

**SPECIAL ISSUE:  
REMEDICATION—STUDENTS  
AND SCHOOLS  
WORKING TOGETHER**

**Summer 1989  
Volume 14, Number 4**

# **JOURNAL OF OPTOMETRIC EDUCATION**



**ALSO: ANNUAL AUTHOR AND SUBJECT INDEX**

# Association of Schools and Colleges of Optometry

The Association of Schools and Colleges of Optometry (ASCO) represents the professional programs of optometric education in the United States, Canada and a number of foreign countries. ASCO is a non-profit, tax-exempt professional educational association with national headquarters in Rockville, MD.

## OFFICERS AND MEMBERS

### President

Dr. Jack W. Bennett, Dean  
Indiana University  
School of Optometry  
Bloomington, Indiana 47401

### President-Elect

Dr. Jerry Christensen, Dean  
University of Missouri-St. Louis  
School of Optometry  
St. Louis, Missouri 63121

### Vice-President

Dr. William E. Cochran, Pres.  
Southern College of Optometry  
Memphis, Tennessee 38104

### Secretary-Treasurer

Dr. Bradford W. Wild, Dean  
University of Alabama  
School of Optometry  
Birmingham, Alabama 35294

### Immediate Past President

Dr. Richard L. Hopping, Pres.  
Southern California College  
of Optometry  
Fullerton, California 92631

### Executive Director

Robert J. Boerner

Dr. William R. Baldwin, Dean  
University of Houston  
College of Optometry  
Houston, Texas 77004

Dr. Jay M. Enoch, Dean  
University of California  
School of Optometry  
Berkeley, California 94720

Dr. Alden N. Haffner, President  
State University of New York  
State College of Optometry  
New York, New York 10010

Dr. Michael Keating, Acting Dean  
Ferris State University  
College of Optometry  
Big Rapids, Michigan 49307

Dr. Arthur J. Afanador, Dean  
Inter American University  
of Puerto Rico  
School of Optometry  
San Juan, Puerto Rico 00936

Dr. Boyd B. Banwell, Pres.  
Illinois College of Optometry  
Chicago, Illinois 60616

Dr. Willard Bleything, Dean  
Pacific University  
College of Optometry  
Forest Grove, Oregon 97116

Dr. Leslie L. Walls, Dean  
Northeastern State University  
College of Optometry  
Tahlequah, Oklahoma 74464

Dr. Richard M. Hill, Dean  
The Ohio State University  
College of Optometry  
Columbus, Ohio 43210

Dr. Melvin D. Wolfberg, Pres.  
Pennsylvania College of Optometry  
Philadelphia, Pennsylvania 19141

Dr. Sylvio L. Dupuis, Pres.  
The New England College  
of Optometry  
Boston, Massachusetts 02115

### Affiliate Members

Dr. Jacob G. Sivak, Dir.  
University of Waterloo  
School of Optometry  
Waterloo, Ontario, Canada N2L 3G1

Dr. Daniel Forthomme  
University of Montreal  
School of Optometry  
Montreal, Quebec, Canada H3C 3J7

Professor S.R. Govindarajan  
Elite School of Optometry  
18, College Road  
Madras 600 006 India

Professor Ogbuehi  
University of Benin  
Department of Optometry  
Benin City, Nigeria

Dr. Oswaldo Vargas, Dean  
Escuela de Optometria  
Universidad Social  
Catolica de LaSalle  
Bogota, Colombia

Dr. Giovanni DeStefani  
School of Optometry  
50059 Vinci Firenze  
Verona, Italy

## Sustaining Members

Alcon Laboratories, Inc.

Allergan Humphrey

Allergan Optical

Allergan Pharmaceuticals

Avant-Garde Optics, Inc.

Bausch & Lomb, Inc.  
Professional Products Division

BerDel International Optics, Inc.

BMC/Vision-Ease Lens, Univis Eyeware,

### \*Ciba Vision Care

Coburn Optical Industries, Inc.

Corning Glass, Optical Products Division

Fused Contacts, Inc.

John Hancock Mutual Life Insurance Co.

Logo Paris, Inc.

Marchon Eyewear, Inc.

Mentor O & O, Inc.

Paragon Optical

Polymer Technology Corporation

Reichert Ophthalmic Instruments

Sola Optical U.S.A., Inc.

### \*Varilux Corporation

Vistakon, Inc.

### \*Volk Optical/Tech Optics, Inc.

Wesley-Jessen

\*Advertisement in this issue  
of the Journal

## Editorial Review Board

Editor: David A. Heath, O.D.

William Bobier, O.D., Ph.D.  
Freddy W. Chang, O.D., Ph.D.  
Lynn A. Cyert, O.D., Ph.D.  
David W. Davidson, O.D., M.S.  
Ben V. Graham, O.D., Ph.D.  
Richard D. Hazlett, O.D., Ph.D.  
Catherine Hines, O.D.  
Thomas L. Lewis, O.D., Ph.D.  
James E. Paramore, O.D.  
Michael W. Rouse, O.D., M.S.  
Hector Santiago, Ph.D., O.D.  
Paulette P. Schmidt, O.D., M.S.  
Clifton M. Schor, O.D., Ph.D.  
Leo P. Semes, O.D.  
Richard D. Septon, O.D., M.S.  
Dennis W. Siemsen, O.D.  
Barry M. Tannen, O.D.  
James W. Walters, O.D., Ph.D.

# Table of Contents

## Summer, 1989

### Volume 14, Number 4

# JOURNAL OF OPTOMETRIC EDUCATION

#### Student Remediation

JOE is pleased to publish papers from this symposium which was presented at the meeting of the Education Section of the American Academy of Optometry in December 1988.

##### **Causes of Academic Difficulty**

*David W. Davidson, O.D., M.S.*

Academic difficulties encountered by optometry students, although rare, can be traced to a number of underlying problems.

**104**

##### **Designing Clinical Remediation Programs**

*Susan Oleszewski, O.D.*

An effective clinical remediation program must involve a coordinated effort between an administration willing to commit resources, faculty and energy, and students dedicated to meeting the expected criteria for clinical competence.

**111**

##### **Responsibilities of the Students**

*David A. Heath, O.D., Lisa Traveis, O.D., and Tim Rioux*

The needs, perceptions and attitudes of the students involved in the remediation program are evaluated.

**114**

##### **Responsibilities of the Institution**

*Dennis W. Siemsen, O.D.*

How far does an institution need to go in helping students in academic difficulty?

**120**

#### **The Association of Optometric Contact Lens Educators**

*Edward S. Bennett, O.D., M.S.Ed., and Lester Caplan, O.D., M.Ed.*

The authors outline the history and activities of an association of interest to all contact lens educators.

**123**

#### **Annual Index of the Journal of Optometric Education**

Author and Subject Index for Volume 14

**126**

## DEPARTMENTS

#### **Editorial: "Student Remediation"**

*Morris Applebaum, O.D.*

**100**

#### **Sustaining Member News**

**102**

The JOURNAL OF OPTOMETRIC EDUCATION is published by the Association of Schools and Colleges of Optometry (ASCO). **Managing Editor:** Patricia Coe O'Rourke. **Art Director:** Dan Hildt. Graphics in General. Business and editorial offices are located at 6110 Executive Boulevard, Suite 514, Rockville, MD 20852 (301) 231-5944. **Subscriptions:** JOE is published quarterly and distributed at no charge to dues-paying members of ASCO. Individual subscriptions are available at \$15.00 per year; \$20.00 per year to foreign subscribers. Postage paid for a non-profit, tax-exempt organization at Rockville, MD. Copyright © 1989 by The Association of Schools and Colleges of Optometry. Advertising rates are available upon request. The Journal of Optometric Education disclaims responsibility for opinions expressed by the authors. Article copies, 16mm microfilm, 35mm microfilm and 105mm microfiche are available through University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.



## Student Remediation

The inability of the student to pass a course or a proficiency examination, or to properly examine a patient is the "symptom" of some underlying "disease process"; remediation is a "treatment." Student remediation is the term generally used to refer to the providing of tutoring to a student who has demonstrated unacceptable performance in a lecture, laboratory, or clinical course. In order to diagnose the "disease" in each case of remediation, there are at least three areas which require our scrutiny: the admissions process, the educational program, and the student.

The admissions process, the means by which we accept our future colleagues, is a major responsibility of each optometric institution. In order to ensure that a student has a reasonable chance of succeeding, each institution must establish prerequisites that provide the foundation for the curriculum. Student transcripts must be viewed not only with respect to GPA, but for indicators of potential problems, including:

1. declining academic performance
2. poor performance in courses critical to optometric curricula
3. light course work load even with good grades
4. grades of D, F, or withdrawals from courses

In order to determine whether an applicant has the communication and interpersonal skills needed by a health care professional, a personal interview is valuable in selecting successful candidates.

The educational program must be scrutinized when dealing with a student in need of remediation. Curricula and course instruction cannot be "do-it-yourself" programs. Areas of consideration include:

1. curriculum design appropriate to teach the knowledge, skills, and attitudes needed by an optometrist
2. appropriate course sequencing
3. individual course content in relationship to the established curriculum
4. faculty knowledge of the curriculum design
5. faculty ability as an educator and evaluator of student performance

Finally, let us consider areas in which the need for remediation rests with the student:

1. lack of intellectual capacity or interpersonal skills
2. personal or health problems
3. insufficient energies applied to academic endeavors
4. lack of desire to be an optometrist

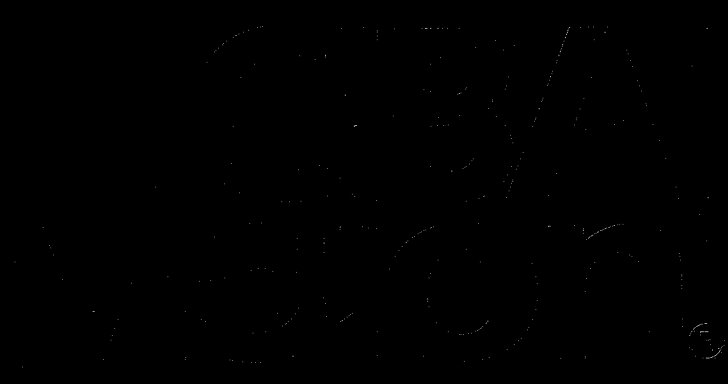
If one considers these components, it is clear that student remediation is not simply a tutorial process. The initial step in providing remediation is the "diagnosing" of the problem. If the problem rests with the admissions process, then changes are indicated. If the problem rests within the academic program, then steps must be taken to remediate the deficits as well as to help the student. If the problem lies with the student, early "diagnosis" of the problem will allow appropriate remedies to be applied including tutoring, counseling, or referral for medical treatment.

Optometric educational institutions have responsibilities to the public, the profession, and the students. We have a responsibility to the public to provide graduates who are knowledgeable, competent, and caring. For the profession, we have the responsibility to accept qualified applicants, and to produce competent practitioners. Our responsibility to the students whom we accept into our program is not only to provide a sound educational program, but to assist them in achieving their end goal if problems arise. As optometric educators, we must make every effort to investigate the sources of student problems, and to provide the resources needed to remedy the problems in a timely manner. If reasonable efforts to help the individual student fail, then dismissal is an appropriate option. If, however, the "disease" lies within the institution, anything less than a full "cure" would be unacceptable.

*Morris Applebaum*

Morris Applebaum, O.D.

*Dr. Morris Applebaum is assistant dean and director of clinical education at the Southern California College of Optometry, and chairman of the Section on Optometric Education of the American Academy of Optometry.*



"In spite of the many changes in the eye  
care profession today, it's the relationship  
between practitioner and patient that ensures  
safe and successful contact lens wear.

"We believe the role of CIBA Vision  
is to support that relationship without ever  
disrupting it."

B.J. Shannon, O.D., F.A.A.O.  
Executive Director, Professional Services  
CIBA Vision Corporation

# SUSTAINING MEMBER NEWS

*Sustaining Members support ASCO initiatives on behalf of the optometric education community. Sustaining members are listed on the inside front cover of each issue. Membership is open to manufacturers and distributors of ophthalmic equipment and supplies, and pharmaceutical companies.*

## **CIBA Vision® Introduces NewVues™ Disposable Soft Contact Lenses**

CIBA Vision® Corporation announced that its NewVues™ (vifilcon A) disposable soft contact lenses, the only disposable contact lenses available in both plus and minus powers, will be introduced to eye care practitioners in test markets in Southern California and, several weeks later, in Northern California. The test marketing of New Vues disposable soft contact lenses will begin immediately, with plans to be announced later for national and international availability.

"We've spent the last several years developing what we think is truly an excellent product," stated Jim Callahan, senior vice president, sales and marketing at CIBA Vision. "To give practitioners greater flexibility in fitting, we've waited until we could supply a wide range of parameters, with plus and minus powers and two base curves. Our initial parameters will be +4.00D to -6.00D, with 8.4 and 8.8 mm base curves," Callahan said.

"NewVues™ lenses give practitioners an extraordinary option by offering patients freedom from contact lens deposit build-up since patients discard lenses after a week, and freedom from lens care compliance since no conventional lens care is needed," Callahan said.

The NewVues program is designed so that patient control remains in the hands of practitioners. "We strongly feel that eye care practitioners should view NewVues disposable contact lenses as an eye care system," said Kim Little, director, new products marketing at CIBA Vision.® NewVues disposable contact lenses are packaged in six-lens multipacks; they are ordered directly from CIBA Vision just prior to each patient's follow-up visit.

"To assist the eye care practitioner with fitting, dispensing, educating and ensuring patient compliance with regard to NewVues disposable soft contact lenses, a number of system enhancements were developed by CIBA Vision," Little said.

The NewVues Fitting System<sup>SM</sup> provides practitioners with a fitting and dispensing inventory, a lens organizer, a continuing education symposium on disposable contact lenses and their management, and enrollment in the LensBank<sup>SM</sup> Replacement System, a single lens replacement system that gives practitioners a convenient

way to restock fitting inventories or replace lenses.

The NewVues Patient Management System<sup>SM</sup> is being offered to eye care professionals to help ensure patient compliance. Included in the program are a patient selection guide, which targets patients whose lifestyles make them good candidates for NewVues lenses; a patient education flip chart, which helps communicate to patients the importance of following the recommended disposable wear regimen; and a patient instruction booklet, which provides an at-home reference guide. A ReCall<sup>SM</sup> Reminder System uses structured communications to increase patient compliance and simplify program administration.

Based in Atlanta, Georgia, CIBA Vision® Corporation is a leading manufacturer of a full line of soft contact lenses and lens care products. The company was formed in 1980 as a subsidiary of CIBA-GEIGY Corporation, headquartered in Ardsley, New York. CIBA Vision products are available in 13 countries throughout the world, in addition to the United States. □

## **B&L Begins National Expansion for SeeSequence® Disposable Lenses**

Bausch & Lomb announced that it is beginning national rollout of its SeeSequence® disposable soft contact lens, following early product success in Florida and California, where the SeeSequence lens was introduced in mid-1988.

"Due to the initial demand for the product, we're making it available to selected accounts, on a territory by territory basis, with the intention of phasing in accounts periodically throughout the year," said David L. Archer, director of marketing for SeeSequence.

The SeeSequence disposable lens system, combined with the company's existing Fresh Lens Program, offers practitioners complete flexibility in meeting patient needs. The SeeSequence lens may be dispensed for a one-week or two-week replacement cycle as recommended by the practitioner. The Fresh Lens program offers replacement cycles of one month to 12 months.

