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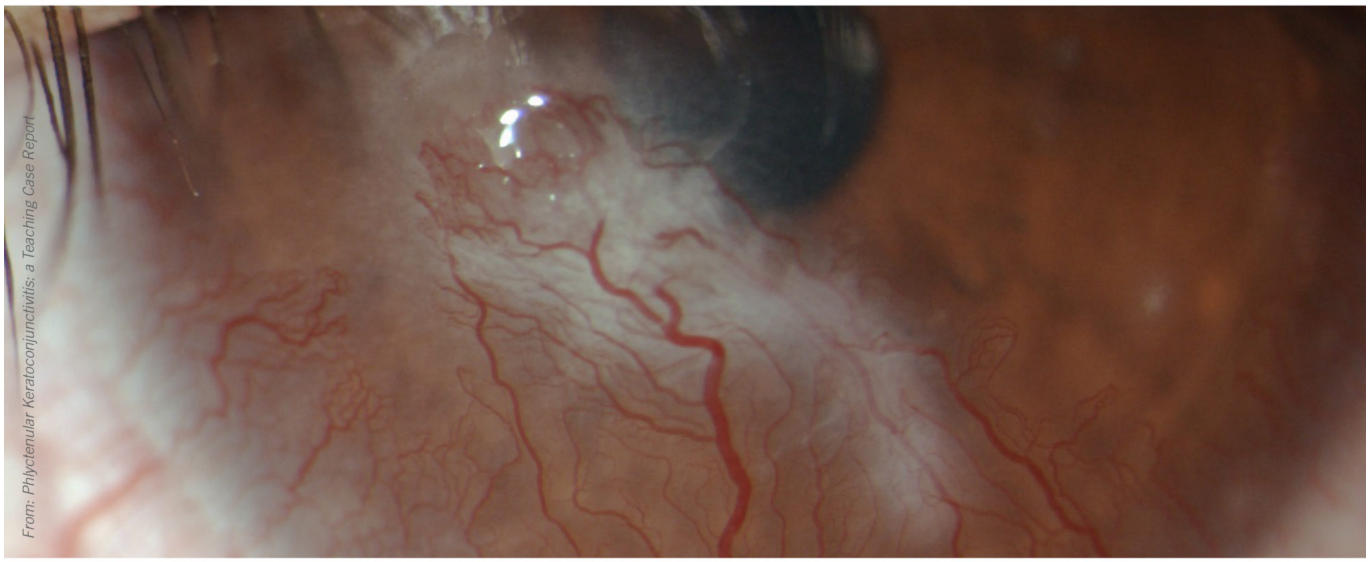

From: Phlyctenular Keratoconjunctivitis: a Teaching Case Report

Torpedo Maculopathy: a Teaching Case Report

Student Perceptions of Attaining the Association of Schools and Colleges of Optometry Graduate Attributes

Phlyctenular Keratoconjunctivitis: a Teaching Case Report

Standardized Tests as Predictors of Success in Health Professions Education: a Scoping Review

Review of Standardized Testing in Doctoral Health Professions Admission Requirements

Transient Vision Loss: a Teaching Case Report

CMV Retinitis: a Teaching Case Report

A Clinical Approach to Pupil Testing: a Teaching Case Report

ALSO INSIDE

Two Additional Teaching Case Reports

Editorial: Positive Changes in Applicant Pool Follow ASCO's *Optometry Gives Me Life* Campaign

Educator's Podium: Optometric Case Vignettes for the Clinical Preceptor

In an Upcoming Issue: Educator's Toolkit Addresses Universal Design for Learning

Industry News

ASCO ASSOCIATION *of* SCHOOLS *and* COLLEGES *of* OPTOMETRY

Optometric Education: Volume 47 Number 1 (Fall 2021)

Table of Contents

Articles

Review of Standardized Testing in Doctoral Health Professions Admission Requirements

Student Perceptions of Attaining the Association of Schools and Colleges of Optometry Graduate Attributes

Standardized Tests as Predictors of Success
in Health Professions Education: a Scoping Review

Features

Educator’s Toolkit to Address Universal Design
for Learning

Optometric Case Vignettes for the Clinical Preceptor

Industry News

Positive Changes in Applicant Pool Follow
ASCO’s Optometry Gives Me Life Campaign

Sponsors

CooperVision MiSight 1 day

Acuvue

Alcon

Articles

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Review of Standardized Testing in Doctoral Health Professions Admission Requirements

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Abstract

As many graduate programs have started to move away from standardized entrance exams, this study aims to identify the percentage of health professions doctoral programs in the United States that require a standardized entrance exam. Twelve doctoral-level health professions were identified. According to their central application service or school website, 10 professions (83%) had at least one school that required a standardized exam. Of the 890 professional schools included in this study, 679 (76.3%) required a standardized exam. Overall, the use of testing varied among the professions, although the majority had at least one school that required a standardized exam. If individual optometry programs decide to eliminate standardized testing, or to adopt a test-optional admissions policy, the profession would be aligned with seven of the 12 doctoral health professions in this study.

Key Words: *doctoral health profession, standardized exam, entrance exams, admission requirements*

Background

The purpose of this study is to assess the current status of the role of standardized testing in the admissions process for graduate health professions in the United States by quantifying the number and percentage of health professions programs that require standardized testing for admissions, and to determine which standardized tests are required by each program. The driving force behind the research question is the growing skepticism in the academic arena regarding the value of standardized exams in predicting success and their potential bias against students of lower socioeconomic status, under-represented minorities and women.[1-3]

In recent years, a significant performance gap on standardized examinations has become obvious between students of different racial and socioeconomic backgrounds. In light of this evidence, standardized examinations are increasingly becoming regarded as barriers to higher education access for students of color and lower socioeconomic status. This observation has caused some undergraduate institutions to either eliminate college entrance examinations or make them optional in order to increase the diversity of their student body.[1]

Additionally, there is evidence of gender bias on the Scholastic Aptitude Test (SAT) as men tend to perform better on the math portion than women, which leads to an underprediction of women's performance in college.[2] Due to these concerns, since 1998 more than 275 undergraduate institutions no longer use the SAT or American College Test (ACT) in their admissions decisions.[3] Many schools that still maintain an SAT score requirement admit to doing so to preserve a reputation of selectivity while the scores contribute minimally to admissions decisions.[2] Most recently, the University of California system

decided to suspend its SAT/ACT requirement for admissions until 2024, after which it will either eliminate or introduce a new entrance examination for in-state applicants.[4]

Reputable graduate institutions have started taking a similar approach to standardized exams. In 2018, Harvard University dropped its Graduate Record Examination (GRE) requirement for its English PhD program, and University of Pennsylvania (UPenn) dropped its GRE requirement for its philosophy department.[5,6] The reasoning behind UPenn's decision was multifactorial. The primary reason was that the financial burden of the exam gives an unfair advantage to wealthy applicants, thus limiting the diversity of matriculated students.[5] UPenn also argued that GRE scores do not accurately predict academic performance in graduate school and result in bias against women and under-represented minorities.[6]

In 2019, Cornell University's English doctoral program followed suit. Cornell's decision to eliminate the GRE requirement for admission was based on the observation that the predictive value of the GRE to determine student success was outweighed by the expense of reducing the diversity of their applicant pool due to the exam posing a significant financial burden on historically under-represented student groups.[7] Several months later, Cornell's biomedical engineering department also eliminated its GRE requirement, citing that the GRE is "a poor predictor of success at graduate school."[8]

The move by two Ivy League institutions to remove the GRE requirement for some of their graduate programs behooves those in higher education to take a closer look at their own institutional policies. It is undeniably true that the expense of standardized testing for graduate programs can be a significant financial burden for students from lower socioeconomic backgrounds, thus narrowing the applicant pool and potentially discriminating against minority students. It is particularly paramount for doctoral health professions programs to revisit their admissions criteria as these programs have arguably the greatest need to expand the diversity of their student body in order to effectively serve an increasingly diverse society.

