Memorial Tribute: Charles Riley Shick (1928-2013)
To Honor Retiring Faculty: Victor Malinovsky and Edwin Marshall
Current Clinical Vision Science Articles of Interest
The IU Optometry Heritage: A Story of Two Paintings
In This Issue

This issue leads off with a memorial tribute to Charles “Charlie” Shick, who was an important faculty member for IU Optometry for 35 years. Also profiled are the two optometry faculty members who retired in 2013 – we hope you will enjoy reading about the long and productive careers of Vic Malinovsky and Ed Marshall. This issue contains reviews of some interesting articles from the current clinical science literature. Lastly, we have a story of two paintings that are presently being displayed on the first floor of the Optometry Building.

David A. Goss
Editor

ON THE COVER: Dr. Charlie Shick (1928-2013)

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**Statement of Purpose:** The Indiana Journal of Optometry is published by the Indiana University School of Optometry to provide members of the Indiana Optometric Association, Alumni of the Indiana University School of Optometry, and other interested persons with information on the research and clinical expertise at the Indiana University School of Optometry, and on new developments in optometry/vision care.

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http://www.opt.indiana.edu/IndJOpt/home.html
Charles R. “Charlie” Shick was born December 20, 1928, in New Bethlehem, Pennsylvania. He graduated from New Bethlehem High School in 1947. Following service in the United States Marine Corps, he completed his preprofessional education at the Indiana University Purdue University Extension Center in Fort Wayne.

He attended Indiana University in Bloomington from 1955 to 1958, where he obtained B.S. and M.Opt. degrees. The latter degree was at that time the terminal optometry degree offered by Indiana University to qualify graduates for the clinical practice of optometry. After he graduated, he was pressed into service as an Instructor when an optometry faculty member suddenly resigned. That began Shick’s 35 year career as an Indiana University faculty member in which he progressed through the ranks from Instructor to full professor.

Shick taught many courses in the optometry curriculum, including ophthalmic optics, contact lenses, low vision, and practice management. He maintained a private practice for 28 years and frequently drew on experiences in his practice to illustrate points made in the classroom. The recognition of his clinical expertise is illustrated by the numerous continuing education lectures he gave to practicing optometrists, covering thirty states and three countries.

Shick was particularly well known for his work in contact lenses. He invented new contact lens modification tools, patented a reversing prism contact lens, and was a consultant to contact lens companies. In 1962, he coauthored Corneal Contact Lenses: Fitting Procedures, one of the first textbooks on contact lenses, with William R. Baldwin. A review of the book in the Journal of the American Optometric Association proclaimed that it would “serve both student and practitioner well in supplying the necessary ingredients for the firm foundation upon which to build a successful contact lens practice.” That same year, he also proposed a modification to the mires on keratometers to improve the accuracy of corneal curvature measurements, a design which continues to be used in some keratometers to this day. He also contributed to four chapters in one of optometry’s best known books, the third edition of Clinical Refraction, edited by Irvin M. Borish.

Shick served the IU optometry school in various administrative posts, including Director of the Contact Lens Clinic, Director of Continuing Education Programs, Chairman of the Department of Patient Care, and Director of Clinics. One faculty member noted that in his role as Clinic Director, “Shick was able to see
potential in his clinical staff and give them opportunity to prove themselves. He generated remarkable camaraderie and loyalty among the clinical teaching staff.”

Another role played by Shick was advisor to various student groups, including many years as placement advisor.

Because he started optometry school in 1955, two years after IU started professional courses in optometry, and moved into an instructional position immediately after his graduation, Shick had the distinction of being either a student with, or an instructor of, every graduate of the first forty years of existence of IU’s optometry school. He was a member of the optometry faculty during several important times of transition – during the change in terminal degree from M.Opt. to Doctor of Optometry (O.D.) in 1968 and the transition from Division of Optometry to School of Optometry in 1975.5 And in 1975 he was the moving force behind the development of external rotations for fourth year optometry students to give them greater breadth of clinical experience.6 In 1979, he received the Foley House Award given for contributions to the development of IU’s optometry school for his work establishing a contact lens laboratory facility.7

Shick retired from IU in 1993, which allowed him to spend more time on his hobbies of hunting and fishing. He was the president of the Sycamore Valley Gun Club for many years and he was a firearms instructor for various organizations. He had many friends from those activities as well as from his optometric work. Shick died in Bloomington on January 25, 2013.