"We believe the SeeSequence option under the Fresh Lens program offers practitioners and patients the best of two

worlds," said Hal Johnson, president of Bausch & Lomb's Professional Products Division, which developed and markets the lens program. "Patients have wanted a contact lens that is comfortable and convenient," explained Johnson, "while practitioners want to enhance patient compliance with contact lens wear. Bausch & Lomb's extensive research into this project has resulted in the SeeSequence program, which satisfies the needs and concerns of both patient and practitioner."

The SeeSequence option of the Fresh Lens program offers many benefits to practitioners in today's changing market, according to Johnson. He says that the primary benefits are better patient control and enhanced patient compliance.

"Our research indicates that this frequent replacement option may minimize the dropout rate among contact lens patients, will encourage patient compliance through the ease of care, and will result in better compliance monitoring since patients must return to their practitioner for regular follow-up," Johnson noted. □

## **Sola Optical Introduces SmartSeg®**

Sola Optical USA, Inc. announces the release of SmartSeg—the world's first progressive flat top.

SmartSeg's patented, progressive flat-top segment is designed to increase power gradually as the eye moves from intermediate to near vision. The result is that wearers see as clearly from 10 feet as from 10 inches. In addition, the lower add-power at the ledge creates less image jump, making SmartSeg easier to adapt to than ordinary bifocals. And because there is less thickness at the ledge, the segment is less noticeable.

"SmartSeg represents a revolutionary approach to flat-top design," says Bernard Freiwald, Sola's executive vice president. "It won't be long before ordinary flat-top bifocals are a thing of the past."

SmartSeg allows dispensers to better meet the needs of their flat-top bifocal patients by offering them intermediate vision without difficult adaptation or the unattractive second line of trifocals. And because over 21 million flat tops are sold in the United States each year, these flat top wearers represent a sizable market to the dispenser.

*(continued on page 125)*



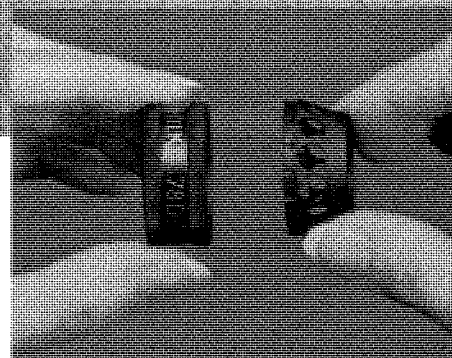
# NEW **VOLK 78D** DOUBLE ASPHERIC

With Lid Lens Adapter

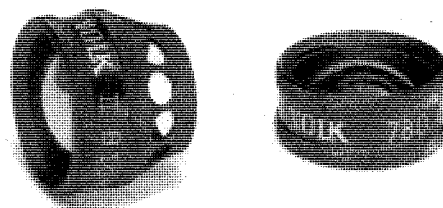
The **VOLK 78D BIO®** Lens has valuable features that make it something special!

- High magnification
- Optimum field of view
- Excellent working distance at the slit lamp
- Available in Clear and Volk Yellow retina protector glass
- **VOLK 78D** Lid Lens Adapter minimizes lid movement and provides instant fundus viewing and lens stability

Lid Lens Adapter sold separately. Also available for Volk 60D and 90D lenses.



Simply insert the Volk Lid Lens Adapter into the lens retaining ring for improved lid control and lens stability during slit lamp indirect ophthalmoscopy.



Exclusive  
Manufacturer

**VOLK** OPTICAL / 7893 ENTERPRISE DRIVE, MENTOR, OHIO 44060 / (216) 942-6161  
MADE IN THE UNITED STATES OF AMERICA

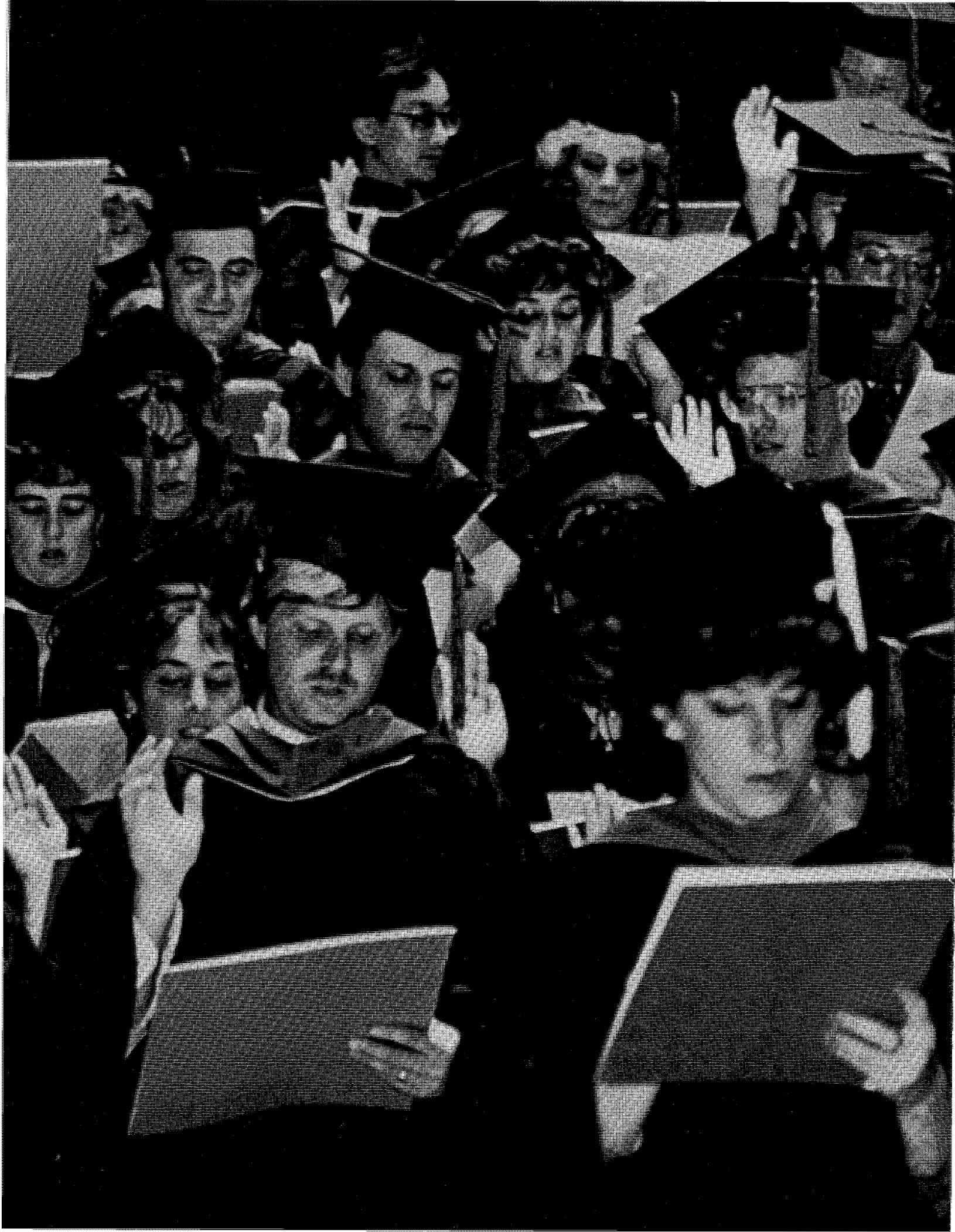


photo by Doree Sauer, Pennsylvania College of Optometry



# Causes of Academic Difficulty

David W. Davidson, O.D., M.S.

## Introduction

It is rare for an optometry student to get into academic difficulty. The primary reason so few optometry students do get into academic difficulty is that, for the most part, these students have been carefully selected from a pool of applicants on the basis of their academic preparation. Because of the process used to select applicants for admission, there is little need for the "weeding-out" process often found in undergraduate programs. The weeding-out is done at the front end, as part of the selection process. Each optometric institution commits time, money and human resources to the professional school admissions process. The net result is an entering class composed of well-qualified candidates who have met the rigorous entrance requirements and who have competed successfully from among the pool of applicants for the limited number of highly-coveted seats in the first year of the professional program. The expectation is that these students represent the best available candidates who are well prepared for the study of optometry.

Barring unforeseen complications, these students should not be experiencing academic difficulty, and, in fact, they are not.

The Association of Schools and Colleges of Optometry, in its annual survey of optometric educational institutions,

produces statistics on student characteristics for all schools and colleges of optometry in the United States and Canada. These statistics include rate of attrition. The data for the last several years shows that overall first-year attrition in all optometry schools for any reason has averaged just under 7%.<sup>1</sup>

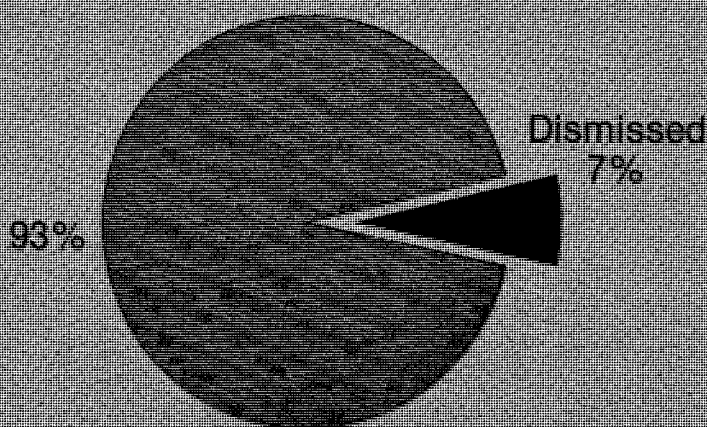
If you were to look at overall optometry school attrition, the rate drops to 3%. That is because the attrition rate drops off considerably after the completion of the first professional year, and is practically non-existent in years three and four.

A closer look at these data shows that

attrition for reasons of academic difficulty represents the largest proportion of the overall attrition rate.

However, these data are likely to be misleading in that it is unclear how many of the students who were dismissed from the professional program for academic reasons had underlying problems such as illness, financial distress, personal problems or other difficulties that may have contributed to their ultimate academic failure. This author's experience with students in academic difficulty suggests that academic difficulty often is secondary to some other undesirable situation (such

**FIGURE 1**  
1st Year Student Attrition  
Percent of total 1st Year Enrollment



1985-87 Annual Survey of Opt. Ed. Inst.

*Dr. Davidson is associate dean of the School of Optometry, University of Missouri-St. Louis.*

*Note: These papers were originally presented at a symposium on student remediation at the Education Section of the 1988 Academy of Optometry meeting.*

as financial problems, marital problems or other emotional disturbances).

## Selection Criteria

The applicant selection process in the schools and colleges of optometry is quite complex. Furthermore, the process varies somewhat from institution to institution. Across the spectrum of institutions, however, there are certain common applicant characteristics which can be used to identify candidates who are very likely to be offered an admission.

### Quality of academic preparedness

The most obvious indicator of an applicant's academic preparedness is the undergraduate grade point average. However, grades are evaluated from a variety of different perspectives. In addition to the overall grade point average, admissions committees are particularly interested in an applicant's performance in the sciences and in specific prerequisite courses. Also, the committees will look at performance in a student's chosen major. Furthermore, the committees give consideration to the pattern of grade acquisition, i.e., determining if the applicant's academic performance is getting better as time goes on, getting worse with time, or staying constant. It is considered preferable for an applicant to be showing academic improvement as he or she pro-

gresses through the undergraduate curriculum as opposed to declines in performance. Also, admissions committees will consider grades in relation to the reputation of the institution where those grades were received. Often this is a difficult judgment to make, but the fact remains that undergraduate institutions vary considerably in their degree of competitiveness, grade inflation and quality of instruction. Most committees would be more impressed with an applicant who had a somewhat marginal academic record from a prestigious Ivy League school as compared to an applicant with the same academic record where the majority of the courses were completed at a small, relatively unknown community college.

Another indicator of academic preparedness is the admission test scores. All applicants to the schools and colleges of optometry are required to take the Optometry Admission Test. This test attempts to measure a candidate's acquired knowledge in the disciplines tested (Biology, General Chemistry, Organic Chemistry, Physics, Mathematics and Reading Comprehension). It is recognized that, as an indicator of acquired knowledge, the OAT is far from perfect. It is a one-day examination and subject to all the potential distractions and complications of any other one-day examina-

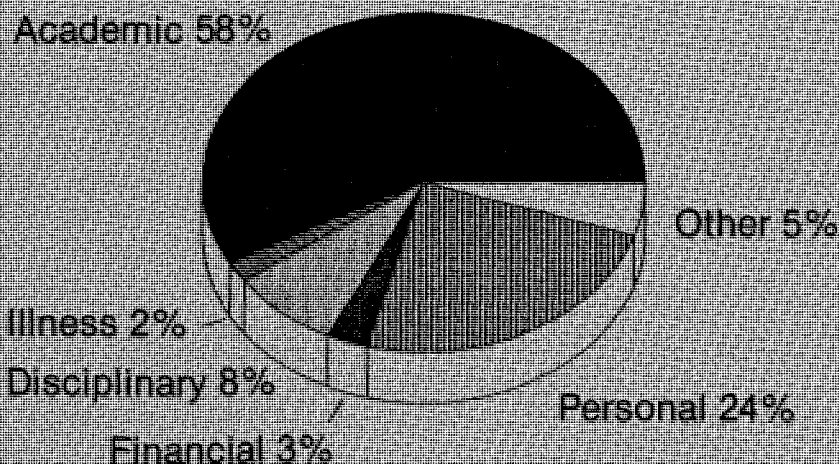
tion. Furthermore, the applicants represent a very heterogeneous group with respect to preparation for the OAT. Many applicants will be years beyond the relevant subject matter when they take this exam, particularly older, career change applicants. Also, students vary considerably in their ability to perform well on standardized multiple choice examinations, particularly when the test is being carefully timed and the applicant is under a great deal of stress to perform well. Lastly, there is considerable variation in test preparation from one applicant to another. Some applicants decide (or are advised) to take the examination "cold," that is, without any specific test review or preparation, adopting the philosophy that the test should be a pure measure of acquired knowledge, uncontaminated by specific review or preparation. Others spend significant time in review, or pay substantial sums of money to take a commercial OAT test preparation program. In spite of these differences among test takers, and the flaws in the test's predictability for success in the professional program, the test does correlate positively with future performance in optometry school<sup>2,3,4</sup> and therefore does represent one more piece of information that can be used to measure a candidate's academic preparedness.

Another factor related to academic preparedness is the amount of schooling a candidate has completed prior to entering the professional school programs. The schools and colleges of optometry vary considerably on this factor. The minimum requirement by any school or college of optometry for undergraduate course work completed is two years. Most schools require a minimum of three years undergraduate course work completed. However, all of the schools and colleges seem to give preference to applicants who have completed their bachelor's degree requirements in that the majority of students entering optometry programs have a bachelor's degree.<sup>5</sup> The reasons cited for giving preference to applicants who have completed a bachelor's degree are not related strictly to academic preparedness. They are related also to an applicant's "well-roundedness" and therefore will be explained in more detail under that subheading.

### Motivation towards optometry

Admissions committees want to feel confident that applicants considered for admission are making an appropriate

**FIGURE 2**  
Student Attrition  
Percentage of total attrition  
by cause



career choice. It certainly is unfortunate when an admitted student drops out of the professional program because it wasn't what he or she expected it to be. Fortunately this does not happen very often but that is because admissions committees try hard to ensure that candidates who are ultimately selected for admission have researched their career options carefully and know enough about optometry to have convinced themselves (and ultimately an admissions committee) that they are well suited for optometry and vice versa. Admissions committees are most impressed with applicants who have researched several different career options and have decided upon a career in optometry after having made careful comparisons of optometry to other alternatives. It is desirable for an applicant to know enough about optometry to be able to enter into a dialogue with committee members about the profession. A well-prepared applicant will know something about the profession's history, scope of optometric practice, trends, income-earning potential, and various practice alternatives.