This paper aims to evaluate which doctoral health professions currently require a standardized entrance exam for admissions. Though this information is publicly available through individual schools and centralized application systems, there is no central source where this information can be compared across health professions. This study collects and presents valuable data in one centralized location for individual admissions committees to review when discussing the role of standardized exams in admissions decisions. The study also discusses potential barriers to higher education that may be applicable to health professions education. In the current climate of movement away from requiring standardized testing for admissions decisions, it is helpful to gain an appreciation of how this trend may also be impacting doctoral-level health professions.

Methods

A cross-sectional study design was used to capture data to evaluate and enumerate the proportion of doctoral health professions programs that require standardized testing for admissions. A list of doctoral-level health professions was reviewed to determine which professions to include in this study.[9] Inclusion criteria for the professions reviewed included the following: health professional doctoral degree, defined as a degree that prepares someone to work in a particular profession, often, but not always, meeting the academic requirements for licensure or accreditation, recognized in the United States or Canada, and emphasizing clinical practice. Exclusion criteria were the following: an emphasis on biomedical or research careers, PhD or Master's level, no longer recognized, or relatively few practitioners in the profession. The following doctoral degrees were excluded from the review: Doctor of Athletic Training, Doctor of Behavioral Health, Doctor of Professional Counseling, Doctor of Health Science, Doctor of Naturopathy, and Doctor of Social Work.

Twelve health professions meeting the inclusion criteria were identified. The corresponding central application service was used to identify which schools within the doctoral program required a standardized entrance exam. Several of the programs did not have a central application system, or the central application system did not have the information desired. In these cases, each individual school website was accessed to identify standardized testing requirements. Dental, audiology, occupational therapy, chiropractic and acupuncture programs required accessing each individual program's website.

The following list of professions included in the study describes the methods by which the data were collected.

Optometry – A list of optometry schools accredited by the Accreditation Council on Optometric Education (ACOE)[10] was accessed via the Optometry Centralized Application System, OptomCAS.[11] OptomCAS provides a table of accredited programs and the required standardized exam for each program.[12] Results were summarized in **Table 1**[13] and categorized as to the number and percentage of programs that required a standardized test for admissions.

Dentistry – A list of dental schools was accessed through the American Dental Association (ADA).[14] Only schools accredited by the Commission on Dental Accreditation were included in the study.[15] The websites for each of the programs listed were searched for details regarding the admissions requirements. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Medicine (MD) – A list of allopathic medical schools accredited by the Liaison Committee on Medical Education (LCME)[16] was accessed through the American Medical College Application Service, AMCAS.[17] All schools listed required the Medical College Admission Test (MCAT) for admissions at the time of this review. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Medicine (DO) – A list of osteopathic medical schools accredited by the American Osteopathic Association Commission on Osteopathic College Accreditation (COCA)[18] was accessed through the centralized application system, AACOMAS.[19] All schools listed required the MCAT for admissions at the time of this review. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

TABLE 1
List of Doctoral Degree Programs Requiring a Standardized Exam[a]

Doctoral Health Profession	Total Number of Schools	Total Requiring Standardized Testing	% of Schools Requiring Standardized Testing	Exam Required
Optometry (OD)	23	23	100.0%	OAT (some accept others)
Dentistry (DMD, DDS)	66	66	100.0%	DAT
Medicine (MD)	147	147	100.0%	MCAT
Medicine (DO)	35	35	100.0%	MCAT
Podiatry (DPM)	9	9	100.0%	MCAT
Audiology (AuD)	74	71	95.9%	GRE (some accept others)
Physical Therapy (DPT)	242	214	88.4%	GRE
Veterinary (DVM)	30	22	73.3%	GRE (some accept MCAT)
Occupational Therapy (DOT)	36	19	52.8%	GRE
Pharmacy (PharmD)	154	73	47.4%	PCAT
Chiropractor (DC)	18	0	0.0%	None
Acupuncture (DACM)	56	0	0.0%	None
Total Schools	**899**	**679**	**76.3%**	
Total Professions	**12**	**10**	**83.3%**	

Table 1. Click to enlarge

Podiatry – A list of podiatry schools was accessed through the American Association of Colleges of Podiatric Medicine.[20] Only schools accredited by the Council on Podiatric Medical Education were included in the study.[21] All schools listed required the MCAT for admissions at the time of this review. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Audiology – A list of schools awarding a Doctorate in Audiology (AuD) and accredited by the Council on Academic Accreditation (CAA) were included in the study.[22] The CAA also provided a list of audiology degree programs.[23] The websites for each of the AuD programs listed were searched for details regarding the admissions requirements. Master's-level degrees in audiology were not included. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Physical therapy – A complete list of physical therapy schools accredited by the Commission on Accreditation in Physical Therapy (CAPTE)[24] was accessed via the Physical Therapist Centralized Application System, PTCAS.[25] PTCAS provided a complete table of programs that required a standardized exam. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Veterinary medicine – A list of veterinary schools accredited by the American Veterinary Medical Association Council on Education (AVMA COE)[26] was accessed through the Association of American Veterinary Medical Colleges.[27] A complete list of U.S. schools with standardized testing requirements was used in this study.[28] Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Occupational therapy – A list of occupational therapy doctoral programs accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) was obtained from the American Occupational Therapy Association website.[29] The websites for each of the programs listed were searched for details regarding the admissions requirements. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions, in this case the GRE.

Pharmacy – A list of pharmacy schools accredited by Accreditation Council for Pharmacy Education (ACPE)[30] was accessed using the American Association of Colleges of Pharmacy.[31] A PDF listing of required entrance exams for each program was utilized in this study. The centralized Pharmacy College Application Service, PharmCAS, was not used for reference as several PharmD programs did not participate in this service at the time of data collection. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Chiropractic – A list of chiropractic doctoral programs accredited by the Council on Chiropractic Education (CCE) Directory of Doctor of Chiropractic (DC) Degree Programs was obtained from the CCE.[32] The websites for each of the programs listed were searched for details regarding the admissions requirements. Additional information was accessed from the Chiropractic College Application Service, ChiroCAS.[33] Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Acupuncture – A list of doctoral-level acupuncture programs accredited by the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) was obtained from the Acupuncture Today website.[34] The websites for each of the programs listed were searched for details regarding the admissions requirements. Results were summarized in Table 1 and categorized as to the number and percentage of programs that required a standardized test for admissions.

Table 1 summarizes the data collected. Limitations to the data collection include changes in standardized exam requirements over the span of the search as well as possible accreditation status changes since the time of the search. The data collection was done prior to the COVID-19 pandemic, which began in the United States in March 2020. Since then, some schools have made exceptions or changes to their standardized testing requirements, which is another limitation to the methods and

results of this study.

Results

A total of 12 health professions doctoral degree programs and 890 schools were identified and evaluated. Of the 12 professions, 10 (83%) had at least one school that required a standardized exam. Acupuncture and chiropractic programs did not require any standardized examinations. In optometry, dental, medicine (MD and DO) and podiatry programs, all schools required a standardized entrance exam. Several other programs varied on the number of schools requiring a standardized exam (audiology [95.9%], physical therapy [88.4%], veterinary [73.3%], occupational therapy [52.8%], and pharmacy [47.4%]).

Of the 890 professional schools included in this study, 679 (76.3%) required a standardized exam. Of the professions where at least one program required a standardized exam (10 of the 12 professions), 83.2% of individual schools (679 of 816) required an entrance exam.

The results for each profession are summarized below and presented in Table 1.[13]

Optometry – There were 23 optometry (OD) programs accredited by the ACOE. At the time of this study, all 23 programs (100%) required a standardized exam for admissions. All programs required the Optometry Admission Test (OAT) and 19 programs (82.6%) varied on other standardized exams, including the GRE, Pharmacy College Admission Test (PCAT), MCAT or Dental Admission Test (DAT), that could be submitted in lieu of the OAT.