References
Indiana University has played a tremendous role in Doctor Victor Malinovsky’s life. Vic graduated from the Indiana University School of Optometry in 1973, having also earned a Bachelor of Science in Optometry from IU in 1971. Many people may not know that Vic played football at IU, three times earning All Big Ten Academic distinction. Vic played on the 1968 Rose Bowl team, and he has maintained a keen interest in the football program over the years, serving as a liaison and mentor to current players. Upon graduation, Vic served as an optometrist in the United States Navy for three years, but it was clear early on that he had a gift for not only patient care, but for teaching as well. After his time in the Navy, Vic joined the faculty at The Ohio State University College of Optometry, where he excelled at both clinical and didactic teaching. After spending three years at Ohio State, Vic moved on to the Ferris State College of Optometry in Michigan, where he practiced and taught for eight years, earning the rank of Full Professor and serving as the Chief of the Ocular Disease Service. Fortunately for IU, Vic was lured back home to his alma mater, joining the IU School of Optometry faculty in 1987, where he has enjoyed a highly distinguished career.

Vic has the rare ability to excel at both patient care and didactic classroom teaching. He has been one of the most respected members of our faculty for over twenty-five years, building a stellar reputation both within the University and nationwide. Vic earned promotion to Full Clinical Professor in 2001, making him one of the few clinical faculty members in the School of Optometry to earn full professorship. He has always been a favorite of our students, receiving the Professor of the Year award an amazing fifteen times. He has also received three Teaching Excellence Recognition (TERA) awards from the University. Over the years, Vic became synonymous with the ocular disease courses in our IUSO curriculum, teaching countless doctors in training how to diagnose, manage, and treat ocular disease. One of the best testaments to his unquestioned skill is the fact that many of the ocular disease courses at the School are now being taught by his former students, who have gone on to become members of the faculty themselves. I count myself very fortunate to be among that group of former students who has had the pleasure to work alongside Vic over the years as a colleague and a friend. He has been a mentor to many of us.

In addition to achieving tremendous success teaching in the classroom, Vic developed a large and devoted patient base. Many patients were very loyal to him, allowing him to maintain a busy clinical practice. This gave him an opportunity to also provide very high level clinical education to the same students that he taught in the classroom. Vic excelled at this as well, having a tremendous impact on the clinical training of his students. He was very effective at teaching both classroom theory and the art of clinical practice, making him quite simply an outstanding teacher. Vic also served in various administrative capacities at the IUSO, spending time as the Chief of the Ocular Disease Service and the Associate Dean for Clinics, as well as the Director of Continuing Education.

Vic has also had a significant impact on the profession of optometry as well, distinguishing himself in our highest national circles. Over the years, he became a highly skilled and much in demand provider of continuing education lectures. He has given literally hundreds of such lectures, sharing his expertise and gift for teaching with practicing optometrists all around the

To Honor Retiring Faculty:
Victor Malinovsky and Edwin Marshall

Victor Malinovsky
By Brad Sutton

Dr. Bonanno presenting the Foley House Award to Dr. Malinovsky.
His reputation allowed him to be chosen as the Chair of the Ellerbrock Lectures and Workshops Committee, the group that is in charge of the continuing education program at the American Academy of Optometry’s large national meeting each year. Widespread recognition of his teaching ability is also evidenced by the fact that in 2001 he received the inaugural Michael G. Harris Family Award for Excellence in Optometric Education given by the American Academy of Optometry.

Vic has served the National Board of Examiners in Optometry and several other national organizations over the years. Like many successful educators, Vic has also been very active in publication and research, contributing to the optometric body of knowledge. He has published book chapters and dozens of scientific articles, while presenting a substantial number of scientific posters at national meetings over the years. Vic has also participated in many clinical research projects, often collaborating with colleagues at the School. His combination of clinical expertise and scientific curiosity has served him very well in these endeavors.

The Indiana University School of Optometry, indeed all of Indiana University, has been very fortunate to benefit from the tremendous talents of Dr. Victor Malinovsky for over twenty five years. Vic and his wife Jan’s parting gift to the School, a sizeable donation to start an endowed optometry scholarship, proves yet again their dedication to IU. His considerable legacy is embodied in the IUSO trained Doctors of Optometry who are providing high quality patient care around the state, around the nation, and around the world. He has touched lives, and he will be missed by those of us who have been fortunate enough to share our careers with him. We wish him the very best in all things.