## Personality attributes

A few optometry schools claim to select applicants for admission purely on the basis of paper credentials. They do not consider an applicant's personality as part of the selection process. On the other hand, most optometry schools do include some assessment of personality in the admissions process. This is most often done through on-site personal interviews with members of the admissions committee, letters of recommendation and related "life" experiences. Some schools go so far as to incorporate a formalized question-and-answer "personality inventory" as part of the selection process. Assessment of an applicant's personality characteristics in terms of making that applicant well suited to a career in optometry is arguably one of the most difficult judgments facing an admissions committee. Personality indices are not easily subjected to quantification; they are not very standardized and admissions committee members usually are not sufficiently qualified on the basis of their own background and training to be evaluating personalities and personality differences. What kinds of personality characteristics are admissions committees looking for? The following come to mind:

1. Leadership ability—Does the applicant demonstrate leadership ability in his

or her demeanor? To have this characteristic come across well in a personal interview requires the applicant to display the proper combination of assertiveness, self-confidence, politeness, and understanding. An applicant's potential for leadership can be demonstrated on the basis of work experience, and leadership positions in school clubs, religious groups, athletics, fraternities or sororities, and participation in community service activities.

*"Assessment of an applicant's personality characteristics . . . is arguably one of the most difficult judgments facing an admissions committee."*

2. Well-roundedness—In spite of the assortment of science prerequisites required, admissions committees like to see applicants complete a well-rounded undergraduate liberal arts curriculum. This is justified on the basis of helping the applicant develop the interpersonal skills needed in order to establish the so-called "doctor-patient" relationship. This is partly the reason why committees give preference to candidates who have completed a bachelor's degree. A full four years of undergraduate college education is usually required in order for a candidate to have completed all of the science prerequisites, as well as having had the necessary time to take an assortment of humanities, arts and social sciences courses. Furthermore, the additional year or two of undergraduate education allows the applicant to become somewhat more mature and that is often desirable.

In addition to a well-rounded undergraduate liberal arts education, a candidate can improve his or her well-roundedness by travel and by demon-

strating a healthy mix of academics, work and social life.

3. Maturity—Another difficult responsibility expected of admissions committees is to judge an applicant's maturity. A candidate's age doesn't (or at least shouldn't) enter into this judgment. Rather, it is an assessment of the candidate's maturity as measured against the expected maturity level for a given age group. If a candidate is 20 years old, his or her level of maturity is not compared to all other applicants, but rather is measured against the degree of maturity expected of typical 20-year-olds.

4. Communication skills—Admissions committees like applicants with good communication skills. This not only includes good grammar and sentence structure, but an ability and willingness to express ideas verbally. Written communications skills are also extremely valuable. Consequently, the application for admission often requires the applicant to write an essay. Faculty are often criticizing optometry students for their communication skills, particularly written communication skills as evidenced by the quality of answers to essay examinations. It is not difficult to find optometry students who perform well on multiple choice examinations, but do poorly on essay examinations. Perhaps admissions committees should place more emphasis on this attribute in the selection process.

## Causes of Academic Difficulty

With admissions committees using such carefully constructed selection criteria, it should be expected that all students admitted into the professional programs would complete the program successfully. As indicated previously, almost all of them do. Why then do some optometry students get into academic difficulty in spite of the care in admissions? In most instances, academic difficulty in optometry schools can be traced to some other underlying form of difficulty.

## Financial difficulties

An optometric education in the 1980s has become quite expensive. The average tuition for all schools and colleges of optometry in 1987 was \$6,000.00 per academic year, with tuition at some of the institutions as high as \$14,000.00.<sup>6</sup> With the cost of an optometric education this high, it is a rare student who can afford to attend optometry school without borrowing money. The average graduate from



optometry school in 1987 was \$28,000.00 in debt.<sup>7</sup> Understandably, students want to keep their level of indebtedness to a minimum and therefore many of them work part time while attending school. Through informal analysis, it is estimated that over 70% of optometry students work up to 10 hours per week, with many working 15 or even 20 hours per week. Some students are able to contend with this added burden on their time better than others. However, almost all working students, when queried, will indicate that they would prefer not to have to work because it cuts into their study time and interferes with their course work. Some students gain employment during late-night hours, reducing their available hours of sleep and in the process compromising their energy level and ability to concentrate when they are studying, and thereby lowering their academic performance.

In addition to the academic problems associated with working part time while trying to be a full-time professional student, occasionally there are psychological problems associated with the high cost of an optometric education. Some students become rather troubled over ultra-tight budgets. Many optometry students are married, some with children and the available budgets are often considerably less than is needed to maintain even a minimally acceptable standard of living. For some students this causes considerable anxiety and these psychological distractions interfere with their academic performance.

## Emotional difficulties

A book could be written about the emotional hurdles to becoming an optometrist in today's environment. Suffice it to say that optometry school is very stressful. Every school and college of optometry has an office of student services and in every case, one of the services offered is counseling.

1. *Marital problems*—One of the most frequent reasons students seek counseling is marital tension. There are numerous examples of optometry students attempting to negotiate "commuter" marriages where the optometry student has moved to the location of the optometry school and the spouse was left behind, and they get together on occasional weekends or vacations. This arrangement can be taxing even on the strongest partnership. Spouses often demand what they feel is their fair share of attention, especially if there are children involved,

and the optometry student is often perceived as being insensitive to these needs, particularly during "midterm season" and in preparation for finals and National Boards.

2. *Financial difficulties*—It was mentioned previously that financial difficulties and budgetary constraints cause many optometry students to have to work. In addition, these financial difficulties frequently lead the student to psychological counseling. There is continuing pressure from the federal government to curtail federally insured loan programs for health professional students. Oftentimes

*"The vast majority of optometry students live very frugally and are budgeted so closely that for some it will be so different a lifestyle that it results in emotional difficulties and the need for psychological counseling."*

these efforts to reduce federal spending on health education loans will paint the health professional student as driving a fancy car, living luxuriously, and taking exotic vacations at the taxpayers' expense—the result of federally-sponsored health education loans. The fact is there may be occasional examples of this kind of behavior, but it is far from the rule, and in fact, very infrequent. The vast majority of optometry students live very frugally and are budgeted so closely that for some it will be so difficult a life style that it results in emotional difficulties and the need for psychological counseling.

3. *Stress*—For many students the course work in the contemporary optometric curriculum, particularly the first two years, is simply overwhelming. Staff psychologists frequently complain that optometry students are getting sleep, exercise and nutrition inadequate to sustain peak performance abilities. Students

complain that faculty and administrators are not concerned or even sensitive to the problem. The demands of the curriculum, the attitudes of faculty and administration and the overall tension-filled professional environment seems to fuel the stress level rather than relieve it. These multiple stresses accumulate over time, resulting in abnormal behaviors among students. These behaviors include a shortened attention span, chronic fatigue, negative attitudes, marital difficulties and a trend towards drug and alcohol abuse.

## Academic Difficulty Without Any Apparent Underlying Cause

Occasionally an optometry student will get into academic difficulty without apparent underlying problems. While these instances are rare, they do exist and can be attributed to several factors.

We must acknowledge that, in spite of the effort that goes into the applicant selection process, it is less than perfect. Occasionally a candidate is admitted to optometry school who is inadequately prepared for the rigors of the optometric curriculum.

There has been a continuing decline in the number of applicants to the schools and colleges of optometry over the last 10 to 15 years. In 1975, when we were at or near the peak in applications, there were reported to be 4.3 applicants for every available seat.<sup>8</sup> That figure has been declining ever since and in 1988, the data reported by the Association of Schools and Colleges of Optometry indicated 1.7 applicants for every available seat.<sup>9</sup> This decline in applicants means that the institutions are digging deeper into their respective applicant pools to fill their entering classes, and candidates are getting into school today who would not have been admitted 10 to 15 years ago.

Each of the schools and colleges of optometry has a published affirmative action plan and is aggressively recruiting minority applicants. Published (and non-published) data indicate attrition among minority students is higher than that among non-minority students. This suggests several things. First, it suggests that minority students may have uniquely challenging obstacles to successfully completing the optometric curriculum. These obstacles include a lack of minority support personnel on the faculty and administration, an inadequate peer support

structure due to the small number of minority students at any given institution, and an overall environment and set of attitudes that has not been conducive to success for minority students. Secondly, it suggests that some minority students may have been admitted who were inadequately prepared for the optometric curriculum. This may be partly the result of the institutions' strong efforts to admit minority students, and partly the result of inadequate preparation for some minority students in spite of adequate paper credentials.

A sensitive issue, often occurring without much notice, is the occasional admission to the professional program of a student who bypassed the institution's normal selection procedures. This may occur for political and/or financial reasons. There is no available data to substantiate this activity and therefore the frequency of occurrence is unknown. It would seem likely, however, that if this type of action resulted in the admission of a student who is inadequately prepared, the likelihood of academic difficulty for this student is quite high.

## Conclusion

Academic difficulty among optometry students is uncommon but does exist. In most instances the academic difficulty can be traced to some underlying cause other than inadequate academic preparation. It would seem that the best way to avoid academic difficulty among optometry students is effective prevention, i.e., preventing academic problems before they occur. Using the analogy to "primary health care," one can argue that prevention is our first line of defense. Common sense would indicate that prevention is more effective, less costly and less traumatic than treatment. An effective program of prevention against academic difficulty among optometry students would include the following components.

Admission should be restricted to those applicants who meet the institution's selection criteria. The institution also must employ careful deliberation in the establishment of selection criteria to ensure that those criteria effectively screen students who should not be admitted, *without being arbitrary, unfair, biased or discriminatory.*

Each institution should offer a pre-enrollment early academic enrichment program. Such a program should be de-

signed to help identify and bolster specific weaknesses, particularly math and writing skills, and offer review in the relevant biological and physical sciences. Furthermore, this program should offer an introduction to those courses in the first professional year that represent the greatest hurdles to academic success. In this way students can have a more realistic set of academic expectations, develop improved self-confidence and begin to establish the foundation for the study of optometry.

The institution must make appropriate support services available to students.

***"The institution also must employ careful deliberation in the establishment of selection criteria to ensure that those criteria effectively screen students who should not be admitted, without being arbitrary, unfair, biased or discriminatory."***

This would include financial aid, housing, and counseling services. In addition, appropriate services should be available to support special student groups such as minority students, handicapped students, and foreign students.

Remedial programs must be offered as needed. The programs would include faculty willing to assist students needing extra help; tutorial services including peer tutoring as well as paid tutoring by upper class students, graduate students and consultants; specialized curricular pathways for those students who have the innate intellectual ability, but are unable to handle the pace of the conventional four-year curriculum. Examples include modified curricula that make it possible to complete the first two professional years over a three-year period, approved leaves of absence, and part-time curricula for those students who must work or must assume other outside responsibili-

ties (such as the rearing of a child) while attending school.

In summary, the best way for an institution to minimize academic difficulty among its students, and to solve these problems when they arise, is to foster a philosophy of commitment and support for all students who have been admitted to the professional program. This support includes:

1. An administration that is willing to invest the necessary institutional resources in terms of personnel and dollars required in order to establish the necessary support network for students with specific needs.

2. A faculty that is innovative in their teaching methods and sensitive to the variation in learning style and abilities of the students under their tutelage, and lastly,

3. An institutional philosophy that places a high enough priority on the educational endeavor, and on student support services, to enable these services to respond effectively to individual student needs as well as the needs of the student body as a whole.

## References

1. Annual Survey of Optometric Educational Institutions. 1985, 1986, 1987. Association of Schools and Colleges of Optometry (ASCO), Washington, D.C.
2. Bailey JE, Voorhees L and Hanlon S. Forecasting optometry grade point average. *Am J of Optom and Phys Optics* Vol 60(5): 399-404.
3. Kegel-Flom P. Academic dropout or academic success: a model for prediction. *Am J of Optom and Phys Optics* Vol 63(9): 774-780.
4. Corliss D. Statistical tools for predicting academic performance in optometry school, Submitted for Publication, *J Optom Education*.
5. American Optometric Association, Admissions to Schools and Colleges of Optometry, Fall 1990 St. Louis, MO.
6. American Optometric Association, Admissions to Schools and Colleges of Optometry, Fall 1990 St. Louis, MO.
7. The Association of Schools and Colleges of Optometry. Educational and indebtedness data for schools and colleges of optometry 1980-86, Final Report to Health Resources and Services Administration, Public Health Service, United States Department of Health and Human Services, October 1986.
8. Davidson DW. The need to increase or maintain enrollment at current levels, as part of the proceedings of a symposium on the topic: optometric manpower needs: implications for the future structure and orientation of optometry schools, *J Optom Ed Spring 1987* Vol 12(4): 114-120.
9. Association of Schools and Colleges of Optometry. Applicant Status Report, 1988 Applicant Year.





## Designing Clinical Remediation Programs

Susan C. Oleszewski, O.D.

### Introduction

The challenge of clinical teaching in the schools and colleges of optometry is to transform an optometry student into a competent practicing optometrist. The transformation is always a much greater challenge when dealing with a weak or failing student clinician. It is, however, the obligation of administrations and faculties to provide every reasonable opportunity for students to meet the expected competency levels through tutorial and additional opportunities. A well-conceived clinical remedial program is often the vehicle that will provide the opportunity for the weak and failing student. The steps taken must involve a coordinated effort between an administration willing to commit resources, faculty and energy, and students dedicated to meeting the expected criteria for clinical competence.

Does an institution have an obligation to design remedial programs for students who are not achieving clinically? Many institutions struggle with this question.

The strongest case against clinical remedial programs is based on the belief that institutional resources, while meager at best, should not be used in attempts to salvage the weakest students in any given class. According to this argument, resources would be more appropriately directed toward accelerated or innovative programs for the achieving students.

The opposing case argues that an institution has a moral obligation to make every reasonable effort to help clinically weak students. This position contends that if an institution has admitted a student through a sound admissions process, there is an understanding between the institution and the student to jointly pursue every reasonable avenue toward the graduation of that student.

While waiting for agreement on the issue of remediation, some institutions have committed resources toward remedial programs. Although our program at the Pennsylvania College of Optometry is in its infancy, we have experienced some successes that might be helpful to other schools.

### Program Evaluation

The goals and objectives of an evaluation system are as key to the remediation design as they are to the evaluation itself. A remedial program is designed to address goals and objectives not met by the student. The remedial program design should be based on the strengths and weaknesses of a student as assessed through a clinical evaluation. It is therefore critical that the faculty and students have a clear understanding of the course goals and objectives.

In designing a remedial program for a weak or failing student, it is important to have identified the areas in which the student has not met competency. It is equally important for the instructor and the student to know the specific areas of weakness in which the student has not achieved. An effective evaluation system outlines a clear understanding of the

goals and objectives of a clinical course of study. The objectives must be specific and they must not be a mystery to the evaluator or to the student. The criteria for acceptable performance must be explicit. Documented clinical shortcomings of a student clinician result in the design of a student-specific remedial program. Failing and weak students are often reliably identified through an objectively valid clinical assessment but then poorly managed by an institution. A well-designed, goal-oriented, remedial program is effective in this situation.

The challenge of clinical teaching is to transform an optometry student into a competent practicing optometrist. This transformation requires that a student be able to demonstrate an acceptable level of competence in many areas, some of which include:

- effective interactions with the patient (interpersonal skills),
- data collection through skillful performance of procedures (technical skills)
- interpretation and synthesizing of data (diagnosis), and
- logical and effective design of management plans.