Dentistry – There were 66 dental (DMD, DDS) programs accredited by the ADA. At the time of this study, all 66 programs (100%) required the DAT as the standardized exam for admissions.

Medicine (MD) – There were 147 Doctor of Medicine programs accredited by the LCME at the time of this study. All 147 programs (100%) required the MCAT for admissions.

Medicine (DO) – There were 35 Doctor of Osteopathic Medicine programs accredited by COCA. At the time of this study, all 35 programs (100%) required the MCAT for admissions.

Podiatry – There were nine podiatry (DPM) programs identified. At the time of this study, all nine schools (100%) required the MCAT as the standardized exam for admissions.

Audiology – There were 74 audiology (AuD) programs accredited by the CAA. Of these, 71 (95.9%) required a standardized exam. All programs that required an exam accepted the GRE. Several programs accepted various other standardized exams in lieu of the GRE.

Physical therapy – There were 242 physical therapy programs (DPT) accredited by CAPTE. Of these, 214 (88.4%) required a standardized exam. The GRE was the required exam for these schools.

Veterinary medicine – There were 30 veterinary (DVM) programs accredited by the AVMA COE. Of these, 22 (73.3%) required a standardized exam. The GRE was the most common exam required in those programs, though some accepted the MCAT instead of the GRE.

Occupational therapy – There were 36 occupational therapy (DOT) programs identified as accredited by ACOTE. Of these, 19 (52.8%) required the GRE. One of these 19 programs did not require the GRE but noted that if scores were submitted they would be considered as part of the admissions process; 13 (36.1%) did not require the GRE. For one program it could not be determined whether the GRE was required based on information provided on the website. If a school offered programs at multiple campus locations, each campus was counted as an individual program.

Pharmacy – There were 154 PharmD programs accredited by the ACPE. Of these, 73 (47.40%) of the programs required the PCAT. Aside from the doctoral professions in this study that do not require any standardized exam, pharmacy had the lowest percentage of programs requiring a standardized exam for admissions.

Chiropractic – There were 18 chiropractic (DC) programs identified as accredited by the CCE. None of the programs was found to require standardized testing as part of the admissions process, but one program noted that GRE scores could be submitted if they were available.

Acupuncture – There were 56 acupuncture (DACM) programs identified as accredited by ACAOM. One of the programs listed had subsequently closed. There were five programs for which it could not be clearly determined whether any standardized test was required for admission based on information provided on the website. The remaining 50 programs did not require any standardized testing for admission.

Discussion

Required standardized entrance exams have been a topic of discussion among undergraduate and graduate programs in the past several years. Many schools have been moving away from this requirement as it may pose a barrier for many potential applicants. The goal of this study was to determine which U.S. doctoral health professions programs currently require a standardized exam. The results of this study showed that the use of standardized testing in admissions varied among the doctoral health professions, though most (83%) had at least one school that required a standardized exam. As seen in Table 1, 41.7% of professions required standardized testing of all schools, and 41.7% of professions required standardized testing of some schools. Furthermore, 58.4% (seven of 12 professions) either did not require any standardized testing or required testing of some schools. This study indicated that if optometry programs were to move away from required standardized testing, the programs would not be outliers when considered in the broader context of doctoral-level health professions education institutions that were included in this assessment.

It is noteworthy that within most of these professions, the use of standardized testing was variable from program to program. The professions that were most uniform in their use of standardized testing were chiropractic and acupuncture, in which no programs were found to use standardized testing, and medicine (MD and DO), podiatry, dentistry and optometry, in which all programs were found to use standardized testing at the time of this study. The professions that demonstrated the most variability in the use of standardized testing for admissions were audiology, physical therapy, veterinary medicine, occupational therapy and pharmacy.

Our study adds to the current knowledge base for admissions committees and provides summarized information in a central location. The relevant information about more than 200 of the schools included in this study had to be individually accessed through school websites. One program required emailing the admissions liaison because the information was not easily found on its public web page. To the knowledge of the authors, no other cross-sectional study that presents the status of standardized testing in admissions for all doctoral health professional programs in the United States has been published.

The literature suggests that graduate programs outside of the health professions have identified standardized testing as a potential barrier due to its bias against under-represented minorities, female students and students of lower socioeconomic status.[1-3] While there is a plethora of published literature on the ability of standardized exams to predict student success in undergraduate education, research in this area for doctoral health professions education is limited. Of the studies that do exist, some cite standardized testing as a good predictor of success in doctoral health professions education, while others conclude that standardized exams are not reliable predictors of success.[35-39]

As for optometry-specific literature on predictors of success, there are a few studies though most are dated. An article by Bailey in 2000 looked at undergraduate grade point average (GPA), OAT scores and optometry school GPA in correlation to performance on National Board of Examiners in Optometry (NBEO) Part I at Southern California College of Optometry. The study found that optometry school GPA after 2 years was most predictive of NBEO performance. However, the OAT academic average along with optometry school GPA after 2 years showed slightly better predictions of success while undergraduate GPA was not a good predictor.[40] An article by Buckingham and Bush in 2013 looked at the OAT and undergraduate courses taken by 322 students at Michigan College of Optometry. They concluded that OAT reading comprehension and OAT academic average scores as well as undergraduate GPA predicted success in their optometry program.[41] Several other optometry-specific studies agreed that undergraduate GPA and certain OAT scores are predictive of success. Wingert, Goodwin and Kramer showed that undergraduate GPA and certain OAT scores are predictive of first- and second-year optometry GPA. These studies varied on which OAT subject tests were most predictive of success, and several also varied on the predictability of the personal interview for admissions.[42-44]

Because optometry is a relatively small health profession and there is limited literature on this topic, it can benefit from looking at what other health professions are doing at this time. As our profession becomes more medically focused, and we work more interprofessionally within the healthcare system, it is important to look at the admissions processes of other professions.

One concern optometry programs may have when deciding to keep or eliminate admissions requirements is the potential threat to professional scope of practice because removing standardized entrance exams may seem like a watering down of the admissions process. However, this study shows that less than 50% of pharmacy programs require the PCAT, yet their professional scope of practice has been growing to include the continued expansion of prescribing ability (including hormonal contraception in most states) and the ability to administer vaccines.[45-47] Similarly, physical therapy has also expanded its scope to include the ordering of imaging and lab work despite only 88.4% of its programs requiring a standardized exam.[48,49] These two professions are sound examples of successful expansion of scope of practice regardless of standardized examination requirements for admission.

When balancing considerations between scope of practice and decision-making authority, some potential differences may emerge among the health professions, perhaps causing the profession of optometry to pursue greater alignment with trends in some health professions as compared with others. The professions of human medicine (MD and DO), podiatric medicine and dental medicine are currently aligned with 100% of programs utilizing standardized testing as part of the admissions process. It is uncertain whether this status is likely to persist, particularly as society emerges from the recent experiences of the global pandemic. Alternatively, two professions with advanced levels of scope of practice and decision-making authority, veterinary medicine and pharmacy, show greater variation in their use of standardized testing across professional programs.