**Edwin C. Marshall**

By David A. Goss and Richard E. Meetz

Edwin C. Marshall was born in Georgia and raised in New Jersey, but he has spent his adult life in Bloomington, Indiana. Ed came to Indiana University for undergraduate school because Bloomington was as far away from home as his mother would let him go. Nearing completion of his B.A. degree in zoology, Ed was contemplating a career in genetics research, when his undergraduate school friend Melvin Shipp, who attended IU’s optometry school and is now the Dean of the College of Optometry at The Ohio State University, convinced him to consider optometry as a profession.

After graduating from the IU School of Optometry in 1971, Ed joined the optometry faculty. He started as a clinical associate in 1971 and worked his way through the faculty ranks to full professor. It wasn’t long after Ed’s appointment to the faculty that he began his remarkable commitment to service. In 1972, with Jack Bennett, he founded the School’s first off-campus clinic, which came to be known as the Community Eye Care Center. It was designed specifically to serve vision care needs of an underserved population. It was initially housed in the garage of the Christian Center located at 827 West 14th Street. Ed was Director of the clinic from 1972 to 1977. The Reverend E.D. Butler, former pastor of the Second Baptist Church in Bloomington, called the clinic “a blessing to our community.” It also became an important clinical experience for optometry students.

In addition to involvement in patient care, Ed taught various topics, including optometric procedure and theory, environmental optics, ocular pathology, legal and professional aspects of optometry, community health, and epidemiology. Ed served fifteen years as the Associate Dean for Academic Affairs for IU’s School of Optometry. While a member of the IU faculty, Ed earned an M.S. degree in physiological optics from Indiana University in 1979 and a Master of Public Health degree with emphasis in Health Policy and Administration from the University of North Carolina in 1982.

Ed has been a consultant or officer for numerous
organizations and commissions. For example, he has been both President and Executive Director of the National Optometric Association, President of the Indiana Optometric Association, and Chairman of the American Optometric Association Information and Data Committee. He is a founding member of the Vision Care Section of the American Public Health Association. He was the first optometrist to be elected President of the Indiana Public Health Association and the first optometrist to be elected Chair of the Executive Board of the American Public Health Association. He was on the National Institutes of Health National High Blood Pressure Education Program Coordinating Committee and had a four-year term on the National Advisory Council on Health Professions Education.

Ed’s professional activities have taken him to more than forty countries. He has been a consultant to many optometry schools and organizations in places such as India, Japan, China, South Africa, The Philippines, Malaysia, Puerto Rico, and Denmark. He has been a delegate at meetings of the World Council of Optometry and has given more than 40 presentations at international meetings.

Ed has been in the forefront of optometry’s involvement in public health since the 1970s. He has published extensively on epidemiology, health policy, public health, optometric education, and related topics, and has prepared optometric workforce studies for the state of Indiana, Puerto Rico, and the Asian region. He was a contributor to the book “Public Health and Community Optometry,” which was published in 1977. He became the co-editor with Robert Newcomb of the second edition of the book, which was published in 1990.

Because of Ed’s background in public health, he was instrumental in helping Indiana University to launch new schools of public health on the IUPUI campus and on the Bloomington campus. He was an adjunct professor of Public Health at the IU School of Medicine. In 2007, he was appointed IU’s Vice President for Diversity, Equity, and Multicultural Affairs. During his watch, the enrollment of minority undergraduate students across all IU campuses increased from 14.5 percent in 2007 to 19.8 percent by the end of 2012.

Ed’s work has been recognized by numerous awards. For example, he received the Indiana Optometric Association Distinguished Service Award in 1998, the Tony and Mary Hulman Health Achievement Award in Public Health and Preventive Medicine in 1999, the Foley House Basement Key Award for contributions to the Indiana University School of Optometry in 2000, the State Health Commissioner Award for Excellence in Public Health in 2001, Distinguished Hoosier award in 2005, the Indiana Optometric Association Optometrist of the Year in 2006, American Optometric Association Optometrist of the Year in 2007, induction into the National Optometry Hall of Fame in 2009, and IU President’s Medal for Excellence in 2013.

Despite his busy schedule over the years, Ed managed to find time on occasion to get out on his boat, the Optical Illusion, on Lake Monroe and to do some snow skiing in the Rocky Mountains. His enthusiasm for boating is evidenced by his earned USPS rank of advanced pilot.

Melvin Shipp echoed the thoughts of many when he said that Ed “has been at the forefront of initiatives that have not only shaped the course of our School and University, but also impacted others beyond our alma mater. We all are better for Ed’s efforts.”