Some students will have documented shortcomings in a few of the above areas. Others will be weak in virtually every aspect of clinical care. A remedial program should be designed to address the student's specific weak areas.

### Clinical Remediation

A well-conceived clinical remediation program should be clearly designed to remediate specific problems that the student is encountering. Institutional re-

*Dr. Oleszewski is an associate professor of clinical and biomedical science at the Pennsylvania College of Optometry, and chief of Primary Care Module V at The Eye Institute.*

sources must be made available for this remediation. Those resources may take the form of clinical space, patient and faculty availability, and equipment. Feedback to the student should be constructive, timely, detailed and nurturing. Assessment (making a determination of competency or incompetency) also is a necessary ingredient to any remedial program. Finally, a realistic time course for a specific remedial course must be stipulated and adhered to.

The specifics of how we have implemented our programs may not be relevant to your institution. Certainly it would be expected that the resources available for remediation would differ among institutions. Perhaps inter-institutional discussions could provide greater insight into ways to develop more effective remedial programs in the technical, cognitive and noncognitive areas of patient care.

## Remediation of Technical Skills

### Technique Review

Reviewing the correct way to perform a given technique may be the appropriate starting point for some students. This may initially be a verbal recounting. The student should be clear on the correct way to do a given test and be clear enough to be able to also verbalize instruction. This review may take place in a practice laboratory or similar setting. It is probably not appropriate to review while the patient is in the chair.

### Role-Modeling

The student must be afforded the opportunity to see the technique demonstrated. Role-modeling requires that a teacher demonstrate a skill or behavior, and label the important aspects or components of the skill being demonstrated. This demonstration enables the learner to imitate more effectively that behavior. Demonstrating techniques can occur in laboratory settings using other students as patients, or more realistic demonstration may occur in the clinical setting with real patients.

### Direct Observation

It is imperative that the technical skills of a weak student clinician be closely observed. Direct observation affords the instructor an opportunity to assess a student's clinical proficiency against standards of performance. Students are judged on the basis of what they actually do. Too often many aspects of clinical

performance are not witnessed by faculty. Instead the faculty judges technical skills indirectly by how the student presents or discusses the case. In a remedial program, direct observation is essential. Poor technique, bad habits, and inefficient time utilization should be identified as early as possible, and corrective instruction given.

Videotaping patient care encounters is a convenient way to record the details of a clinical performance. Not only can it provide meaningful feedback with respect to technical skills but the videotape

*"Many career educators believe that the most difficult component of clinical care to standardize is the noncognitive dimension, i.e., interpersonal skills."*

also provides feedback about a student clinician's interpersonal skills and patient rapport.

### Providing Opportunity

Increasing a student's clinic time, thereby increasing patient care encounters, often will help to enhance their ability to master clinical skills. However, it is not always easy to increase that clinic time without negatively impacting on another student's experiences. At the Pennsylvania College of Optometry we have recently made some progress in this area by adding patient care hours on Saturdays. Several of our remedial students have been mandated to patient care duties on Saturdays, while being closely supervised by a clinical faculty member or optometric resident.

Merely adding increased clinic time is not the entire answer. That additional time must be closely supervised. Without

close supervision it is likely that improvement in clinical performance will be slow at best and may not occur at all. The likelihood of a student continuing to make the same technical errors is great, unless someone directly observes the problem, critiques it, provides feedback, and offers the necessary instruction.

## Remediation of Cognitive Skills

A student's ability to analyze data gathered, make a diagnosis, and develop a meaningful management plan is considered to be a higher level skill than merely collecting data. The cognitive aspects of clinical care are best taught, reinforced, and remediated in the context of the patient care experience.

Increasing the opportunities for students to go through the exercise of case analysis and management plan formulation is important. As previously mentioned, increasing a student's clinic time will provide increased opportunities.

Another effective technique is to assign a remedial student to a faculty member or optometric resident. The remedial student accompanies the doctor while he/she is precepting other students. The remedial student has the opportunity, while accompanying the preceptor, to hear the case presentations of other interns, and to analyze the data of additional cases. This has proved to be an excellent way to engage students actively in the process of identifying problems and developing management plans. Students are asked to verbalize their underlying thought-processes and to defend their recommendations.

It is at this time that preceptors should reveal their own thought processes so that students can understand the logic used in reaching decisions.

## Remediation of the Noncognitive Dimension

Many career educators believe that the most difficult component of clinical care to standardize is the noncognitive dimension, i.e., interpersonal skills. The ability to communicate effectively with patients, colleagues, and the public at large is believed to be critical to the competence and success of health care practitioners. Certainly through direct observation and videotaping we can identify where and how the student falls short in these interpersonal areas. The challenge comes

with trying to change student attitudes and behaviors.

## Role-Modeling

Once again, role-modeling plays a critical role in the remediation of problems in the noncognitive aspects of patient care. Role-modeling is the demonstration of clinical competence. Clinical competence must include exemplary professional characteristics, including showing genuine concern for patients, recognizing one's own limitations, showing respect for others, taking responsibility, and not appearing arrogant.

## Personal Counseling

The ability to alter deeply entrenched affectual behaviors is difficult at best. These troublesome behaviors may have been reinforced for many years. Role-modeling may be helpful but often is not sufficient to undo longstanding behaviors that may be negatively affecting the doctor-patient rapport. Some students may be helped in this area by personal counseling by psychologists. Attempting to change affectual behaviors of interns through mandatory professional counseling is a very sensitive area. Institutions and their faculty continue to struggle with the role they should or should not play in this area. I believe we have a responsibility to advise students whom we admit to our program, who are not able to comfortably and appropriately interact with patients. The student must be made aware of the problems, encouraged, and in some cases, mandated, to pursue professional help.

## Additions to the Curriculum

At the Pennsylvania College of Optometry we are incorporating a course into our curriculum that we believe may make a difference in the number of students needing remedial help in the noncognitive dimension of patient care. It is difficult to know what impact this course will have on the performance of students in these areas, but we are optimistic that this course, entitled "Professional Communication," will provide a sound foundation for the development of these critical noncognitive skills.

The course, "Professional Communication," will be offered in the second year curriculum, preceding the third and fourth clinical years. This course will introduce the student to the basic language of communication and the principles of information exchange. The course also

will cover the psychological and emotional aspects of doctor-patient communication.

## Institutional Resources

An institution's resources are often the limiting factor in initiating new and innovative programs. This fact applies to remediation programs as well. At PCO we have used our resources to increase student clinical opportunities and to provide tutorial manpower.

All students, particularly marginal stu-

*"Clinical competence must include exemplary professional characteristics, including showing genuine concern for patients, recognizing one's own limitations, showing respect for others, taking responsibility, and not appearing arrogant."*

dents, need practice opportunities for skill and concept development. For remedial students these practice opportunities must exceed their regularly scheduled clinic time. The additional time must be quality time, that is, time that will allow for close supervision or tutorial.

A problem that interferes with providing this increased opportunity may be the student's other course assignments. In addition, coordination of student time with the faculty/resident preceptor time, in light of their many other respective responsibilities, may be difficult. It is essential that institutions be creative in finding additional opportunities for students to improve.

Manpower is a critical component to a remedial program. In our institution we have utilized optometric residents almost exclusively for tutors, role models, and preceptors in our remedial efforts. We

have employed junior and senior faculty far less extensively.

The advantages to utilizing optometric residents are several. Resident time is typically less costly than faculty time. Resident time is usually more available and more flexible. Because an optometric resident is typically a recent graduate, a remedial student may be less intimidated by a clinical instructor that is closer in age to the student. Because the working relationship between the student and remedial instructor is a close one, students may be more able to take direction from someone they perceive to be closer to the learning process.

We have found our optometric residents to be effective as role models and mentors. They have met the challenge of providing structure to the learning environment, promoting problem solving, objectively assessing performance and offering feedback.

## Conclusion

The challenge for institutions to design effective remedial programs, in the face of limited institutional resources, is great. Programs may fail as a result of inadequate resources. Failures may result if the remedial program is poorly designed, or the program may be appropriately designed, but the student still fails to meet competency in the agreed time frame. An institution and its faculty must be prepared for some students not to achieve, irrespective of their collective efforts. However, it is the successful remediation of a student that should bolster an institution's continued commitment to create effective and consistently successful clinical remediation programs.

## References

1. Dell WM. Clinical evaluation: issues and problems. *Journal of Optom Educ* 1988 Spring; 13(4): 113-116.
2. Ende J. Feedback in clinical medical education. *JAMA* 1983; 250(6): 777-781.
3. Irby DM. Clinical teaching and the clinical teacher. *Journal of Med Educ* 1986; 61(9): 35-45.
4. Hinz CF. Direct observation as a means of teaching and evaluating clinical skills. *Journal of Med Educ* 1966; 41: 150-161.
5. Barker FM. Videotaping optometry students. *Journal of Optom Educ* 1985 Summer; 11(1): 11-14.



## Responsibilities of the Students

David A. Heath, O.D.  
Lisa Traveis, O.D.  
Tim Rioux

### Introduction

Until the 1980s professional schools had long been remiss in addressing the issue of the student in academic trouble. When admissions offices were overflowing with applicants, the issue was moot. In recent years, however, with a decreasing applicant pool, attention to the problem of remediation has increased.<sup>1,2</sup> The loss of applicants has presented the schools and colleges of optometry with an array of problems including higher attrition rates, questions about the qualifications of the applicants, as well as concerns about maintaining high professional standards. As professionals and educators we always have had an obligation to both the profession and the student to provide support to and maximize the skill level of our graduates. That obligation now is being tested.

The response to date has been three-pronged in nature. One response has been an effort to more effectively evaluate admissions candidates' basic skills and aptitudes in the hope of improving our preadmission screening process. Effectively, this is the search for the perfect predictor of academic success.<sup>3,4</sup> The second response has been increased recruitment efforts.<sup>2</sup> Both of these responses are

in effect prematriculation efforts to limit the acceptance of students at risk into degree programs. The third response, aimed at the postmatriculation doctoral candidate, has been to develop more effective evaluation tools for both the classroom and clinical settings.<sup>5</sup> Many of these efforts have been successful. Optometry schools are far better at identifying those students at risk, as well as identifying, quite specifically, areas of weakness. However, identification is only the first

step in responding to the needs of the remedial student.

The most difficult step is to design and provide a mechanism that effectively resolves a student's problem and that is accessible from the student's perspective. Several articles<sup>6,7,8</sup> have been written that directly describe and assess the effectiveness of remediation programs in professional school settings. The use of students as peer tutors in the remediation process has been clearly established. This ap-

TABLE 1  
Self-evaluation Categories

<b>Self-Perception:</b>	Is the student's view of his/her academic performance consistent with external indicators? Do students accept responsibility for their record? Self-esteem plays an important role in this area.
<b>Cognitive Strategy:</b>	How does the student approach the learning/studying task? A high score indicates the student uses the "deep approach" in which understanding meaning is the most critical. Motivation for this student is generally intrinsic. A low score represents the "shallow approach." This task emphasizes memorization with passing the exam as the primary motivator.
<b>Attitude:</b>	Is the studying process a positive or negative experience for the student? Motivational issues are an implicit component of this score. A high score would indicate studying is a positive and satisfying experience.
<b>Study Habits:</b>	A high score would indicate the student perceives his/her study habits as comprehensive and timely. Students with the low score would be reporting that they review the minimum necessary and frequently procrastinate.

*Dr. Heath is an associate professor of optometry at the New England College of Optometry and director of general vision services at the College's teaching clinic. He is also editor of the Journal of Optometric Education.*

*Dr. Traveis is director of student support services at the New England College of Optometry.*

*Mr. Rioux is a fourth year student and tutor at the New England College of Optometry.*

proach has been shown to be effective and practical.

The tutorial program at The New England College of Optometry was formally established in 1981.<sup>6,8</sup> Since that time, the service has implemented some administrative and program changes but the foundation of the service remains unchanged. The support systems provided include individual peer tutoring, peer-run group reviews, study skills counseling via an external consultant and personal counseling with either our school psychologist or external sources.

At the time the service was developed, the support provided was solely for the didactic program. Recent changes, designed to support students experiencing clinical difficulties, have underscored the need for flexibility as different response characteristics from this group of students became apparent. While this observation is largely anecdotal, it has been our experience that the student who is clinically deficient tends to be more resistant to admitting a problem exists than a student experiencing academic difficulties. This resistance may well be secondary to some of the problems of "judgment" inherent in clinical evaluation systems.<sup>5</sup> Regardless of the cause, it has required a more forceful approach. In the case of clinical remediation, we have moved beyond outreach and now require tutoring in the event a student receives a clinic grade of "remedial," although voluntary involvement is preferable.

Once access to the troubled student is gained, services must be provided that respond to the student's individual needs. The tutor/tutee relationship is a fragile one and effective tutoring does not occur simply because a tutor is smart. Tutors must be selected who possess superior interpersonal skills and a sensitivity to variations in learning strategies. If it is at all possible, tutor training programs should be established using educational specialists.

To establish a remedial program using students as tutors, the roles and responsibilities of students as receivers of remediation and as providers of remediation need to be clearly understood. Understanding these roles may be broken down into the tangible versus the intangible components of the tutoring relationship. The tangible components are by far the easier to identify; they are the organizational details of a remedial program. However, understanding the intangible components, a far more elusive task, is

**TABLE 2**  
**Self-evaluation Inventory Statements**

**SELF-PERCEPTION:**

1. I generally think of myself as a/an
  - a. A student.
  - b. A/B student.
  - c. B student.
  - d. B/C student.
  - e. C student.
  - f. C/D student.
2. The grades I receive are about what I expect.
3. I study very hard.
4. I have good study habits.
5. I often teach other people but they do better than I do on exams.
6. I generally test well.
7. I believe most tests are well designed and fair.
8. I don't do well on standardized tests.
9. I seem to study the wrong things.
10. No matter how much time I put in I always get the same grade.
11. I feel very anxious about exams.

**COGNITIVE STRATEGY:**

12. When I study I concentrate on memorizing the important facts.
13. I need to completely understand a topic before I'll move on to the next topic.
14. I frequently use materials from other courses to help understand the course I am studying for.
15. I prepare for an exam by asking myself questions.
16. I use problem solving as a way to understand course material.
17. I enjoy courses that force me to think logically and solve problems.

**ATTITUDE:**

18. I often find studying exciting and gripping.
19. Studying is depressing.
20. My primary concern is to pass the exam.
21. I enjoy studying.
22. A lot of the courses seem worthless.

**STUDY HABITS:**

23. I often fall behind in my work.
24. I frequently pull all-nighters.
25. Class notes are my primary source of information.
26. I read "required materials."
27. I read "recommended readings."
28. I tend to procrastinate when it comes to studying.
29. I am prepared for tutoring sessions.

an essential prerequisite if the tangible components are to be developed in a way that is optimally responsive to the needs of our students.

The purpose of this article is to examine the less tangible aspects: the tutor and the tutored, in terms of their perceptions of the peer tutoring relationship, their needs, responsibilities and roles.

**Methods**

To evaluate the needs, perceptions and attitudes of the students involved in the remediation program, we designed a survey which had two primary sections. The central component of the survey was a self-evaluation inventory. The inventory consisted of twenty-nine statements. The students were asked to rate each statement on a one to five scale, in which one represented "strongly agree" and five

represented "strongly disagree." Inventory subscales were grouped into four basic categories: 1) self-perceptions, 2) cognitive strategy used in the studying process, 3) attitudes towards the studying and evaluation processes and 4) study habits. Categorical definitions are provided in Table 1 and inventory subscales are presented in Table 2 according to their grouping. The statements were randomized and bidirectional to control for the accuracy of responses; that is a response indicating strong agreement was sometimes positive and sometimes negative.