As health professions programs continue to need qualified applicants of various backgrounds to fuel the growing healthcare system, it is important for schools to look at ways to reduce admissions barriers. Options may be to eliminate standardized testing altogether, or to evaluate ways to reduce the cost of the exam and increase accessibility. Currently, many of the standardized tests are taken in-person at testing centers, with exams only offered during certain times of the year and in certain locations (some offered only in the United States). If standardized tests continue to be required in the admissions process, moving to an online platform, as the GRE has done in the past year, may increase accessibility for applicants. Due to the COVID-19 pandemic, the GRE now provides the option for test-takers to take the exam online in their own home. It is proctored by a human through ProctorU, and applicants are able to take the exam 24 hours a day, 7 days a week.[50]

Though moving to an online platform may increase accessibility, an underlying bias against under-

represented minorities and genders remains. Although this study concluded that the majority (83%) of health professions doctoral programs had at least one school that required a standardized exam and that overall 76.3% of the individual programs required a standardized exam, this may change in the near future. With the need for a more robust and diverse applicant pool and the questionable utility and predictability of standardized exams, the hope is that doctoral health professions programs will look into evaluating applicants using different means. Many studies have looked into a more holistic approach to admissions decisions, including various undergraduate GPA calculations, essays, behavioral interviews and multiple mini interviews.[51,52]

One limitation to this study is the possible change in admissions requirements for each program listed. For example, after collecting the data and analyzing the results, the authors became aware that in July 2020, Indiana University School of Optometry made the GRE and OAT exams optional for admissions.[53] This test-optional model is becoming a trend among many undergraduate and graduate institutions including the University of California system, Harvard University, Cornell University and the University of Pennsylvania. In our study, one occupational therapy and one chiropractic program allowed for optional submission of exams scores. The authors believe this will likely be the trend among optometry programs in the near future. Some undergraduate institutions have also begun to implement test-flexible or test-optional models. The test-optional model removes standardized test requirements for all applicants, while the test-flexible model allows students who meet certain criteria to apply without submitting a standardized exam score. Examples of qualifying criteria include achieving a certain GPA and/or involvement in extracurricular activities. Though the test-flexible model may sound appealing, it likely does not actually increase applicant diversity due to the difficulty accessing extracurricular activities and academic support by under-represented minorities.[54] The test-optional model also has its limitations. A study by Cahn in 2015 looked at 30 graduate health professions schools and concluded that the test-optional model did not increase program diversity unless other recruitment strategies were implemented as well. These strategies included diversifying the faculty, giving extra weight to under-represented applicants, increasing high school and undergraduate presentations, and increasing outreach to minority populations in the community.[55]

With the knowledge gained from this study, further research needs to be conducted looking at trends of institutions changing standardized testing requirements for admissions, especially as new studies evaluating the validity and predictability of standardized exams are published. Though the decision to make any changes to standardized testing in admissions is up to individual optometry programs, this study may help admissions committees in their discussions on this topic.

Conclusion

This study provides a centralized location for optometry admissions committees to access valuable information on the current use of standardized testing in doctoral health professions in order to make informed admissions decisions and to track changes over time. Though the majority of individual health professions programs still require standardized exams, there is variation among several professions. If optometry programs were to eliminate standardized testing requirements, they would not be outliers and, in fact, would still be aligned with some of the other doctoral-level health professions. As more research is published regarding potential barriers to higher education and the predictive value of standardized exams, optometry programs may decide to make changes to their admissions requirements.

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PEER REVIEWED

Student Perceptions of Attaining the Association of Schools and Colleges of Optometry Graduate Attributes

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Abstract

Education assessment seeks to determine how well students are learning and is an integral part of improving education outcomes. A survey was created and administered to the graduating classes of 2015, 2016 and 2017 to assess whether graduates perceived they successfully attained the Association of Schools and Colleges of Optometry (ASCO) graduate attributes and competencies.[1] By incorporating an assessment of the ASCO graduate attributes into the college's assessment plan, a new data point has been added that incorporates students as stakeholders.

Key Words: *assessment, graduate attributes, exit survey, competency*

Background

Assessment of learning is a necessary step in providing feedback to students on their learning and providing the institution valuable information for making programmatic changes. Assessment is defined as the process of gathering data to understand changes in students' knowledge, ability or attitude.[2,3] Assessment can take many forms. In the classroom, formative assessment is used to *provide* ongoing *feedback to the* instructor on how to improve teaching and to the student on how to improve learning. Likewise, summative assessments are employed in the classroom to assess student learning outcomes, and on a program level to assess program learning outcomes. For example, Standard 1.3 of the Professional Optometric Degree Standards adopted by the Accreditation Council on Optometric Education (ACOE) states: "The program must identify and use outcome measures to evaluate its effectiveness by documenting the extent to which its goals and objectives have been met and must use such assessment to improve its performance."[4] As part of the ACOE standards 1.3 and 1.4, programs are obligated to assess:

- passage rates on the National Board of Examiners in Optometry licensure exams
- graduation rates
- attrition rates

Although these are important metrics for gauging the education effectiveness of an institution, they provide little perspective about the students' experiences. To address this gap, professions such as allopathic medicine have annually administered the Medical School Graduation Questionnaire (GQ), which serves as a tool for program evaluation and feedback on how to improve the medical student experience.[5] Rickards et al. noted the limitation with most graduate medical education surveys is the lack of reliability and validity evidence on the survey tool; however, the GQ has been assumed to be valid because of its employment since 1978 and its many uses within education research.[6-9]

In 2000, Heath et al. published an initial report outlining attributes of a U.S.-trained optometric graduate.[10] Rather than documenting education effectiveness through the number of clock hours spent

or resources dedicated to learning, the report took a more contemporary view by focusing on outcomes that graduates are expected to demonstrate. In 2011, the Association of Schools and Colleges of Optometry (ASCO) revised the competencies to reflect current practices.[1] Similar to learning objectives, graduate attributes are orienting statements used to describe the profession's expectations of graduates.[11] Institutions of higher learning have adopted the use of graduate attributes as a means of articulating to faculty, accrediting agencies and the workforce community alignment with expected knowledge and skills. Hughes and Barrie advocated for the use of student perceptions and longitudinal studies as part of the assessment of graduate attributes.[12] The purpose of this paper is to report on how students perceived their attainment of the ASCO graduate attributes and how the data has been used in curriculum review.

Methods

ASCO graduate attributes survey development

"Attributes of Students Graduating from Schools and Colleges of Optometry" contains a series of attribute statements that broadly define entry-level competencies expected of students graduating from a U.S.-based optometry program.[1] The document defines competency within three attribute areas: 1) professional values and ethics, 2) knowledge, and 3) skill. To assess students' self-perceptions of attainment of the ASCO graduate attributes, the skills domain was used because it encompasses both the cognitive and motor skills of a new Doctor of Optometry:[1]

- all the skills required for the diagnosis, triage, management and/or treatment of common visual conditions, including or resulting from:
    - refractive anomalies
    - abnormalities of accommodation, monocular or binocular vision skills, oculomotor and sensory/perceptual dysfunctions
    - ocular disease and trauma
    - prior ocular surgery and/or laser intervention
    - systemic disease
    - environmental or occupational conditions
- the ability to order and interpret frequently needed laboratory and diagnostic procedures
- the critical-thinking skills needed to assess the patient's visual and physical status and to interpret and process the data to formulate and execute effective management plans
- the ability to prescribe or use ophthalmic materials, contact lenses, vision therapy, low vision devices, pharmaceuticals and certain surgical procedures to treat and manage vision disorders and disease
- an understanding of nutritional influences on ocular physiology and systemic health and disease
- the ability to understand, evaluate and apply the use of contemporary imaging technologies in the provision of eye and vision care
- the ability to recognize and initiate the coordination of patient care requiring advanced medical, systemic, interprofessional or specialty care
- the ability to recognize life-threatening conditions and to initiate immediate intervention
- effective communication skills, both oral and written, as appropriate for maximizing successful patient care outcomes
- the ability to appropriately use all resources, including the use of ancillary personnel, intra- and interprofessional collaboration, co-management and referral, in ensuring the best quality patient care
- the ability to access evidence-based knowledge (including through the use of information technology) and manage information, and to apply that information in making decisions about patient care and healthcare delivery
- the ability to embrace the cultural diversity and individual differences that characterize patients,

populations and the healthcare team
- the ability to work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services

Table 1. Click to enlarge

Ten survey items **(Table 1)** were created from the skills domain list and were embedded within the Southern California College of Optometry at Marshall B. Ketchum University (SCCO) Graduating Class Exit Survey where students responded based on a four-point Likert scale ranging from Strongly Disagree, Disagree, Agree and Strongly Agree.