This study from psychology and ophthalmology researchers in France compared eye movements during reading and a visual search task in dyslexic children to two control groups. The dyslexia group consisted of 12 children whose scores on a standard French reading test were less than two standard deviations below the mean and a normal IQ. They had a mean age of 11+-0.6 years, a mean IQ of 100+-7, and mean reading age of 8.8+-1 years.

One of the two control groups was matched to the dyslexia group by chronological age. They will be referred to as the older non-dyslexia group. The nine children in this group had a mean chronological age of 11+-0.9 years.

The other control group was matched to the dyslexia group by reading age. They will be referred to as the younger non-dyslexia group. The ten children in this group had a mean chronological age of 8.3+-0.9 years. The children in both control groups had no known neurological or psychiatric anomalies, “no visual impairment or difficulty with near vision,” (p.2) and normal reading ability. All three groups of children had 20/20 or better visual acuity, normal near point of convergence, and normal near phoria by cover test, which they considered to be exophoria of 3.5 prism diopters or less.

Near base-in vergence ranges averaged 10 prism diopters in the dyslexia group which was significantly different (p<0.01) from the average of 16 for the younger non-dyslexia group but not significantly different from the average of 12 in the older non-dyslexia group.

The mean near base-out vergence range in the dyslexia group was 24 prism diopters which was significantly less than the 38 for the younger non-dyslexia group (p<0.02) and the 39 for the older non-dyslexia group (p<0.01). It was not stated whether these were blur or break values or whether measurements were by rotary prisms or prism bars, although the magnitude of the ranges suggested that prism bars were used.

The main part of the study was an examination of eye movements during reading and during a visual search task using a Mobile Eyebrain Tracker (www.eye-brain.com). The movements of both eyes were studied. For the reading task, the children read silently from lines taken from a book for children. The text read by children with reading ages of 7 to 9 years differed from that used for children with reading ages of 10 to 12 years. For the visual search task, the text was the same as that for the reading task except that the vowels were all replaced by consonants. A forehead rest and a chin rest were used and the viewing distance was 58 cm.

One of the variables studied was the number of fixations. The dyslexia group had significantly more fixations than the older non-dyslexia group during reading (p<0.001). The younger non-dyslexia group also had more fixations than the older non-dyslexia group (p<0.007). The number of fixations during reading was less than the number of fixations during visual search for the older non-dyslexia group (half as many on average), but there was not a significant difference in fixations between reading and visual search for the dyslexia group or for the younger non-dyslexia group.

Another variable studied was the duration of fixations. The duration of fixations was significantly greater in the dyslexia group than in the older non-dyslexia group (p<0.0003). The duration of fixations for visual search was greater than for reading in the older non-dyslexia group, but no such difference was found for the dyslexia group or for the younger non-dyslexia group.

Also studied was the interocular difference in saccade amplitude, expressed as a percentage of total saccade amplitude. This disconjugacy was significantly greater in the dyslexia group than in the older non-dyslexia group (p<0.0001).

The authors interpreted their results as suggesting that “ocular motor characteristics of dyslexic children are impaired with respect to those reported in non-dyslexic children with comparable age….Many fixations and...
longer duration, during reading and visual search, could be due to an immaturity of visual attentional strategies, leading to reduced visual attentional span. The poor quality of binocular coordination in dyslexic children during and after the saccades, suggests an immaturity of ocular motor learning...” (p.6) They further noted that “orthoptic vergence training, together with specific visual attentional training and reading tasks, could be useful tools in dyslexic children to improve visual attentional span, vergence capabilities as well as saccade yoking.” (p.7)


This investigation of the relation of optometric findings to the ability to perceive single image random dot stereograms was performed in departments of optometry and psychology in Spain. For correct perception of auto-stereograms, individuals must shift the plane of convergence to a different distance from the plane of accommodation.

Subjects were 15 male and 54 female university students. They were between 21 and 28 years of age. They had monocular and binocular decimal visual acuities of at least 1.0 at both far and near. Persons with “manifest binocular visual imbalance” (p.148) were excluded from the study, although what that constituted was not specifically defined. Other exclusion criteria were color vision anomalies, existing ocular pathology, ongoing ocular treatment, previous ocular surgery, or previous refractive surgery. None of the subjects had previous experience with single image random dot stereograms.

One random dot auto-stereogram from a magic eye book was used as the target throughout the study. Subjects were instructed to hold the stereogram at a very close distance and then slowly move it away until the 3D effect was observed. Otherwise there were no instructions on how to perceive the effect. When the 3D effect became visible, subjects pressed a button which provided a measure of the time required to perceive the stereogram. There was a time limit of 90 seconds.