The tutors were asked to fill out an additional self-evaluation inventory indicating the way in which they believed the typical student they tutored would respond. This arrangement allowed us to compare not only the two groups of stu-

dents, but also the tutor's perceptions of the tutees versus the tutee's self-evaluation.

The survey also addressed (section II) a variety of issues surrounding the reasons students sought tutoring and the nature of the tutor/tutee relationship. Questions asked are listed in Table 3. This information was elicited using a combination of multiple choice and forced ranking formats.

The surveys were mailed, with an accompanying letter of explanation, to twenty tutors (approximately two-thirds of the tutors were still actively tutoring), and eighteen tutees. Participation in the study was purely voluntary and students were not required to identify themselves.

## Results

The survey was completed by twelve tutors and ten tutees. *Section I: Self-Evaluation Inventory.* The data from the self-evaluation inventory was reorganized to group the questions into their respective categories and the scales selectively reversed to establish a common directionality for all statement scales. The ratings for all statements were summed to derive a category score for each responder. Using the category sums of the tutors and tutees, the data was then compared using a Mann-Whitney *U*-test. The Mann-Whitney *U*-test is an alternative to the *t*-test for nonparametric data which is also particularly useful for small samples. Each group's responses to the individual statements were also analyzed using the Mann-Whitney *U*-test.

Figure 1 summarizes the comparison of the tutee's self-evaluation to that of the tutors and that of the tutors evaluating the tutees. The self-evaluations of the tutors were found to be significantly different from those of the tutees in the categories of self-perception ( $P < .001$ ) and attitude ( $P < .05$ ). The evaluations of the tutees by the tutors were significantly different from those of the tutees themselves for all categories: self-perception ( $P < .001$ ), attitude ( $P < .01$ ), cognitive strategies ( $P < .01$ ) and study habits ( $P < .01$ ). Figure 2 presents a comparison of the mean categorical responses across the three testing conditions.

*Section II:* Tutees identified "being cautious" as the primary reason for seeking tutoring (50%). This contrasted with the tutor's perceptions which saw "referral" as the primary reason for students getting tutoring (41.67%) and "difficulty

**TABLE 3**  
**Survey Questions Section II**

1. Primary reason for getting tutoring:
  - a. self referred after doing poorly on an exam
  - b. just being cautious
  - c. referred by a course instructor
  - d. felt overwhelmed by the course subject content
  - e. didn't know how to deal with the quantity of material
  - f. referred by another student
  - g. referred by an administrator
2. I study an average of \_\_\_\_\_ hours per day.
 

A. 0-1	D. 4-5
B. 2-3	E. 5-6
C. 3-4	F. >6
3. Of the following tutor qualities, rank the top three:
 

a. knowledgeable	g. a good listener
b. explains things clearly	h. understands testing strategies
c. empathetic	i. has good study skills
d. reliable	j. responsible
e. perceptive	k. ability to evaluate my skills
f. respects tutee	l. well organized
4. Which of the following tutoring styles do you find to be the most effective?
  - A. The tutor lectures.
  - B. The tutor answers questions.
  - C. The tutor questions, evaluates and fills out the tutee's knowledge.
5. Rank the following in terms of what is the most valuable for you to receive from the tutor in the tutoring session:
  - A. knowledge of the subject
  - B. study skills
  - C. study strategies for a given course
  - D. reassurance

of material" rated second with 25%. Tutors believe that students sought tutoring "to be cautious" only 8.33% of the time.

Tutors and tutees agreed that the most important product of a tutoring session was increased knowledge by the tutee (Figure 3). Opinions differed, however, on what was second most important, with tutors believing that teaching study skills was second to knowledge, and for tutees it was seeking study strategies for specific courses. Reassurance was selected last by both groups.

Fifty percent of tutees felt a tutoring style that stressed having questions answered by the tutor was most effective (Figure 4). This was followed by an interactive style (30%) and a lecturing format (20%). In contrast, 70% of tutors believed an interactive format, one that stressed tutee participation in the learning process, was most effective.

In general, there was support by both groups for tutors providing evaluations for the tutoring service and for use in aca-

demic status decisions. Eighty-two percent of tutors felt they should evaluate the tutee for the tutoring service and 64% believed those reviews should be used when making decisions regarding the student's academic status. Tutees marginally supported both roles with 56%.

## Discussion

The analysis of the survey and the self-evaluation inventory in particular raise a number of interesting issues. Perhaps the most striking is the difference between the self-evaluations of the tutees and the view of the tutees by the tutors, specifically in the areas of cognitive strategies and study habits. This disparity may indicate that 1) we have elicited a biased group of tutee responders, 2) the tutees have an inaccurate view of themselves, 3) the tutors are erroneous in their appraisals of the remedial student, or 4) a combination of all three.

*Cognitive Strategy:* A great deal of attention has been given to the learning strategies of students in professional



# STUDENT REMEDIATION

schools although to date little has been found that accurately predicts academic performance.<sup>3,4,9</sup> Recent educational research, most notably by Newble,<sup>3,9</sup> has delineated two general learning strategies: a surface approach and a deep approach. The student who uses a surface approach is predominantly concerned with memorizing facts and being able to replicate information for testing purposes. In contrast, the student who uses a deep approach needs to gain a thorough understanding of the meaning of the topic under study.

The category of cognitive strategy was designed to determine if the learning styles of the two groups would differ with the tutors tending to use a deep approach and the tutees a surface approach. The tutors' mean categorical rating reveals that as a group there is a slight tendency towards using the deep approach although this is not clear. The students using remedial services were nearly iden-

tical in their self-evaluations and as previously indicated there were no significant differences between these populations. This result is in agreement with earlier studies.<sup>3,4</sup> The tutor's view of the tutees,

however, was in stark contrast to the tutee's self-report. Tutors very definitely view the typical remedial student's cognitive strategy as surface in nature. Interpreting this difference leaves us with two

Self-evaluation inventory: Significance				
Category	Tutors z	Tutees Sign.	Tutors of Tutees z	Tutees Sign.
Self-Perception	3.842	.001	-3.314	.001
Cognitive Process	.229	none	-3.079	.01
Attitudes	-2.095	.05	-2.852	.01
Study Habits	.729	none	-3.041	.01

FIGURE 1  
STATISTICAL RESULTS FOR CATEGORICAL RESPONSES  
TO THE SELF-EVALUATION INVENTORY.

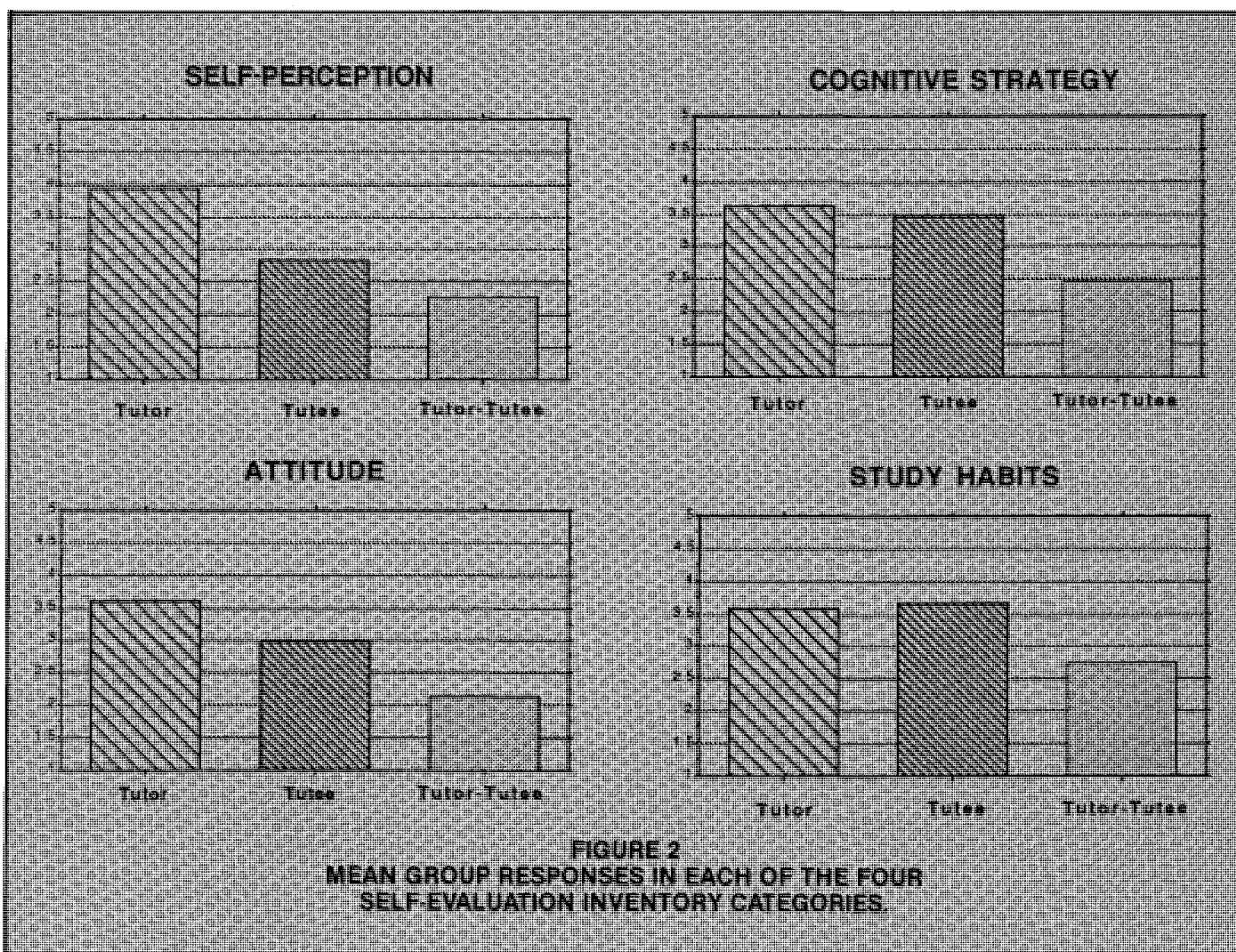
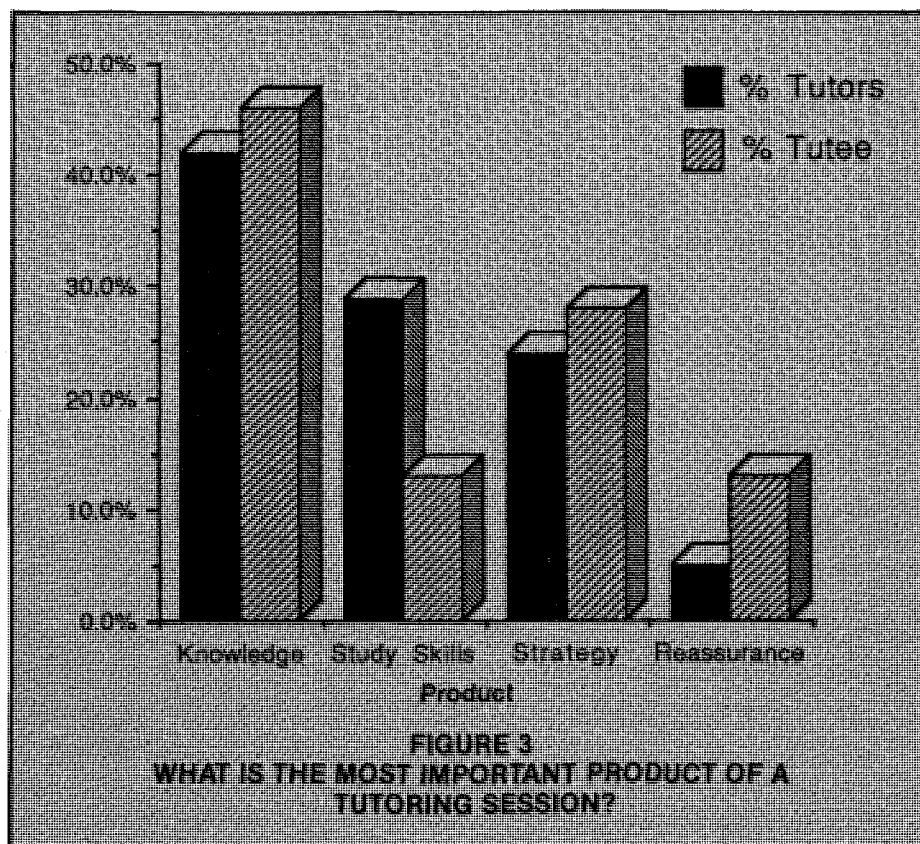


FIGURE 2  
MEAN GROUP RESPONSES IN EACH OF THE FOUR  
SELF-EVALUATION INVENTORY CATEGORIES.



options: a) the remedial students view their studying approach as something it is not or b) the tutors' evaluations are erroneous. In either event it is important that the learning style of the remedial student be considered in the remediation process. Sensitivity to the learning style of the individual may well be critical for effective remediation of a student's academic problems. If a tutor is unable to tailor tutoring strategies to the learning style of the tutee or successfully modify the tutees' learning style, remediation efforts could be hindered.

**Study Habits:** Self-evaluations of the two groups revealed no significant difference in the category of study habits. Once again the tutor's view of the tutee's study habits was quite negative and differed significantly from the tutee's self-evaluation. Unlike the tutee's self-appraisal, the tutors regard remedial students as likely to be behind in their work and, due to the negative academic experience, avoid studying in a number of situations. Avoidance as an issue is negated somewhat in light of self-reported study times. Asked as a separate question, tutees indicated they studied an average of four hours per day while students who tutored studied an average of three hours per day. While these findings may minimize the issue of avoidance, they do not indicate whether students with academic problems use their study time effectively.

Perhaps the most telling rating difference in opinions was on the statement, "I am prepared for tutoring sessions." Tutees gave themselves a group mean rating of 4.60 on this statement, while the

***"The perceptions of remedial students, both regarding their academic situation and themselves, are frequently less than accurate."***

tutors gave the tutees a grade of 2.67, a difference significant to the .001 level. This vast difference regarding a shared experience again emphasizes the existence of either erroneous self-perceptions by the tutees or poor judgment by the

tutors. In our view the first is the more likely.

**Self-Perception:** The tutees, as represented by the category of self-perception, generally do not believe their knowledge and skills are accurately represented by educational indices. Students in need of remediation appear to have a certain sense of futility as indicated by the low mean ranking in response to statements such as "The grades I receive are about what I expect" and "No matter how much time I put in I always get the same grade." The tutees also report a high level of test anxiety, which would not be unexpected given the remedial student's academic dilemma.

**Attitude:** The general level of frustration is also reflected in the self-reporting differences in the category of attitude. Although marginal, the difference in attitude between the tutors and the tutees supports a portrayal of the tutee as working to get over the next hurdle. The significant difference between the two groups' self-evaluations was largely due to responses to the statement, "my primary concern is to pass the exam." It is important to note that this approach is in conflict with the tutee's self-reported "deep approach" to studying. The tutors' view of the tutees' attitude was quite negative. The prevailing perception was of a student who found studying depressing and for whom there was little intrinsic motivation for knowledge and understanding, a belief that the remedial student is outer-directed.

Overall the results present two predominant problems with which peer remediation programs must grapple. The first problem is "what are the responsibilities of the student in academic trouble?" The self-evaluation data indicates the tutees tend to view themselves as using fairly high level cognitive strategies and possessing disciplined study skills. This self-assessment may indeed be the most formidable problem. Why should students who believe they have the ability and discipline to study appropriately seek assistance early in the educational process? This finding is in conflict with the generally accepted premise that early intervention is critical to successful remediation.