Survey development and deployment

The SCCO Graduating Class Exit Survey was designed to learn from the graduating students' opinions about their didactic and clinical education, career aspirations, satisfaction with student affairs services, and treatment during optometry school. The questionnaire was based on the types of questions asked in the GQ, which include:[5]

- pre-clinical, clinical and elective experiences
- general medical education and readiness for residency
- student services
- experiences of negative behaviors
- financial aid and indebtedness
- career intentions
- strengths of the medical school and areas that need improvement

Beginning in the 2014-2015 academic year, students completed the SCCO Graduating Class Exit Survey **(Appendix A)**. Students from the graduating classes of 2015, 2016 and 2017 were invited to respond to the exit survey. The class of 2015 had 96 members, the class of 2016 had 96 members, and the class of 2017 had 101 members. Students volunteered to respond to the exit survey during the week leading up to the commencement ceremony (May of each year) and were assured their responses would be anonymous. The survey was posted on the MyCoursEval (Invoke Solutions, Waltham, MA) portal for each class. The survey remained open until the day after the ceremony, with an initial invitation and two email reminders. The process was the same for all classes.

An application was submitted to the Institutional Review Board at Marshall B. Ketchum University, and the research was found to be exempt due to the anonymity of the survey.

Statistical methods

Descriptive statistics (mean, distribution and standard deviation) for each survey item were generated by the MyCoursEval software. Questions using a four-point Likert scale were designated with "Strongly Agree" equal to a numerical score of four and "Strongly Disagree" equal to a numerical score of one. A one-way analysis of variance (*ANOVA*) was performed to assess statistical significance between the three graduating classes with statistical significance set at a p-value less than 0.05.

Survey responses from all three graduating classes were also aggregated to assess areas of strengths and weaknesses with the following definitions:

- 90% or above of responders agreeing or strongly agreeing with a survey statement = an area of strength
- 80-89% percent of responders agreeing or strongly agreeing with a survey statement = an area to

monitor
- less than 80% of responders agreeing or strongly agreeing with a survey statement = an area to focus on change

Results

Subjects

Refer to **Table 2** for the survey response rates from each class. From the class of 2015, 76 responses (79%) were recorded. From the class of 2016, 59 responses (61%) were recorded. From the

Table 2. Click to enlarge

Table 3. Click to enlarge

class of 2017, 29 responses (29%) were recorded.

Based on ASCO Annual Student Data Reports, the demographics of the SCCO class of 2015 were 66.7% (n=64) female and 33.3% (n=32) male.[13] The ethnic distribution of the class was 67.7% (n=65) Asian, 27% (n=26) White, and 5.2% (n=5) Black/Latino/other/unknown. The demographics of the class of 2016 were 77.1% (n=74) female and 22.9% (n=22) male. The ethnic distribution of the class was 46.9% (n=45) Asian, 34.4% (n=33) White, and 18.7% (n=18) Black/Latino/other/unknown. The demographics of the class of 2017 were 68.4% (n=67) female and 31.6% (n=31) male. The ethnic distribution of the class was 51.0% (n=50) Asian, 35.7% (n=35) White, and 13.3% (n=13) Black/Latino/other/unknown.

ASCO graduate attributes

Mean responses on the attainment of the ASCO Attributes of Students Graduating from Schools and Colleges of Optometry were reported by class year in **Figure 1**. Each class reported the highest mean (3.4 to 3.6) with question 17 (practice in a professional and ethical manner) and the lowest mean (2.4 to 2.5) with question 12 (order and interpret laboratory and diagnostic procedures).

The distribution of student responses were reported in **Table 3** along with the results from the one-way ANOVA analysis. The responses for individual questions were not statistically different among the 2015, 2016 and 2017 graduating classes (p=0.44 to 0.69).

When all responses for each survey item were combined **(Figure 2)**, students indicated the following as areas of strength (?90% strongly agree or agree):

- question 10 (95%): prescribe or use ophthalmic materials, contact lenses, vision therapy, low vision devices, pharmaceuticals and surgical procedures to treat and manage vision disorders and disease
- question 14 (96%): use written and oral communication that is understandable to patients, families and other healthcare team members
- question 16 (90%): engage in continuous professional and interprofessional development
- question 17 (99%): practice in a professional and ethical manner
- question 18 (95%): promote wellness and disease prevention services

The highest response came from practice in a professional and ethical manner (99%).

Figure 1. Click to enlarge

Figure 2. Click to enlarge

Students indicated the following as areas to monitor (80-89% strongly agree or agree):

- question 13 (82%): understand, evaluate and apply the use of contemporary imaging technologies in the provision of eye and vision care
- question 15 (83%): access evidence-based knowledge, manage information, and to apply that information in making decisions about patient care and healthcare delivery

Students indicated the following as areas needing improvement (<80% strongly agree or agree):

- question 11 (79%): recognize and initiate the coordination of patient care requiring advanced medical, systemic, interprofessional or specialty care
- question 12 (46%): order and interpret laboratory and diagnostic procedures
- question 19 (74%): work within an interprofessional collaborative team to improve patient outcomes

The two lowest responses came from ordering and interpreting laboratory and diagnostic procedures (46%) and working within an interprofessional collaborative team (74%).

Discussion

The American Optometric Association defines an optometrist as an independent healthcare provider who examines, diagnoses treats and manages diseases, injuries and disorders of the visual system, the eye and associated structures as well as identifies related systemic conditions affecting the eye.[14] Based on the results from the SCCO Graduating Class Exit Survey, students graduating from SCCO felt competent in fulfilling the core responsibilities of a Doctor of Optometry. Most students, but not all, felt competent with imaging technologies and implementing evidenced-based practice.

Working within an interprofessional collaborative team and recognizing and initiating the coordination of patient care requiring advanced medical, systemic, interprofessional or specialty care were areas identified for curriculum improvement. The mission of SCCO is to “educate caring, inspired healthcare professionals who are prepared to deliver collaborative, patient-centric health care in an interprofessional environment.”[15] In fulfilling the mission, students within the three programs at Marshall B. Ketchum University ? SCCO, College of Pharmacy, and School of Physician Assistant Studies ? began attending classes together in the 2015-2016 academic year in an effort to prepare future graduates for interprofessional collaborative practice. Students were enrolled in Medical Ethics (first year), Population and Public Health (first year), Evidence-Based Practice (second year), and Interprofessional Case Conferences (third year) so they could learn with, from and about each other.[16] In addition to classroom learning, complementary clinical experiences that model interprofessional collaborative practice are being developed. Because the students from the graduating classes of 2015, 2016 and 2017 did not complete the interprofessional education curriculum, the results from questions 11 and 19, coordination of care and work within an interprofessional collaborative team, serve as a baseline for evaluating the effectiveness of the interprofessional education curriculum.

Similar to the ASCO graduate attributes, the Medical School Objectives Project was developed by the Association of American Medical Colleges to describe the skills, attitudes and knowledge a graduating medical student should possess.[17] Promes et al. administered a survey to first-year medical residents and found that the variability in undergraduate medical school curricula resulted in varying levels of competence.[18] Sanders et al. made a similar observation when surveying medical school associate deans for academic affairs where the teaching and assessment of technical procedures had differing levels of rigor.[19] Question 12, order and interpret laboratory and diagnostic procedures, was identified as a skill needing additional instruction. Learning from the lessons from medicine, collaboration within the university’s other health professions, identifying and monitoring opportunities within clinical externship,

and more rigorous forms of assessment are all being considered.

Limitations

Although the administration of the exit survey was exactly the same for each class year, the response rates varied. The especially low response rate for the class of 2017 may have been the result of this cohort being particularly non-responsive to survey inquiries. Despite the different response rates and diminished number of responses with each class year (2015: 79%, 2016: 61%, 2017: 29%), there was good agreement among the responders to the survey items.

The results of the survey have limited generalizability due to the response rate and the sampling from one program's curriculum.

Conclusion

Chen et al. recommended that reform to medical education should be empirically based, and noted that little is known about how graduates feel regarding preparation for work and life as medical residents.[20] For SCCO, assessing the ASCO graduate attributes with other assessment data has helped provide a more holistic view in triangulating program learning outcomes.