Subjects were divided into three groups, or skill levels, based on the time required to perceive the 3D figure in the stereogram. Group 1 needed less than 10 seconds, group 2 needed more than 10 seconds, and group 3 did not perceive the 3D shape. Ten seconds was taken as the cut-off between groups 1 and 2 because that was the median time needed.

The following tests were performed by an optometrist: (1) interpupillary distance for 40 cm with a pupillometer, (2) stereoacuity with the TNO test at 40 cm, (3) distance and near phorias with prism neutralized cover test, (4) negative and positive relative accommodation, (5) base-in and base-out vergence ranges at 40 cm, and (6) gradient AC/A ratio.

The relative values of the coefficients in linear discriminant analysis showed that the tests that best predicted the subjects’ stereogram skill level were stereoacuity, near phoria, and near base-in vergence range. However, because correct prediction of the subjects’ skill level based on a discriminant analysis model with all nine variables was achieved in only 67% of subjects, the authors suggested that other visual skills or parameters might be important.

The authors speculated whether some subjects classified as being in group 3 might have been in group 1 or 2 if additional information or training on stereograms had been provided. They further felt that it was unclear whether single image random dot stereograms might be useful as a diagnostic tool in clinical practice.


This study looked at base-in prism treatment in symptomatic presbyopic patients with convergence insufficiency. It examined whether certain binocular vision test findings were correlated with (1) symptom levels before prism treatment, (2) symptom levels after prism treatment, and (3) change in symptom level with prism treatment. The study was performed in a private practice in South Dakota.

The 29 subjects in the study were at least 45 years old, had a score greater than 16 on the Convergence Insufficiency Symptom Survey, and had an exophoria at near that was at least 4 prism diopters greater than at distance. Other eligibility criteria were as follows: visual acuity of at least 6/7.5 in each eye at distance and near, presently wearing progressive addition lenses, minimum add of +1.50 D in the habitual prescription, minimum of two hours spent on reading or close work daily, zero associated phoria at distance, near associated phoria of at least one prism diopter base-in, no constant
strabismus, no vertical phoria greater than one prism diopter, and no previous treatment with prism. The mean age of the subjects was 54.1 years. The average amounts of exophoria were 2.2 prism diopters at distance and 11.2 prism diopters at near.

Subjects wore two pairs of progressive addition lenses in randomized order. One pair had an amount of prism at near equal to the near associated phoria. The other pair functioned as a placebo and had no prism. The Convergence Insufficiency Symptom Survey was administered (1) before the study lenses were worn as a baseline, (2) after three weeks of wearing the placebo lenses, and (3) after three weeks of wearing the prism treatment lenses. The mean symptom survey scores were 30.2 at baseline, 23.6 after placebo, and 13.4 after wear of prism treatment lenses.

The Pearson correlation coefficients of test results with baseline symptom survey scores were: near phoria, r = 0.10; near associated phoria, r = 0.16; NPC break, r = 0.13; and base-out vergence, r = -0.24. None of those correlation coefficients were statistically significant. The correlation of test findings with symptom survey scores after prism treatment were: near phoria, r = 0.05; near associated phoria = r = -0.04; NPC break, r = -0.12; and base-out vergence, r = -0.03. None of those correlation coefficients were significant either.

A third set of correlations looked at the relation of test findings to the improvement of symptom survey score from prism treatment. Improvement in symptoms was calculated as the placebo symptom survey score minus the symptom survey score after prism treatment. Some of these correlations were statistically significant: near phoria with improvement, r = -0.45 (p<0.01); near associated phoria with improvement, r = -0.39 (p<0.05); NPC break with improvement, r = 0.42 (p<0.01); and base-out vergence with improvement, r = -0.09 (not sig.). Greater improvement in symptom survey scores was associated with greater exophoria at near and more remote NPC break. Although there was a significant correlation of symptom score improvement with near associated phoria, the authors suggested that it was not a strong association because the range of associated phorias was limited.

Because the study subjects had presbyopia, the authors cautioned that the results could not be generalized to children or young adults. They suggested that the finding of greater improvement in symptoms being related to greater exophoria and to more receded NPC “might help the clinician advise symptomatic CI patients on the expected outcomes of treatment.” (p.196)


This study used a ReadAlyzer, an infrared objective eye movement recording device, to assess the effect of plus lenses on reading performance. Subjects in the study were 67 first year optometry students at Southern College of Optometry. They ranged in age from 22 to 37 years and averaged 23.5 years of age. Inclusion criteria were corrected visual acuity of 20/20 in each eye and no strabismus. Only subjects who wore contact lenses or had no habitual optical correction were included.