The second problem is the discrepancy between the self-evaluations of the remedial student and the tutor's perception of the tutee. Sensitivity or lack of sensitivity to these issues may play a pivotal role in

whether a given tutor/tutee dyad is effective.

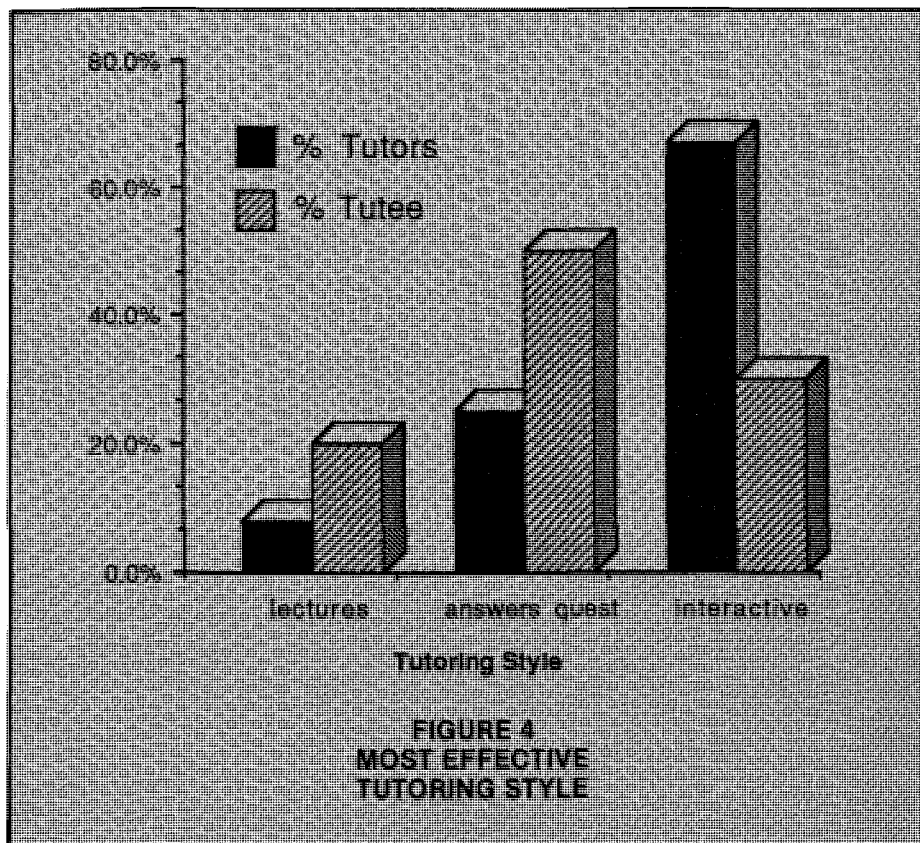
Issues raised by the results of the self-evaluation inventory appear again in section two of the survey. While both groups view knowledge as the most important product of the tutoring session, the role of learning new study skills is minimized by the tutees. Tutors agree with the prevailing view of educators that this is a very critical area in the remediation of academic problems. Unfortunately, to effectively address the problem student, the student must be open to intervention.

The desire of the remedial student to avoid verbal give-and-take in the tutoring session is also notable. Interaction during the tutorial is viewed by the tutor as the most effective format. This approach allows the tutor to evaluate the knowledge and understanding of the tutee and subsequently guide the session in the appropriate direction. Avoidance of the interactive style by the remedial student has several possible explanations: 1) being in a situation where students must demonstrate their knowledge is threatening, given the circumstances leading to the need for remediation; 2) students are not as prepared as they believe; or 3) the interactive style is only effective if the cognitive strategies of the tutor/tutee are similar or if the tutor can modify the approach for the tutee. Ultimately, it is critical that the struggling student confront the fact that they "don't know" that is why they are doing poorly.

## Conclusion

It is unlikely that recruitment efforts and admissions processes will evolve to the point that they are capable of matriculating only those students who will successfully complete professional degree programs. As long as we have students of optometry who are in need of remedial support services, we will have the obligation to provide those services in the most effective manner. This is not to say that every student should be assured of a degree. Indeed, it is equally important that the student who is not capable of completing the program or who can not achieve entry level skills be identified and dismissed as early as possible. But we must create an arena in which students, if they possess the ability, have the opportunity not only to succeed, but to thrive.

It is critical in establishing peer-based support services that they be broad enough to meet both the academic and



psychosocial needs of our students. And it is equally important to take into consideration the psychosocial perceptions and cognitive strategies of both the consumers and the providers of the services when they are designed: the intangible before the tangible.

The perceptions of remedial students, both regarding their academic situation and themselves, are frequently less than accurate. Thus, few students are self-identifying and the burden of reaching these students falls upon educational institutions. There is a tendency to rely

upon academic and clinical evaluations to identify the problem student. Unfortunately these evaluations often occur too late in the educational process. It is then necessary to develop a program that facilitates early intervention. The means by which this intervention can be accomplished include outreach activities, the development of summer preparatory programs for students suspected to be at risk<sup>10,11</sup> and a conscious effort to create an academic atmosphere which accepts and encourages struggling students to achieve to the best of their ability.

## References

1. Peters HB. Demographics. *J Optom Ed* 1987 12(4): 104-108.
2. Davidson DW. The need to increase or maintain enrollment at current levels. *J Optom Ed* 1987 12(4): 114-120.
3. Newble DI and Gordon MI. The learning style of medical students. *Medical Education* 1985, 19: 3-8.
4. Martenson DF. Students' approaches to studying in four medical schools. *Medical Education* 1986 20: 532-534.
5. Symposium issue: new directions in clinical skills evaluations. *J Optom Ed* 1988 13(4): 112-133.
6. Heath DA, Hines C and Kamens HR. Meeting optometric student needs: a proposed tutorial model. *J Optom Ed* 1983 8(4): 8-11.
7. Walker-Bartnik LA, Berger JH and Kappelman MM. A model for peer tutoring in the medical school setting. *J Medical Ed* 1984 59: 309-315.
8. Heath DA. Academic support services: effectiveness of tutoring evaluated. *J Optom Ed* 1985 11(1): 17-21.
9. Newble DI and Jaeger K. The effect of assessments and examinations on the learning of medical students. *Medical Education* 1983 17: 165-171.
10. Ugbohue A, Whitley PN and Stevens PJ. Evaluation of a preenrichment program for minority students admitted to medical school. *J Medical Ed* 1987 62: 8-16.
11. Cohen K. The minority recruitment program at the Pennsylvania College of Optometry. *J Optom Ed* 1987 12(3): 72-74.



## Responsibilities of the Institution

Dennis W. Siemsen, O.D.

### Introduction

Why is it necessary for any health professions institution, particularly optometry, to provide remedial education for its students? Are institutions relaxing their admissions standards? Are they accepting too many students with deficiencies in admissions requirements? Is too much emphasis being placed on how the candidate performs during the admissions interview?

A closer look at the admissions practices of our health professions schools today would demonstrate that, with a few exceptions, none of the preceding statements are true.

### Admissions Policies

A review of the admissions statistics at the Illinois College of Optometry shows that the requirements for admission to the professional optometry program have, in fact, become even more stringent.

A comparison of standards between the Illinois College of Optometry and those of other midwestern medical and dental schools shows that in almost every area, optometry's requirements for admission are the highest.<sup>1</sup> Areas compared include biology, general chemistry, organic chemistry, mathematics, physics, and English composition.

There has been some concern that as the baby boom generation ages, the number of applicants will decline. That has not occurred at the Illinois College of Optometry. The number of applicants

per year to ICO has risen 70% in the five-year period since 1982. It should be noted, however, that the number of requests for applications is down as much as 20 percent from previous years. This may ultimately become a problem unless recruiting efforts by schools are increased.

It is also interesting to note that the number of applicants having a bachelor's degree or higher increased from 48% in 1982 to 75% in 1987.<sup>1</sup> The entering grade point average has also increased approximately 5% among applicants.

Much publicity has surrounded the decline of average SAT scores of high school graduates. The question frequently is asked whether test scores of optometry school applicants are declining also. Unfortunately, the current Optometry Admission Test (OAT) has been in use only a few years. As such, it is not possible for us to compare admission test scores over several years, or to effectively compare student performance during the professional program with the OAT. This information may eventually give us further guidance in which applicants will perform better than others in the professional program. (It should be noted that the mean scores are increasing slightly, but it is too early to determine long-term trends.)

Admission requirements have been developed to set undergraduate program standards. However, little objective data has been developed to distinguish the candidate from a school which has successfully prepared health professions students from those schools whose undergraduate training may fulfill only the letter of the requirement. These latter

schools may fail to adequately challenge the student, or to include specific basic science knowledge which the admissions requirements of the professional school expect the candidate to possess.

The students we are admitting in 1989 should, by our own standards, be as well-prepared as any generation of optometry students before them. Yet they continue to have academic problems and to need remediation. Optometry is not alone in this area. One survey of dental schools indicated that half the schools responding to the survey had less than 5% of their students in any class needing remediation and another one-third of the schools reported 5-10 percent of the students needed remediation.<sup>2</sup>

### Transition from Undergraduate to Professional Student

Many students do not comprehend the difference between a regular graduate or undergraduate curriculum and a professional program. We expect more from our students because these individuals will, if successful, earn the privilege of having patients' lives placed in their hands.

Many students enter professional programs unaware of the level of commitment and intensity of study necessary to succeed. Indeed, they may not have been challenged adequately during their undergraduate preparation and as a result enter the professional program without the study skills and discipline they will need.<sup>3,4</sup>

Because of these inadequacies, some first-year students may not be prepared for the challenges they face, even though

*Dr. Siemsen is the chairperson of the Department of Clinical Education at the Illinois College of Optometry.*



they may have scored well on entrance tests and preprofessional courses.

## Can We Identify Problem Students Early?

Ideally, we should identify students with cognitive deficiencies early in their professional careers and take steps to remediate them. Unfortunately, deficiencies in interpersonal skills and deductive reasoning—skills that are necessary for the clinician—may not be adequately assessed until sometime after the first professional year. It is at this time that problems will be revealed through difficulties in patient care performance. We then have the dilemma of failing students who may have demonstrated didactic competency and who have already invested a significant amount of time and money in a professional career.

I would expect that all schools of optometry provide some form of remediation for students who develop difficulties in didactic and/or clinical areas. This assistance ranges from the simple to the sophisticated. Some of the more common methods of remediation include:

- *Independent Study and Retest*—In this format, students are allowed time to review the material on their own, usually with the opportunity to consult with faculty on any questions they may have, and then submit to a retest on the material.

This format can be useful for both didactic and clinical material. The advantages to this type of program are that there is usually only a minor penalty to the student (after all, they have finally mastered the material), and very little faculty or administrative time is spent in the process.

- *Group or Individual Tutoring of Student(s)*—This process is designed for those students for whom independent study has been ineffective, and who need further instruction. Faculty members invariably dislike this option since it means additional student contact time beyond their normal assignments.

Since this type of instruction is not very cost-effective, the responsibility quite often falls to graduate students/residents/fellows, whose time is not deemed as valuable as the full faculty members. Something is often lost in the translation, though, from the person actually teaching the course, to the surrogate assigned the work of remediating students in aca-

demic difficulty. The student may receive negative feedback from the instructor/resident/fellow, if the student is viewed as a burden.

- *Mechanically Assisted Tutoring (Computer, Videotape, etc.)*—This method can be a valuable adjunct to other forms of teaching. Although using this method as the only form of remediation raises some questions, presenting the information in a different format can have the effect of reinforcing previously introduced topics.

- *Retaking the Course*—This is the most extreme circumstance, but, depending on the level of difficulty the student has with the material, it may be the best option. It usually does not require any additional effort on the part of faculty, assures that the student is getting a full exposure to the material, and success or failure is easy to determine.

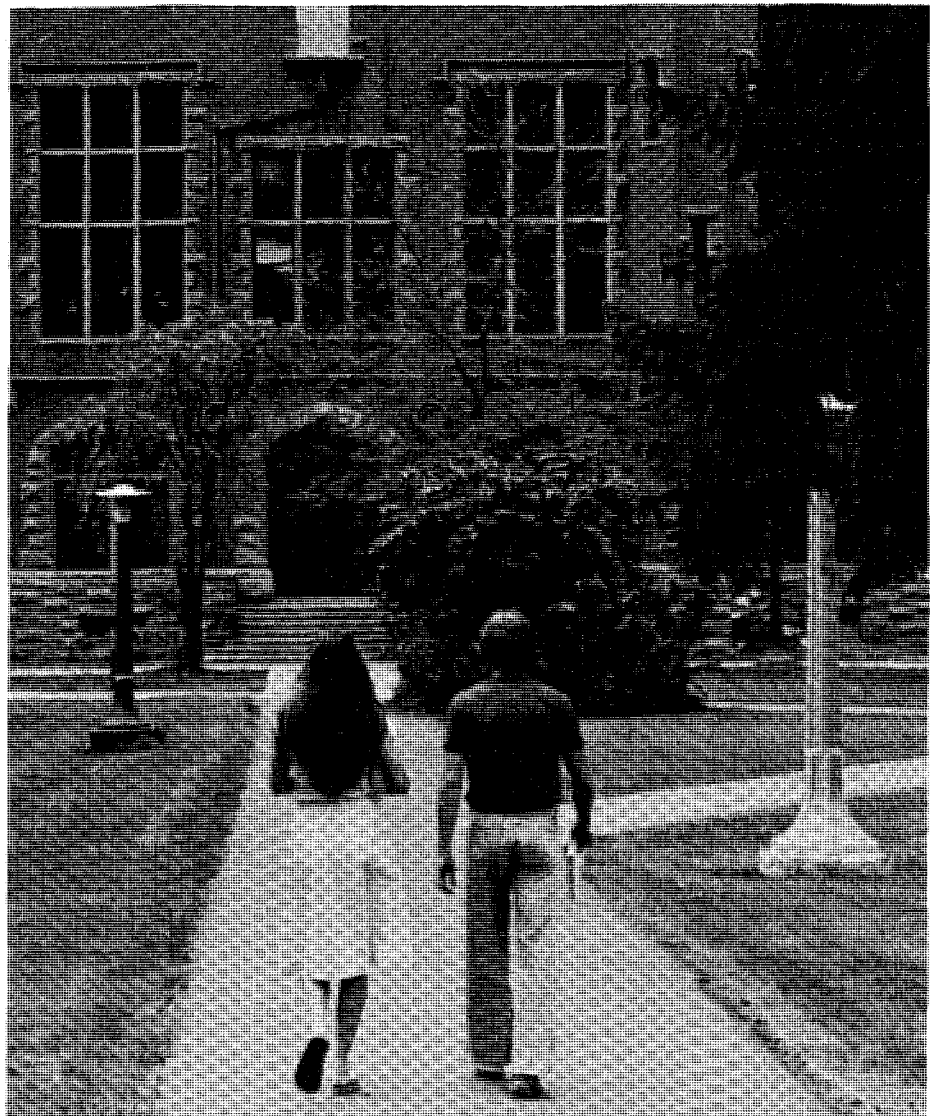
In a professional program, it may not be possible to retake a course without

repeating the entire year. For many students, difficulty in one course is coincident with problems in other courses/skills, and repeating the year may be the only option.

In some exceptional cases, when the material in question is not a prerequisite for other courses or clinical rotations, repeating the course at the next available opportunity may be possible.

Many students will require remediation only once or twice in their careers. For those students, any of these forms of remediation will serve them and the institution well. It certainly is not unreasonable to expect that the institution will make such options available when there are so many variables in the success or failure of the student, some of which are beyond the students' control.