Gehlbach et al. recommended a seven-step process for education research survey development, which includes a final step of pilot testing.[21] The information learned from the SCCO Graduating Class Exit Survey can serve as pilot testing for future study consideration expanding the assessment of graduate attributes across graduating students from all ASCO member institutions.

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Appendix A. Click to enlarge

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PEER REVIEWED

Standardized Tests as Predictors of Success in Health Professions Education: a Scoping Review

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Abstract

Standardized examinations were created to evaluate student academic aptitude and eliminate bias from college admissions. The validity of standardized examinations in predicting student success in doctoral health professions education has been minimally explored. A scoping review was conducted to determine what is known about the predictive value of standardized tests in doctoral health professions education in the United States and Canada. A total of 323 titles and abstracts were reviewed for inclusion and exclusion criteria. Fifteen full-text articles were ultimately chosen for inclusion in this study. The results indicate conflicting data and underscore the necessity for further research in this area.

Key Words: *doctoral health profession, standardized exam, academic success*

Background

Standardized testing is used as a formal assessment of academic ability in order to predict student success in higher education at both the undergraduate and graduate levels. Standardized tests differ from in-class assessments of knowledge because they are administered in a controlled environment, thus allowing for comparison of student performance that is presumably independent of socioeconomic status (SES), gender and race. Two supporting arguments for standardized testing assume that the standardization process eliminates potential for bias and that standardized tests can accurately assess students' intellectual ability.[1]

The first large-scale standardized tests were administered in 1901 by the College Entrance Examination Board, which is known today as the College Board.[2,3] One reason for creating and administering the tests was to reduce the volume and variety of pre-matriculation exams required by each undergraduate institution.[2,3] Due to a national push to mandate aptitude tests for college admission, the College Board administered the first Scholastic Aptitude Test (SAT) in 1926 to thousands of students.[2,3] In 1959, the American College Testing Company administered the ACT for the first time.[2,3] Shortly after the first administration of the SAT, American graduate institutions followed suit. The first Medical College Admissions Test (MCAT) was given in 1928, the first Graduate Record Examination (GRE) in 1949, and the first Law School Admissions Test (LSAT) was given in 1948.[2,4] The first Optometry College Admission Test (OCAT) was developed in 1971 by the Psychological Corporation under the sponsorship of the Association of Schools and Colleges of Optometry and was administered for the first time in the fall of 1972.[5]

Despite attempts to eliminate bias from standardized examinations, many in academia argue that requiring standardized exams for admission into undergraduate and graduate programs significantly disadvantages students of female gender and lower SES and those in under-represented minority (URM) groups. Miller and Stassun argue that requiring the GRE significantly decreases the opportunities for women, URM students and lower SES students to enter the science, technology, engineering and math (STEM) professions.[4] They point out that the Educational Testing Service, which administers the

GRE, publicizes that women score 80 points lower in the physical sciences than men, and African Americans score 200 points below white test-takers on the exam.[4]

Moneta and Koehler report that students with low SES perform worse on standardized exams, possibly due to lack of access to academic preparation and lack of funds to pay for exam retakes if the first score is low.[6] Nankervis argues that the SAT underestimates future success of female test-takers because males average 35 points higher than females in the mathematics section.[7] In another publication, Wilson discusses a study demonstrating that metrics-based file reviews of applicants excluded twice the number of applicants who identified as historically URM, and moving away from metrics-based admissions processes resulted in a remarkable increase in admission of URM students to a doctoral biomedical science program.[8] Wilson also reiterates that women and URM students score lower on the GRE than white and Asian-American men; therefore, using GRE scores to stratify doctoral applicants significantly reduces the diversity of the applicant pool.[8]

In addition to the reported bias against women, URM students and students of lower SES, there are conflicting reports about the ability of standardized exams to predict academic success at both the undergraduate and graduate level. Kuncel argues that standardized exams are effective predictors of performance in graduate school but the combination of standardized exam scores and undergraduate grade point average (uGPA) gives the most accurate prediction of academic success.[9] He also states that student motivation and interest are crucial for continued exertion throughout graduate school and cannot be measured with standardized exams.[9]

In contrast, Miller and Stassun argue that there is a weak correlation between the GRE and success in STEM fields.[4] They point out that research from the Educational Testing Service shows that the predictive validity of the GRE is limited to first-year graduate grade point average (gGPA) but academic success is much broader than first-year gGPA.[4] Academic success encompasses first-year gGPA, gGPA, degree attainment, licensing examination performance, faculty evaluation of students, residency attainment and completion, and numerous other outcomes that cannot be predicted by GRE scores.[4]

Similarly, Moneta-Koehler and colleagues found that GRE scores are moderate predictors of first-semester graduate grades and weak to moderate predictors of overall gGPA.[6] They also found that the GRE does not predict other skills necessary to succeed in biomedical doctoral programs and concluded that the limited benefits of the GRE do not outweigh the expense of excluding URM students and students of lower SES from entering graduate biomedical doctoral programs.[6]

Table 1. Click to enlarge

While a reasonable amount of literature about the ability of standardized exams to predict success in biomedical graduate programs exists, current studies exploring the validity of standardized exams in predicting academic success in doctoral health professions programs are relatively scant, particularly in the field of optometry.[5,11-18] To gain insight into how many doctoral health professions programs require standardized exams as part of their admissions requirements, the authors first identified 12 health professions to explore, including optometry, dentistry, allopathic medicine, osteopathic medicine, podiatry, audiology, physical therapy, veterinary medicine, occupational therapy, pharmacy, acupuncture and chiropractic programs. Nursing was not included due to the wide range of doctoral-level nursing programs, the diverse pathways to attainment of doctoral degrees within the nursing profession, and the differing requirements for each program. Once the programs for inclusion were identified, their respective standardized test requirements were summarized **(Table 1)**.[10]

As suggested by Arksey and O'Malley, a scoping review methodology is well-suited for four primary

contexts.[19] The review question undertaken in this research addresses three of the four circumstances identified: 1) to examine the extent, range and nature of research activity; 2) to summarize and disseminate research findings; and 3) to identify research gaps in the existing literature. This project utilized a scoping review methodology to gain a deeper understanding of the current status of standardized testing in health professions admissions processes, along with any research evaluating the predictive power of pre-admissions standardized test results for ultimate academic and/or professional success. Furthermore, this research seeks to summarize what is currently known by gathering and assessing published works relevant to this inquiry, and upon review of the summary, to identify needs for further research on this topic.

Methods

The scoping review methodological framework adheres to the guidelines suggested by Arksey and O'Malley and was conducted as an iterative process following the five suggested stages: Stage 1: identifying the research question; Stage 2: identifying relevant studies; Stage 3: study selection; Stage 4: charting the data; and Stage 5: collating, summarizing and reporting the results.[19]

The investigators determined the inclusion and exclusion criteria prior to searching the literature. The inclusion criteria focused specifically on scholarly, peer-reviewed indexed literature describing information related to health professions education, admissions to health professions education programs, and standardized testing. The time period for inclusion was limited to the past 10 years, and language was limited to English. Only articles published about health professions education in the United States and Canada were included due to potential differences in health professions education relative to governmental, regulatory, economic and cultural factors in countries outside North America.

Articles with a focus on non-health professions programs, such as biomedical sciences, and articles from gray literature sources were excluded. Gray literature was defined as a thesis, dissertation, non-peer reviewed study, conference proceeding or editorial. It was noted that one article could have multiple reasons for rejection. To establish clearly defined guidelines for rejection, each reason was enumerated. In each case where a paper was excluded, the primary reason for rejection was noted.

Literature search

A combination of methods was used to locate articles for this scoping review. Keywords were used to retrieve the broadest possible number of articles related to the research question, and controlled language was used to construct a narrow, defined search strategy. A discussion among the investigators, serving as content experts, and two vision science librarians, serving as technical experts, reviewed the research question in depth and resulted in a listing of the following keywords for a broad search: educational measurement, school admissions criteria, academic success, GRE admissions health professions, standardized testing graduate education. A review of the controlled language **(Table 2)** available in electronic databases was conducted using the keywords to locate appropriate terms to create focused search strategies. All keywords, controlled language terms and subsequent search strategies were vetted by both vision science librarians.