Before the reading test, a binocular cross cylinder (BCC) test was done on each subject. The endpoint of the test determined the lens power that subjects wore during the reading test. The distribution of BCC endpoints was: over +1.00 D, 2 subjects; +1.00 D, 19 subjects; +0.75 D, 20 subjects; +0.50 D, 17 subjects; less than +0.50 D, 9 subjects.

Subjects with a BCC of +0.50 D or less wore +0.50 D during the reading test. Those with a BCC of +0.75 D wore +0.75 D during the reading test. Subjects with a BCC finding of +1.00 D or more wore +1.00 D. Subjects who were contact lens wearers used these lenses over their contact lenses.

To familiarize the subjects with the ReadAlyzer testing, they first read a short passage from a story. If they achieved a comprehension score of 70% or more on the passage they continued in the study. Then subjects silently read passages of about 800 words with plano lenses and another passage with the test lenses. Whether plano lenses or the test lenses were used first was randomized. Reading rates and a comprehension score from true/false questions were compared for plano lenses and the test lenses.

The average reading rate was 5.8 words per minute faster with plus lenses than with plano, but the difference was not statistically significant (p = 0.08). When the nine subjects who were tested with +0.50 D lenses but whose BCC was less than +0.50 D were excluded, the reading rate was statistically significantly greater with plus lenses than with plano. Reading comprehension scores were significantly better with plus lenses than with plano (p<0.001).

When the authors took into account that the difference in reading rate increased when the nine subjects with BCC findings less than +0.50 D were removed from the analysis, they concluded that “appropriately prescribed
low plus lenses improve reading efficiency,” but that “too much plus may be detrimental to reading efficiency.” (p. 106)


This paper examined the relation of Mallett unit associated phorias with fusional vergence range parameters. Data were taken from 500 participants recruited from an optometry practice in the United Kingdom. Exclusion criteria were ocular disease, visual acuity less than 6/6, anisometropia more than 2 D, strabismus on cover test, history of having done vision therapy, and having prism in their present spectacle prescription.

Tests performed were Mallett unit associated phoria at 6 m in a mirror room, Mallett unit associated phoria at 40 cm, dissociated phorias at 6 m and 40 cm by prism neutralized cover test, and prism bar fusional vergence ranges. Blur, break, and recovery were used in the analysis, as were a Sheard’s value and a Percival’s value. The Sheard’s value in this study was the fusional reserve blur (or break if no blur was reported) divided by the dissociated phoria. The Percival’s value was the BO break divided by the BI break. The Percival’s value was calculated only for near because “normal distance fusional reserves would not satisfy Percival’s criterion.” (p. 2)

The age range for the 500 participants was 18 to 59 years, with a mean age of 41.6 years. Dissociated phorias at 6 m ranged from 10Δ exo to 6Δ eso, with a mean of 1.6Δ exo. Dissociated phorias at 40 cm were in the range of 20Δ exo to 6Δ eso, with a mean of 5.9Δ exo. Associated phorias were zero in 373 subjects at 6 m and in 299 subjects at 40 cm.

There were 197 subjects who had a BI associated phoria at near. For those 197 subjects, there were statistically significant correlations of associated phoria with BO blur (r = 0.71), BO break (r = 0.81), BO recovery (r = 0.77), Sheard’s value (r = 0.43), and Percival’s value (r = 0.30).

A BO associated phoria at distance was observed in 57 subjects. For those subjects, the amount of associated phoria was significantly correlated with Sheard’s value (r = 0.30), but not with BO blur, break, or recovery.

The authors concluded that the strong correlations between BI associated phoria and fusional vergence reserves at near “suggest both measures are indicators of heterophoria decompensation,” (p. 5) but that further research is needed to explain the low or non-significant correlations of distance associated phoria with fusional vergence reserves.


This paper looked at the prevalence of binocular vision and eye movement disorders in older adults based on records of 500 patients from the Optometry Clinic at the University of Waterloo. Records of patients who had been seen over an 18 month period beginning January, 2008, and who had attended the clinic for at least nine years were randomly selected. Equal numbers of patients with ages of 60-69, 70-79, and 80 and over were selected. Data used for analysis were from the most recent complete examination and from an exam nine to eleven years before that.