When a student has difficulty in many courses and clinical techniques, however, the institution is faced with determining whether that student is using more than his/her share of college resources. Students who are chronically on



academic probation and in constant need of remedial work sap the strength and assets of the school and allow less effort to be directed at good-to-average students. At some point, the faculty and administration must answer two questions:

- Will this student ever have an understanding of the material adequate to become a capable, competent professional?
- Can the school afford to provide this student with the additional support needed to develop that competency?

## Identifying Students with Problems

Since we have already demonstrated that it is difficult, if not impossible, to determine with absolute certainty which students will be admitted, there is no reason to expect that we will be any more successful in deciding who will benefit from remediation and who will not. There is, unfortunately, no information in the literature that will help the instructors or administrators make that decision.

In early professional years, most evaluations of student performance are made by what are considered to be objective criteria. How objective is it, though, when the passing grade is set at an arbitrary 65, 75, or 80%? Not only is the cutoff suspect, but also the material itself. In most professional programs, the course instructor defines what is the appropriate material. For example, how many schools have the luxury of two or more ocular anatomists on staff with the expertise and credentials needed to define the state of the art as it exists?

At best, this situation means that the future fate of the student rests on one or more faculty members and their subjective determination of what is important and whether the student knows that material.

Some schools skirt the responsibility somewhat by requiring, for promotion within the professional program, passage of the National Board of Examiners in Optometry exam sequence. This approach may actually prove to be counterproductive. Students may spend their study time preparing for NBEO, and neglect their professional studies. This policy also may jeopardize the integrity of the school. Consider the scenario whereby students fail the NBEO, and are denied promotion to the next professional year, even though they have met the school's other passing criteria.

NBEO, of course, has the advantage of bringing together the top scholars in each field, something which the schools are unable to duplicate. In many cases, an instructor can use the NBEO outline as a guide, but the Topical Outline isn't detailed enough for, nor is it intended to be, a course outline.

In considering the passing criteria, very few schools are in a position to develop true criterion-referenced testing vehicles. This means that a passing grade is defined in a norm-referenced manner, which itself is subjective in nature.

One last complication in identifying students with problems is determining what is the original reason for poor performance, and what is the outcome of that problem. In many cases, identifying the problem is much easier than finding the cause.<sup>5</sup> Some of the lesser known underlying problems may be the student's lack of confidence, faculty assumptions that a student knows certain basic concepts, when in fact, they do not, and lack of support systems for minority and second-career students.<sup>4,6</sup>

In the area of patient care skills, the issue of minimal competency comes into play. Many definitions of minimal competency exist. Witness the more than 50 jurisdictions in which new graduates may choose to seek licensure. Attempts to regionalize have failed, in large part due to differences in passing criteria.

The purpose of this part of the discussion is to illustrate that the criteria under which a decision is made to dismiss a student from the program is primarily subjective in nature. As such, a student deserves the benefit of at least some attempt at remediation.

Ideally, if we subscribe to the idea that each student admitted is capable of becoming a competent optometrist, remediation, in some form, should continue until that student achieves mastery of the given material. Perhaps one form of remedial work is not as effective for an individual student as another would be.

Regardless of the method, there is a cost involved in offering remedial programs: cost of development, cost of implementation, cost of evaluation. These costs are ultimately borne by other students, either in the form of higher tuition, or reduced availability of faculty for their own educational needs. Residents, fellows, and teaching assistants can be used to tutor in remedial programs, of course, but this type of activity adds little to their development.

Finally, failure to provide a useful remedial program could lead to legal action against the institution in the form of a breach of the implied contract between student and school. From a legal standpoint, the school, upon accepting a student candidate, must provide a reasonable opportunity for success. What an institution considers reasonable and what the courts find reasonable may differ greatly.

## How Should the Institution Proceed?

More information is needed by institutions in the following areas:

- Which entering first year optometry students are likely to need remedial assistance?
- How often should these students be allowed to participate in remedial programs?
- How long should problem students be carried by the school before a decision is made to dismiss them?

Joint studies among several schools should be conducted to answer these questions.

In the meantime, it is important for each school to have a current policy on remediation, and to administer it uniformly. The school also needs to evaluate its evaluators, to assure consistency and as much objectivity as possible.

Ultimately, the school has a responsibility to the three participants in the remediation process:

**The Students:** Whom we will continue to help as long as there is a possibility that they will develop into competent, caring professionals.

**The Public:** Who want to be certain that they are treated by knowledgeable, skilled professionals.

**The Institution Itself:** Whose goal it should be to balance the concerns of the other two participants in a way that maintains institutional integrity.

## References

1. Illinois College of Optometry, *Institutional Self Study*, Revised 1988.
2. Formicola AJ. Preprofessional preparation for the basic science curriculum. *J Dent Ed* 1986 50(8): 458-61.
3. Slotnick HB. Identifying and remediating specific deficiencies of entering medical students. *J Med Ed* 1981 56(2): 91-102.
4. Wittrock JW. Remediating clinical problems. *J Dent Ed* 47(5): 340-43.
5. Pinter K. Support systems for health professions students. *J Nurs Ed* 1983 22(6): 232-36.

# The Association of Optometric Contact Lens Educators

Edward S. Bennett, O.D., M.S.Ed.  
Lester Caplan, O.D., M.Ed.

The Association of Optometric Contact Lens Educators (AOCLE) was initiated in the mid-1970s for the purpose of promoting the quality of contact lens education. For the past 13 years the Annual

*Dr. Bennett is associate professor and chief of the contact lens clinic at the School of Optometry, University of Missouri-St. Louis.*

*Dr. Caplan is assistant dean and director of clinics at the School of Optometry, University of Missouri-St. Louis.*

Meeting has been sponsored by a grant from Bausch & Lomb in conjunction with their Annual National Research Symposium on Contact Lenses. AOCLE consists of all contact lens educators who attend AOCLE scheduled meetings, usually two members from each institution with no limitation. Current officers are Drs. Tim Edrington (SCCO), chairman, Joel Silberg (PCO), vice-chairman, Les Caplan (UAB), treasurer and Gina Sorbara (Waterloo), secretary. Past chairmen

of the AOCLE (two year term) have included Drs. Maurice Poster, Morton Sarver, Gerald Lowther, Elwood Kolb, James Paramore, Marcus Piccolo and Edward Bennett.

**Industry:** A valuable relationship exists between industry and the AOCLE. Over the years a mutual respect and appreciation has developed between the two groups. Contact lens programs at the schools have benefitted greatly by this

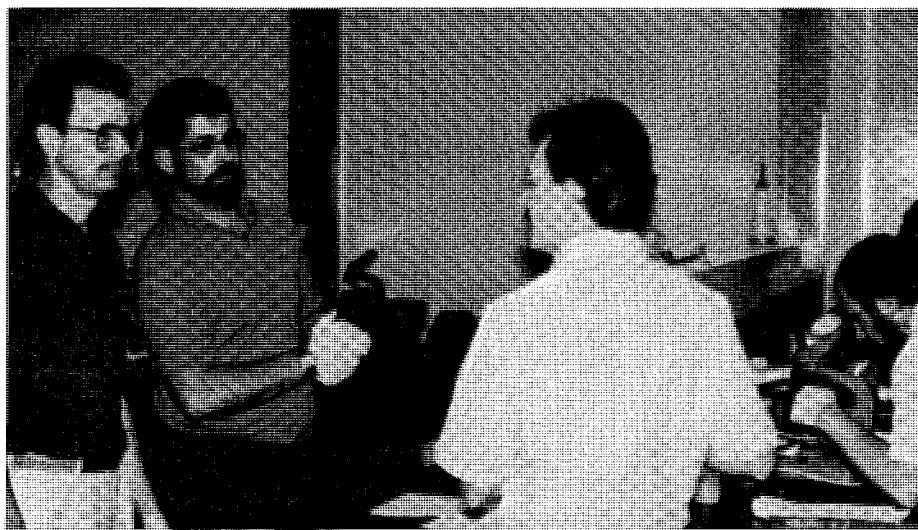


Attendees and sponsoring company representatives gathered at the 1988 Indiana University workshop.

spirit of cooperation that was initially generated by AOCLE/industry collaboration. The 1988 workshop at Indiana University was sponsored by Alcon Laboratories, Allergan Optical, American Hydron, Barnes-Hind, Bausch & Lomb, Ciba, Polymer Technology and Sola. The sponsoring companies usually send a representative to the workshops. Positive comments regarding the value of the workshops have been expressed by these industry representatives. Dr. Paul White, New England College of Optometry, was chairman of the Educational Program Committee of the AOCLE for many years and his contacts with industry combined with his fund-raising efforts have been an integral part of the progress of the organization. Dr. White was presented a plaque for his numerous contributions to AOCLE at the 1987 annual business meeting.

**Annual Business Meeting.** Attending the Bausch & Lomb National Research Symposium on Contact Lenses along with the annual meeting has enabled AOCLE to share ideas and become a cohesive, viable force in optometric contact lens education and research. Time has been devoted to relevant clinical topics, Food and Drug Administration issues, and the contact lens content of the National Board Examinations. Curriculum has been another topic of importance. The Contact Lens Curriculum committee provides an annual report on new developments in this area. An article published in the winter 1983 issue of the *Journal of Optometric Education* provided a so-called "model" curriculum based upon pooling of the curricula from all of the schools and colleges of optometry and the unique qualities of each program. The residency committee also reports at every business meeting. These discussions have stimulated interest in the development of postgraduate contact lens programs at several institutions.

For two years the AOCLE, by means of a grant from CooperVision, had a visiting professorship program with England. This allowed Drs. Les Caplan, Mike Harris and Don West the opportunity to spend two to three weeks in England and share ideas with both practitioners and educational institutions. Two optometric educators from England visited and lectured at several U.S. schools of optometry. Other AOCLE programs instituted at the annual meetings have included a slide duplication and exchange service and a test item pool. The latter service under the direction of Dr. Robert Mandell has been especially beneficial as AOCLE members have exchanged test questions



*Microbiology Workshop - Dr. Chris Snyder (University of Alabama)  
Dr. Robert DiMartino (University of California, Berkeley and Gary Keck (Indiana University Instructor) discussing a point.*

and, in the process, developed a common pool of several thousand test items.

Interaction with the chairmen of the Cornea and Contact Lens Section of the American Academy of Optometry and the AOA Contact Lens Section as well as the executive director of the Contact Lens Association of Ophthalmologists has occurred at recent business meetings, thereby providing a mutual interaction between the AOCLE and these organizations. In addition, there has been a recent exchange of information between the AOCLE and the International Association of Contact Lens Educators (IACLE). It is likely that the AOCLE chairman will be able to attend future IACLE meetings, courtesy of a grant from Bausch & Lomb.

**Annual Workshop.** A desire by AOCLE members to improve the educational credibility of the group by indepth discussions in such topics as curriculum, teaching methodologies, special testing methods and techniques resulted in the initiation of an annual workshop. The First Annual AOCLE Educational Workshop was held at the University of California-Berkeley in June 1983. This meeting provided beneficial clinical research information on pachometry, oxygen transmission, and computer-assisted lens design. In addition, Annual AOCLE Educational Workshops have been held at the New England College of Optometry providing information on contact lens curriculum; at Ferris State College of Optometry with sessions on computer application in clinical research, computer communication, statistical packages, spreadsheets, computer-assisted contact lens design and the video disk system; at Pacific University School of Optometry emphasizing effective use of video equipment in schools and colleges of optometry; at the

University of Houston School of Optometry emphasizing research techniques, patient management problems, clinical simulations and computer applications. Two sessions were devoted to discussing a variety of clinical situations presented by members of the organization. These sessions were especially beneficial in enhancing the ability of AOCLE members to effectively solve commonly encountered clinical problems such as refitting rigid and hydrogel lens failures and on-eye surface wettability of different rigid gas-permeable lens materials. The 1988 AOCLE Workshop was held at Indiana University School of Optometry and included sessions on the development of contact lens fit and evaluation videotapes for instructional use and experience with computer statistics and graphics programs. The 1989 Educational Workshop will be held at the Pennsylvania College of Optometry and will emphasize specialized clinical techniques and procedures.

These sessions have given the contact lens educators the opportunity to learn new skills, discuss important issues and visit many schools of optometry in order to benefit from the unique qualities of each program.

**Summary.** Since its inception, the Association of Optometry Contact Lens Educators has become a cohesive organization, where many friendships have evolved, clinical research ideas have been introduced and group projects initiated. Publications and continuing education lectures also have been produced. Most importantly, the continued growth and on-going educational activities of the AOCLE have resulted in promoting and enhancing the quality of optometric contact lens education. □



(continued from page 102)

Although new and only recently patented, SmartSeg is already a success. "In clinical trials conducted in the U.S. and Australia, SmartSeg was preferred 4 to 1 over ordinary flat tops," says Mark Mattison-Shupnick, director, New Products. Wearers said SmartSeg offered clear intermediate vision, a large reading area, easier adaptation, and an overall increased range of vision over ordinary flat tops. In a test market in the Northwest, SmartSeg achieved a 98% wearer success rate, and dispensers and lab technicians reported that it was easy to process and fit.

In addition to industry advertising that will reach eyecare professionals each month, SmartSeg articles in consumer publications will be read by millions of targeted eyewear consumers. Sola also gives eyecare professionals the opportunity to alert interested consumers through the latest issue of its successful "patient recall" vehicle, *Eyecare Update*. This newsletter, which includes a \$10 SmartSeg coupon, may be ordered by eyecare professionals directly from Sola at no charge. In addition, dispensers can receive free recall postcards describing SmartSeg to send to their patients. □

#### **New Lens from Volk**

Representing a new concept in indirect ophthalmoscopy lens design, the Volk Pan Retinal Lens 2.2 offers a large 56° field of view along with magnification comparable to the 20D lens.

The lens is suitable for practically every examination procedure, including small pupil indirect ophthalmoscopy and features an extremely durable, 99.9% efficient, broad-band, multi-layer, Anti-Reflection coating.

The 52mm Volk Pan Retinal Lens 2.2 is available in Clear and Volk Yellow Retina Protector glass, and is designed and manufactured by Volk in the U.S. List price is \$208.00. □

#### **W-J Designs Program to Help New Practices**

Wesley-Jessen has designed a program to help practitioners enter private practice. Called the "First Practice Program," it is an exclusive package of products and services offered at substantial discount. For \$349, enrollees will receive diagnostic sets of DuraSoft® Colors and OptiFit® torics and cases of select W-J solutions, a savings of over \$700 from standard prices.

In addition, W-J will send the First Practice Kit, which includes material to help new private practitioners enjoy a successful first year. Included in the free kit are half-price certificates on DuraSoft lenses, a book on successful practice management

plus a generous supply of patient literature.

A consigned fitting inventory of 54 lenses plus free lens racks are also part of the First Practice Program.

"Our First Practice Program offers the new private practitioner a great beginning and the start of a lasting relationship with W-J," said Alisa Levy, W-J product manager. □

#### **PTC Appoints Robert Thompson Vice President, U.S. Marketing**

Philip Keefer, senior vice president, Polymer Technology Corporation (PTC), announced the appointment of Robert Thompson to the newly created position of vice president of U.S. marketing.

"Among the greatest challenges accompanying PTC's rapid growth is to maintain the entrepreneurial values and style that has made us strong while developing the systems and talent necessary to manage a rapidly expanding business. We anticipate this growth will continue and are committed to building a management structure to support it."

Thompson joined PTC in 1983 and held several key sales/marketing positions until being made Director of Marketing & Sales for the BOSTON® Solutions in 1988. Due, in large measure, to his leadership, BOSTON Solutions today enjoy 50% of retail market share and nearly 75% of all practitioner recommendations.