The databases included in the study were selected based on library subscription, availability of controlled language search option, and comprehensive coverage of the topic. The investigators and the consulting librarians determined which search filters **(Table 3)** would yield the best, most relevant results. The searches of the following databases were conducted in August 2019: PubMed/Medline, Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Cochrane Library.

All searches for all databases were filtered for English-only articles published in the past 10 years. Embase had the following additional filters added: Embase-only articles, articles in press, and review-

only articles. After a review of the keywords, the controlled language terms were chosen to best retrieve search results that were focused more on the topic being searched.

Table 2. Click to enlarge

Table 3. Click to enlarge

Inter-rater reliability calibration

After mechanical and manual de-duplication of all articles resulting from the full electronic search, all investigators participated in a calibration session to determine inter-rater reliability. In this session, 14 abstracts were reviewed to gauge inter-rater reliability regarding the application of the inclusion and exclusion criteria. This session took place prior to the title, abstract and full-text review. The decision-making process for each of the articles reviewed was documented on a case-by-case basis then summarized to identify major categories for the reasons to include or exclude an article. Through discussion, the investigators' inter-rater reliability for title/abstract review was able to reach 100% agreement.

After calibration, each investigator reviewed two-thirds of the titles and abstracts, with two investigators randomly assigned to each article. If consensus was reached by two of the investigators to either include or exclude an article, that action was immediately taken. If there was no consensus, the third investigator was used as a tiebreaker to determine final inclusion or exclusion of the article. Once a full consensus was achieved regarding every article, each investigator was randomly assigned 11 full-text articles for a thorough review.

As suggested by Arksey and O'Malley, data extracted from each source were charted and entered into a data-charting form using the database program Excel. Data were charted independently by each investigator with confirmations by co-investigators when questions arose. Data charting focused on summarizing each publication's process and methodology, predictors and outcomes. For each source included in the scoping review, the following variables were included: authors, year of publication, study location (to ensure United States or Canada), health professions studied, study design utilized, standardized admissions test evaluated, outcome measures or indicators of success and means of measuring outcomes, statistical test, results and significance level, and the publication's main conclusions.

Results

A total of 323 articles underwent title and abstract review by two authors to determine inclusion for full article review. Of the 323 articles reviewed, the two authors agreed on 305 (94.4%) of the articles, with 18 (5.6%) articles requiring a title and abstract review by the third author. Of the 18 titles and abstracts that underwent a review by the third author, five were accepted for the full article review, resulting in a total of 33 articles accepted for full article review and 290 rejected articles. The primary reasons for rejection were summarized in **Table 4**. After the full article review, 18 additional articles were excluded for the reasons summarized in **Table 5**. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart[20] for this review can be found in **Figure 1**.

Table 4. Click to enlarge

Table 5. Click to enlarge

The final scoping review was completed for a total of 15 papers **(Table 6)**. The six different health professions represented in the 15 papers included in the scoping review were pharmacy (5 papers),

dental medicine (3 papers), veterinary medicine (2 papers), physical therapy (1 paper), allopathic medicine (3 papers), and allopathic medicine combined with PhD (1 paper).

Figure 1. Click to enlarge

Four different standardized tests were represented in the papers included in the scoping review: GRE (four articles), Pharmacy College Admission Test (PCAT – five articles), Dental Admission Test (DAT – two articles), and MCAT (four articles).

The majority of papers included in the scoping review assessed more than one primary outcome variable. Eleven of the papers included some assessment of the association between standardized tests and gGPA, including the ability to predict the gGPA at different points in the program, such as at the time of graduation, in the first-year curriculum, multiple years in the program, or for specific courses such as basic science courses or clinical evaluations. Eleven of the papers evaluated the association between standardized tests and performance on board examinations. Three papers evaluated the predictive value of standardized exams on residency success. One paper evaluated the predictive value of the MCAT on gGPA, time to defend PhD, board scores, publication number and career outcomes.

Ten of the papers reported positive findings. The DAT, GRE, MCAT and PCAT were all found to be predictive of board examination results.[21-26] The GRE, DAT and PCAT were found to be positive predictors of gGPA.[25,27-29]

Five of the papers reported somewhat mixed results. For example, it was found that the PCAT was predictive of gGPA; however, PCAT scores were inadequate when used alone.[30] PCAT scores were also found to be less strongly predictive of pharmacy program GPA than the uGPA.[31] One paper found that PCAT scores were predictive of pharmacy program GPA but not predictive of board examination results.[28] Similarly, another paper found that the DAT was less predictive than the uGPA for the gGPA.[27] One paper found that the GRE indirectly predicted board scores via the gGPA.[32] Thus, in essence, the gGPA was more predictive of board scores than the GRE.

Three papers did not find an association between a standardized test and the outcome of interest. In two studies, the MCAT did not predict board examination results or gGPA.[33,34] In one study, the GRE did not predict specialty board results.[35]

Table 6. Click to enlarge

Several limitations are noted for this scoping review. The review did not yield any optometry-specific literature using the databases that the investigators chose; thus, optometry-specific literature was not included in the scoping review. Additionally, the review focused only on graduate, doctoral-level health professions in the United States and Canada. Other research for non-doctoral-level professions as well as research in other countries may have provided additional insight into this research question. The authors decided not to include literature about nursing programs due to the wide range of programs and varying pathways to degree attainment within the profession as it differs greatly from the traditional academic trajectory of an optometry student. Including studies from doctoral nursing programs may add additional insight about the question at hand. The time frame for inclusion in the scoping review was limited, and publications before and after the period of the review may provide additional information. The scoping review used qualitative techniques for interpreting the data and did not employ quantitative methods. Additional research on this topic might have been found by including published abstracts, conference proceedings or other sources of gray literature. Despite these limitations, this scoping review seeks to shed light on a topic of great interest for the profession of optometry, particularly due to the paucity of current research on this topic as it relates directly to optometric education.

Discussion

Standardized tests have been used to assess academic aptitude in order to determine student preparedness for higher education. Initially designed to minimize potential for bias and increase accuracy in assessing students' intellectual ability, standardized tests have come under increasing scrutiny due to possible bias against low-income, minority and female students. In addition to this drawback, many have questioned the true ability of standardized exams to predict student success, particularly in under-represented populations. The purpose of this study was to conduct a scoping review of the ability of standardized tests to predict success in doctoral health professions programs in order to shed light on the role of these exams for admission into optometry school.

The results of the scoping review suggest that health professions programs are invested in evaluating the predictive value of standardized testing as a tool to be utilized in the admissions process. Most of the publications included in this scoping review assessed the relationship between standardized testing and academic achievement within a specific health professions program. Few publications carried the assessments further into correlations with ultimate success in clinical practice. The publications included in this scoping review demonstrate disagreement about the value of standardized exams in predicting success in doctoral-level health professions education.

The limited number of articles included in this scoping review suggests that there is not an abundance of solid evidence to support the value of standardized testing for admissions decision-making in the health professions. There certainly appears to be some evidence of the value of standardized exams to predict academic success, but the magnitude of the potential benefits of testing has not been compared to the potential costs of limiting access to, and perpetuating bias against, under-represented student groups. Because the predictive value of standardized exams cannot be compared for applicants who did not matriculate into a health professions program, there is no means of knowing how many of those candidates would have been successful in the programs they were denied entrance into based on their exam scores. There is also no way to measure the ultimate impact on the pipeline of healthcare providers and the public who would have been served by the individuals who were denied entrance into the various programs.