Test data taken from the records included lateral and vertical distance and near dissociated phorias by cover test and Maddox rod (with Maddox rod used for analysis when there was a discrepancy between the two), near point of convergence (NPC), pursuits, ocular motility, incomitancy, and less, frequently, Worth dot test, stereopsis, and fusional vergence ranges. Other data taken from the record included entering symptoms, previous ocular and systemic diagnosis, smoking history, and use of antidepressants (because of their suggested association with binocular vision problems).

One criterion for analysis was whether patients had an anomalous test result. Anomalous test results were any strabismus, vertical phoria more than 2Δ at distance or near by cover test, vertical phoria more than 1Δ at distance or near by Maddox rod, distance exophoria
more than 4Δ by cover test or Maddox rod, near exophoria more than 8Δ by cover test or Maddox rod, any esophoria by cover test, NPC greater than 10 cm, incomitancy, anomaly of pursuits, suppression by Worth dot test, or stereoacuity greater than 60 seconds.

Another criterion for analysis was whether or not patients had an eye movement or binocular vision disorder. Disorders included strabismus, anomalous distance with anomalous positive fusional vergence or diplopia or suppression, anomalous near exophoria with anomalous NPC or diplopia or decreased stereopsis or suppression, any esophoria, incomitancy, and anomaly of pursuits.

The prevalence of anomalous test results was high, ranging from 31% at 50-59 years of age (in the previous exam) to 51% at 80+ years (in the current exam). It was also high for binocular vision disorders, ranging from 17% at 50-59 years to 38% at 80+ years. For each of the three age groups, there was a statistically significant increase in prevalence of anomalous test results and binocular vision disorders compared to their exam about 10 years previous.

The use of antidepressants was significantly related to anomalous test results on both the current exam (p = 0.016) and the exam about 10 years before (p = 0.028). The presence of anomalous test result at the current exam was also related to the number of ocular and systemic diseases reported (p = 0.010).

For all ages combined the prevalence of anomalous test results increased from 35% at the exam 10 years earlier to 45% at the current exam. The prevalence of binocular vision disorders also increased from 20% to 32% from the earlier exam to the current exam. Tests which showed statistically significant increases in prevalence of anomalous results were vertical phoria (from 4% to 14%), near exophoria (from 7% to 12%), NPC (from 7% to 14%), and pursuits (from 3% to 7%).

The authors concluded that: “BV problems are common in the older adults, and may result in reduced stereopsis, which has functional consequences, including being a known risk factor for falls in older adults. However, the management of BV disorders may not be receiving the attention that it deserves.” (p. 3803)
The IU Optometry Heritage: 
A Story of Two Paintings

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The significance of two paintings in a display case on the first floor of the Optometry Building may be unknown to recent students and faculty, but the paintings portray buildings that were important to IU Optometry for several years. The painting on the upper left shows Foley House where the Optometry Clinic was located from 1959 to 1968. Prior to that, the clinic was in Jordan Hall, and immediately after that the clinic was located in the present Optometry Building at 800 East Atwater Avenue. Foley House was a wooden frame two story house with a basement. It was named for Arthur Lee Foley, an IU physics professor who owned the house from 1898 to 1945. Before 1968, optometry classes and offices were located in various buildings around campus, so Foley House became the building most associated with the optometry school for most persons at IU. Foley House, which had a street address of 744 East Third Street, is no longer standing. The present optometry clinic building is not sitting on exactly the same ground that Foley House did, but its street address is also 744 East Third Street.

The painting on the lower right of the display case shows a portion of the exterior of the old Health Center Building with the steps leading to the building’s basement. The Health Center Basement is where some optometry teaching laboratories were held from early in the program until the completion of the Optometry Building in 1968. Some optometry offices were located on the first and second floors of the Health Center Building for several years. The old Health Center Building stood behind Jordan Hall.

The block of wood with Optometry painted on it in the display case is thought to be the sign that hung above the stairs going to the health center basement. Also in the display case are a photograph of Henry Hofstetter, founding dean of the optometry school, ascending the health center basement steps and a plaque containing a shingle from Foley House.

Both paintings are signed M. van Nus. The painter was Margaret van Nus, wife of optometry student Frederick van Nus (1928-2008). A Michigan native, Frederick van Nus received Bachelor of Science and Bachelor of Arts degrees from Western Michigan University in 1953. He served in the United States Army from 1946 to 1948 and again from 1953 to 1955, after which he attended optometry school at IU. He graduated from optometry school in 1958, and in 1959 he became an Optometry Officer in the United States Army. Later he returned to IU to study in the physiological optics graduate program, completing an M.S. degree in 1967. It is interesting to note that in the acknowledgments of his thesis, he credited his wife with composing the diagrams in the thesis.