Reporting to Mr. Thompson are Jonathan Jacobson, director, Marketing-U.S. Materials and Cynthia Lee-Ryden, director, Marketing-U.S. Solutions.

BOSTON products are available in 42 countries and are the world's most prescribed rigid gas permeable contact lenses and care solutions. Polymer Technology Corporation is a wholly owned subsidiary of Bausch and Lomb. □

#### **W-J Introduces Reception-Area Video**

Wesley-Jessen is offering a new video on contact lenses for patient viewing in reception areas.

The video will educate patients on flexible wear, astigmatism, handling tints and colored lenses.

The VHS-formatted video is 10 minutes long, but is set for continuous play. It can be played with audio off without loss of meaning as text appears on screen.

"There's no better place to educate patients than in the doctor's office," said Alisa Levy, a W-J product manager. "If a patient has questions, the doctor or staff are there to provide answers," she said.

The message of the flexible wear segment is that Flexiwear® lenses give patients wearing options including safe napping and occasional overnight wear.

The video's use of graphics helps explain what astigmatism is. Patient demonstrations are used to explain how handling tints help patients with lens insertion, removal and finding lenses.

The segment on colored contact lenses features W-J's DuraSoft® Colors. The lenses are worn by patients with different complexions and hair colors and in different fashion settings. □

#### **Bell Optical Accepts the Varilux 1988 Distributor of the Year Award**

Bell Optical Laboratory, Inc., a wholly-owned group of laboratories headquartered in Dayton, Ohio, is this year's winner of the Varilux Corporation Distributor of the Year.

The Award was announced by R. Michael Daley, vice president of sales, at the Varilux National Sales Meeting in Lake Tahoe, Nevada. Tom Zobrist, president of Bell Optical, accepted the award at a separate Varilux meeting in Phoenix, Arizona. The award was presented to him by Jacques Stoerr, president of Varilux, and Mr. Daley. Bell Optical has earned the Award by their unwavering commitment to Varilux over many years. A Varilux distributor since 1983, Bell Optical currently projects +50% annual growth in its orders of Varilux products. □

#### **Paragon to Distribute Optacryl Materials**

Pilkington Visioncare and Paragon Optical announce that Optacryl 60, blue, contact lens materials are immediately available through Paragon Optical to all authorized Optacryl finishing laboratories. The announcement follows Pilkington's earlier announcement that it intends to keep Optacryl 60 silicone acrylate materials available "as long as there is a demand."

According to Krist Jani, Paragon's director of marketing, "Paragon is the logical division to supply Optacryl materials. We have the domestic and international distribution capability. Further, we recognize the continued existence of brand loyalty among labs, practitioners, and patients."

"Optacryl 60 has established a niche that would be adversely affected by a sudden disappearance of the product. Our objective continues to be one of customer satisfaction through maintaining the availability of RGP materials to the independent laboratories."

He added that current market research indicates Optacryl holds 5 percent of the domestic rigid gas permeable lens market. "That number, combined with Optacryl's international presence, represents a significant group of laboratories, practitioners and patients. Ultimately, those customers will represent a selling opportunity to Paragon and Pilkington." □

# ANNUAL INDEX

## *of the Journal of Optometric Education*

### Author Index

#### A

- ASCO  
Annual Report 1987-1988—Vol. 14, No. 1, p. 22  
New optometry schools—the ASCO perspective—Vol. 14, No. 3, p. 94  
APPLEBAUM, M.: Student remediation—Vol. 14, No. 4, p. 100  
ASTON, S.J. et al: Optometric gerontology: state of the art in the schools and colleges of optometry—Vol. 14, No. 1, p. 8

#### B

- BENNETT, E.S. and Caplan, L.: The Association of Optometric Contact Lens Educators—Vol. 14, No. 4, p. 123

#### C

- CAPLAN, L.:—see Bennett, E.S.  
CHAUNCEY, D.M.: The accelerated O.D. program: graduates of the first ten years—Vol. 14, No. 1, p. 16  
COLLINS, G.: The challenge of change—Vol. 14, No. 2, p. 36

#### D

- DAVIDSON, D.W.: Causes of academic difficulty—Vol. 14, No. 4, p. 104  
DESYLVIA, D.A.:—see Aston, S.J.  
DUNSKY, I.L.: Instructional strategies for the optometric educator—Vol. 14, No. 2, p. 46

#### E

- EGAN, D.J. et al: An analysis of clinical test selectivity by fourth year optometry students—Vol. 14, No. 2, p. 51  
EDWARDS, M.: The development of optometry in Hong Kong—Vol. 14, No. 2, p. 42

#### G

- GARZIA, R.P.:—see Egan, D.J.

#### H

- HEATH, D.A.:  
Educational research: fact or fantasy—Vol. 14, No. 1, p. 4  
et al: Roles and responsibilities of the students—Vol. 14, No. 4, p. 114  
Postgraduate clinical education: at the crossroads—Vol. 14, No. 3, p. 68  
HEIBERGER, M.H.:  
and Mozlin, R.: Vision training residency: an outcome study—Vol. 14, No. 3, p. 74  
and Suchoff, I.B.: Evaluation of a core curriculum for optometric residents—Vol. 14, No. 3, p. 80  
HOFFMAN, D.J.: Postgraduate clinical training at the New England College of Optometry—Vol. 14, No. 3, p. 85

#### M

- MANCIL, G.L.:—see Aston, S.J.  
MOZLIN, R.:—see Heiberger, M.H.

#### O

- OLESZEWSKI, S.: Designing clinical remediation programs—Vol. 14, No. 4, p. 111

#### P

- PAGANO, V.:—see Waldstreicher, J.S.

#### R

- RIOUX, T.:—see Heath, D.A.  
ROSNER, Jerome and Rosner, Joy: Teaching students how to manage strabismus—a need for structure—Vol. 14, No. 2, p. 57  
ROSNER, Joy:—see Rosner, Jerome  
RUMSEY, J.M.: Spectacle calculations program—Vol. 14, No. 3, p. 94

#### S

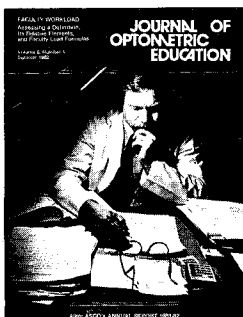
- SIEMSEN, D.W.: Responsibilities of the institution—Vol. 14, No. 4, p. 120  
SUCHOFF, I.B.:—see Heiberger, M.H.

#### T

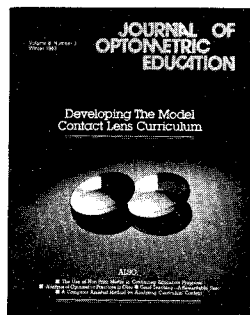
- TERRY, J.E.: Deans in the health professions: a comparison of degrees—Vol. 14, No. 1, p. 19  
TRAVEIS, L.:—see Heath, D.A.

#### W

- WALDSTREICHER, J.S. and Pagano, V.: The evolution, development and use of an independent self-study DPA educational program—Vol. 14, No. 1, p. 13  
WOLF, M.L.:—see Egan, D.J.



# Subject Index



## A

### ASCO

Annual Report, 1987-88, Vol. 14, No. 1, p. 22

New optometry schools: the ASCO perspective, Vol. 14, No. 3, p. 94

## C

Clinical test selectivity, an analysis by fourth year optometry students, Egan, D.J. et al, Vol. 14, No. 2, p. 51

Contact lens educators, association of, Bennett, E.S. and Caplan, L., Vol. 14, No. 4, p. 123

Curriculum, evaluation of for optometric residents, Heiberger, M.H. and Suchoff, I.B., Vol. 14, No. 3, p. 80

## D

Deans in health professions, Terry, J.E., Vol. 14, No. 1, p. 19

DPA educational program, Waldstreicher, J.S. and Pagano, V., Vol. 14, No. 1, p. 13

## E

### Editorials

The challenge of change, Vol. 14, No. 1, p. 36

Educational research: fact or fantasy, Vol. 14, No. 1, p. 4

Postgraduate clinical education: at the crossroads, Vol. 14, No. 3, p. 68

Student remediation, Vol. 14, No. 4, p. 100

## G

Gerontology, optometric, state of the art in the schools and colleges of optometry, Aston, S.J. et al, Vol. 14, No. 1, p. 8

Graduates of the accelerated O.D. program, Chauncey, D.M., Vol. 14, No. 1, p. 16

## H

Hong Kong, the development of optometry, Edwards, M., Vol. 14, No. 2, p. 42

## I

Instructional strategies for the optometric educator, Dunskey, I.L., Vol. 14, No. 2, p. 46

## N

New England College of Optometry the accelerated O.D. program, Chauncey, D.M., Vol. 14, No. 1, p. 16  
postgraduate clinical training, Hoffman, D.J., Vol. 14, No. 3, p. 85

## O

Optometric educator, instructional strategies, Dunskey, I.L., Vol. 14, No. 2, p. 46

## P

Postgraduate clinical training at the New England College of Optometry, Hoffman, D.J., Vol. 14, No. 3, p. 85  
at the crossroads, Heath, D.A., Vol. 14, No. 3, p. 68

evaluation of a core curriculum for optometric residents, Heiberger, M.H. and Suchoff, I.B., Vol. 14, No. 3, p. 80

vision training residency, Heiberger, M.H., Vol. 14, No. 3, p. 74

## R

Research, educational, fact or fantasy? Heath, D.A., Vol. 14, No. 1, p. 4

### Resource Reviews

Atlas of clinical ophthalmology, Vol. 14, No. 1, p. 30

Clinical teaching for medical residents, Vol. 14, No. 2, p. 62

Contact lens optics, Vol. 14, No. 1, p. 31

Contact lens perspectives, Vol. 14, No. 3, p. 95

The eye and its disorders in the elderly, Vol. 14, No. 2, p. 63

Low vision—principles and applications, Vol. 14, No. 1, p. 31

Manual of clinical problems in ophthalmology, Vol. 14, No. 2, p. 63

Pathology and pharmacology of the eye, Vol. 14, No. 3, p. 95

Primary care of the anterior segment, Vol. 14, No. 3, p. 95

Retinal dystrophies and degenerations, Vol. 14, No. 2, p. 63

Retinitis pigmentosa, Vol. 14, No. 2, p. 62

Rigid gas permeable contact lenses, Vol. 14, No. 2, p. 62

Stereoscopic atlas of macular degeneration, Vol. 14, No. 1, p. 30

Vision and sports, Vol. 14, No. 1, p. 31

## S

Self-study DPA educational program, Waldstreicher, J.S. and Pagano, V., Vol. 14, No. 1, p. 13

Spectacle calculations program, Rumsey, J.M., Vol. 14, No. 3, p. 91

Students, an analysis of clinical test selectivity by fourth year optometry students, Egan, D.J. et al, Vol. 14, No. 2, p. 51

Strabismus, teaching students how to manage, Rosner, J. and Rosner, J., Vol. 14, No. 2, p. 57

Student remediation, a symposium Causes of academic difficulty, Davidson, D.W., Vol. 14, No. 4, p. 104

Designing clinical remediation programs, Oleszewski, S., Vol. 14, No. 4, p. 111

Responsibilities of the institution, Siemsen, D.W., Vol. 14, No. 4, p. 120

Roles and responsibilities of the students, Heath, D.A., et al, Vol. 14, No. 4, p. 114

## T

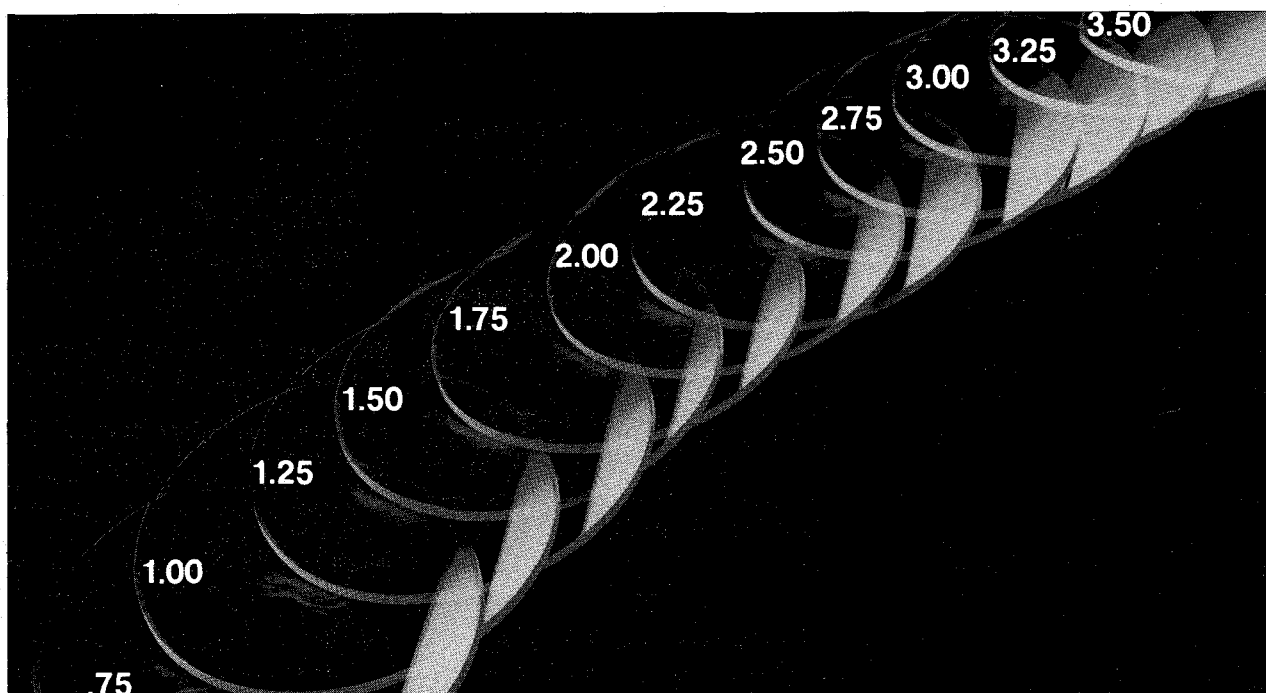
Teaching students how to manage strabismus, Rosner, J. and Rosner, J., Vol. 14, No. 2, p. 57

## V

Vision training residencies, Heiberger, M.H. and Mozlin, R., Vol. 14, No. 3, p. 74

# Your two Main Concerns with Progressive Lenses Just got Cleared Up!

**VARILUX Infinity.®** More usable  
reading area. More peripheral clarity.



**W**ith the revolutionary Varilux Infinity Multi-Design System, the reading area does not shrink as add power increases. Which translates to a consistently larger reading area throughout the add power range. Larger than any single design progressive addition lens.

Add a soft, comfortable transition between far and intermed-

© 1988 Varilux Corporation

iate, with improved peripheral aberration, and you have a guaranteed easy fit for practically every presbyope.

Varilux Infinity offers 12 separate lens surface designs, one for each 0.25 add power increase. So, simply by prescribing Varilux Infinity, you automatically provide each patient, at any stage of presbyopia, with optimum vision at all distances.

**The Varilux Guarantee:** If your patient is not completely happy with Varilux Infinity, there is no cost to you or your patient. For more information on Varilux Infinity please call or write us today.

**VARILUX®**

Varilux Corporation  
363-E Vintage Park Drive Foster City, Ca 94404  
800 BEST PAL ext. 22



ASSOCIATION OF SCHOOLS  
AND COLLEGES OF OPTOMETRY  
6110 Executive Blvd.  
Suite 514  
Rockville, MD 20852

**Non-Profit Org.  
U.S. POSTAGE PAID  
Suburban, MD GMF  
Permit No. 6123**