A few years after graduate school, Frederick van Nus served as president of the Armed Forces Optometric Society. After 28 years in the U.S. Army Medical Service Corps, he was a clinical instructor for the University of Waterloo and Pacific University. At Pacific University, his chief duty was supervision of clinical interns at various Indian Health Service and Public Health Service clinics in Oregon and Washington. In 2011, the van Nus family established the 80 acre Dr. Frederick van Nus Preserve near Lake Superior to honor his love of nature.
Optometry building first floor display case. (Photo by Joe Boes)

Photo of Foley House, 744 E. Third Street

Old Health Center stairs to Optometry Labs.
The first 42 volumes (1970-2011) of the Optometric Historical Society’s publication Hindsight: Journal of Optometry History are now online. Over 2,500 pages of high-quality, OCR enhanced, searchable, digital documents are now freely accessible to researchers at IUScholarWorks (http://scholarworks.iu.edu/journals/index.php/hindsight/issue/archive). This was made possible by a joint effort of the Optometric Historical Society and IUScholarWorks. IUScholarWorks is a service of the Indiana University Libraries with additional technology support from Indiana University Information Technology Services.

Examples of the scholarship found in Hindsight include:

- Biographical sketches of influential figures such as John Eberhardt (1857-1927), who championed the term “optometrist” to unite those who identified themselves as “refracting opticians”, “sight-testers” or other related terms (volume 18, pages 43-44) and Frederic Woll (1874-1955), whose tours and reviews of optometry schools in the 1920s served to strengthen the standards of optometric education (volume 42, pages 63-66);
- Personal memoirs and reflections of educators, innovators, practitioners, advocates and leaders in the profession;
- Historical research on individuals, events and trends in vision care, the profession and legislation;
- Book reviews and historiographies.

OHS founder, Dr. Henry W Hofstetter, noted that studying optometry history can lead to an appreciation of its “centuries-long existence and emergence from a prestigious and sophisticated handicraft to its present academic stature, a truly proud history which includes many prominent and accomplished personalities.” (Hindsight, volume 27, pages 17-18).

Hindsight is a publication of the Optometric Historical Society (OHS). OHS was formed in 1969 through the efforts of Dr. Hofstetter, then outgoing president of the American Optometric Association (AOA), and Maria Dablemont, librarian and archivist for the AOA. Presidents of OHS have included six Deans of optometry schools, two AOA presidents, an editor of the Journal of the American Optometric Association, and other noted educators and practitioners. The current president of OHS is Dr. John F. Amos.

The first publication of OHS, the Newsletter of the Optometric Historical Society, appeared in January, 1970. OHS has produced a quarterly publication ever since. Starting with volume 23 (1992), the title of the publication became Hindsight: Newsletter of the Optometric Historical Society. Beginning with volume 38 (2007) and continuing to the present, it has been titled Hindsight: Journal of Optometry History.

The Optometric Historical Society has always had a strong IU and Indiana connection. Dr. Hofstetter, the first director of the IU’s optometry school, was editor of the OHS publication for most of the first 25 years. Taking over for Hofstetter at various intervals during that time or serving as co-editor were John R. Levene, an IU faculty member, and Douglas Penisten, an alumnus of the IU O.D. and Ph.D. programs. David Goss, a current IU faculty member, has been editor since 1995. Only four of the thirteen OHS presidents over its 43 year history have not either been an IU faculty member, IU alumnus, or Indiana practicing optometrist. IU faculty or alumni who have been OHS presidents include Hofstetter, Levene, Penisten, T. David Williams, Charles Haine, Walter W. Chase, and John F. Amos. Indiana practicing optometrists Jerry Abrams and James Leeds are among the former presidents of OHS.

In 2009, members of the Board of Directors of OHS and Optometry Cares – The AOA Foundation signed a Memorandum of Understanding that places OHS under the umbrella of Optometry Cares. The AOA Foundation is also in charge of the AOA Archives and Museum of Optometry (http://www.aoafoundation.org/archives-museum-of-optometry/).

New issues of Hindsight can be obtained in print form as they are published by joining the Optometric Historical Society. One year membership in the Optometric Historical Society and subscription to Hindsight is $25 for regular membership and $50 for patron membership. A lifetime membership is $250. Membership can be obtained by sending name and address and check made out to the Optometric Historical Society to Kirsten Hébert, Optometric Historical Society, Archives and Museum of Optometry, 243 N. Lindbergh Boulevard, St. Louis, MO 63141.