Since the first administration of the OCAT in 1972 (which was renamed Optometry Admission Test in 1987), few studies have explored the ability of the exam to predict success in optometry school.[5,11-18] Out of eight studies that looked at the predictive value of the OAT, four studies used the first- and second-

year optometry GPA as the main outcome measures.[5,12,14,17] Another four studies looked at additional outcome measures, including class rank at graduation, clinic performance, cumulative 4-year GPA, and National Board of Examiners in Optometry (NBEO) Part 1 performance.[10,11,13,16,18] Three of these studies were published in the year 2000 or earlier, which makes extrapolating the results to today's optometry students extremely problematic as substantial changes have been made to both the OAT and individual program curricula since the studies were conducted. These circumstances highlight the necessity for updated research on this topic so that optometry admissions committees do not continue to rely on outdated information to guide their admissions policies. Until such studies come to fruition, it behooves optometric institutions to look at what is currently known in other doctoral health professions about the role of standardized exams in predicting academic success that is not limited to first- and second-year gGPA. This scoping review aims to achieve exactly that, and its findings can be utilized by optometric institutions until new optometry-specific research comes to light.

Of particular interest to the authors of this study is the value of standardized examinations in admissions decisions for schools and colleges of optometry. While optometry programs continue to review the potential benefits and limitations of the OAT, until very recently all 23 schools of optometry in the United States required a graduate entrance exam as part of their admissions criteria. Historically, all 23 programs required the OAT, but in recent years many optometry schools have started to accept other graduate entrance exams in lieu of the OAT, including the GRE, DAT, PCAT and MCAT.[10] While several studies suggest a positive predictive value of the OAT for academic success in optometry school,[5,11-18,36] the shift away from the OAT by many optometry schools leads one to ask what predictive power the exam truly has for ultimate student success, and whether requiring an entrance exam negatively affects the diversity of the student body across all 23 programs. Furthermore, given the fact that many optometry schools are now accepting the GRE, DAT, PCAT and MCAT in lieu of the OAT, the results of this scoping review provide timely and valuable information for optometric institutions by looking at their predictive value for success in other doctoral health professions where the exams have been utilized for far longer.

There is certainly an increasing move away from requiring standardized examinations across many disciplines, including the health professions, due to several reasons. If the recent decision by Indiana University School of Optometry (IUSO) to move toward test-optional admissions requirements is any indication, the profession of optometry may start to follow suit. One of IUSO's motives for the pivotal change is its finding that "test scores are becoming a weaker predictor of future academic success,"[37,38] which is at least partially consistent with the results of this scoping review. In light of this, the glaring lack of optometry representation in the literature search on this topic is greatly concerning. It needs to be ameliorated with future research so that optometry admissions committees have sound and current data on which to base their admissions decisions so they may ensure student success in their programs without affecting the diversity of their graduates.

Conclusion

This scoping review demonstrates the limited body of research on a critical topic and highlights the need for further exploration to fully understand the complexities of the value of standardized testing as part of the admissions process for doctoral health professions programs, particularly for the profession of optometry. The paucity of studies on this topic, particularly in regard to optometry, is troubling due to the ever-increasing demand for qualified and diverse healthcare providers. Understanding the framework of doctoral health professions education and the lessons that have been learned by other doctoral health professions will help guide decision-making by optometry admissions committees until new and relevant optometry-specific research is published. The current studies that exist on this topic suggest conflicting data about the ability of standardized exams to predict student success in doctoral health professions education. This finding makes it even more critical to invest in research on this topic as standardized exams can heavily disadvantage certain student populations, thus negatively impacting the profession of

optometry by decreasing the diversity of the healthcare provider force.

Of particular interest to the authors is the ability of standardized exams to predict student success in optometry school and future clinical practice. There exists a dire need for longitudinal research comparing students admitted with and without the OAT and their success in school and in future optometric careers. Retrospective analyses of longer-term outcomes, such as on-time licensure, NBEO success on first attempt, residency placement or measures of “practice success” linked back to pre-matriculation variables, including standardized test scores, will shed more light on the value of standardized exams in the optometry admissions process. Furthermore, due to the growing utilization of the GRE, DAT, MCAT and PCAT in lieu of the OAT for optometry school admissions across many institutions, it is imperative for similar research to be conducted about the validity of those exams in predicting short- and long-term success outcomes for optometry students. Until such research comes to realization, the current scoping review provides vital information about the utility of these exams in predicting success in other doctoral health professions. Prospective comparison within and between programs for policies of test-optional or test-agnostic admissions vs. traditional requirements for OAT would yield tremendous information that admissions committees could utilize when selecting students into their programs. Additionally, case studies to further elaborate on perceived barriers and biases associated with the OAT are necessary to complete the picture of why this research needs to be conducted in the first place.

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Features

In an Upcoming Issue

Educator’s Toolkit to Address Universal Design for Learning

Desiree Ifft | Optometric Education: Volume 47 Number 1 (Fall 2021)

In an upcoming issue of *Optometric Education*, the Educator’s Toolkit feature will focus on Universal Design for Learning (UDL) and UDL concepts that optometric faculty can incorporate into our instructional repertoire.

Based on scientific insights into how people learn, UDL is a framework designed to provide a flexible learning environment in which the instructional needs of all students can be met. Such a framework can decrease barriers to learning, which is an important goal as the demographics and backgrounds of students entering post-secondary education programs continue to change.

Educator's Podium

Optometric Case Vignettes for the Clinical Preceptor

Amy Moy, OD, FAAO, CPCO, Jennifer Reilly, MS, OD, FAAO, and Linda Pham, OD, FAAO | *Optometric Education: Volume 47 Number 1 (Fall 2021)*

Third-year optometric interns generally enter their clinical rotations at a point in their education where they are making the transition from thinking as students to thinking as clinicians. This transition is reflected in how they present their cases to their preceptors, as well as in the quality of their assessments and plans. Historically, healthcare disciplines have used case studies to enhance knowledge base and clinical proficiency. Optometry is no exception, and students have been shown to learn well from hands-on opportunities to report to their preceptors and receive feedback from them.

As preceptors in a community health center setting, we decided to develop nine case vignettes to test whether leading our students through practice scenarios would equip them to make the transition more quickly. The healthcare landscape is focused more than ever on productivity, and preceptors must constantly balance this with teaching their interns. While the Teaching Case Reports currently published in the journal *Optometric Education* are effective tools for teaching when adequate time is available, preceptors often have only 5-10 minutes at a time to have teaching moments during the daily course of patient care. The vignettes we developed enable us to present extra material to the students for testing themselves (with no grading) on their entering status in presenting cases or writing management plans.

The vignettes are based on actual patients seen in the clinic, and we adjusted them to be theoretical case scenarios that test student readiness to handle complex situations involving analytical thinking and pattern recognition. Examples include knowing what to do with a patient taking hydroxychloroquine, recognizing increased intraocular pressure and understanding what needs to be done for follow-up, and awareness of the philosophy of refraction. The nine case vignettes form our “case bank,” and we also developed an answer key with discussion questions and references to serve as a Preceptor Guide.

Multiple preceptors in two different clinical settings tested the case vignettes, with the same results. Students reported the cases to be helpful exercises in the real-time clinical setting.

Evaluation of the Usefulness of the Case Vignettes

To test the case vignettes, preceptors presented nine of them (with intentionally varied topics and level of complexity) to third-year optometry students at two different clinical sites. The initial presentation of the exercise included this summary of basic principles for writing assessments and plans:

1. Every diagnosis should have a matching plan, even if it is to just monitor yearly.
2. Chief complaint should be listed as first assessment.
3. Think of an assessment as the problem and the plan as the action we are taking. For example, “dry eye” is the assessment and “Rx Refresh Optive ophthalmic solution 1 drop TID OU” would be the plan, because it’s the action we are taking to address the problem.
4. Your assessment should reflect the diagnosis for which you are coding on a billing sheet/screen. The primary diagnosis would be the first assessment listed.
5. Sometimes you don’t know the diagnosis, but can write “diagnosis A vs. diagnosis B” and create a plan to do further testing.
6. Do not list a test as the first work in your diagnosis. “HVF normal” is not appropriate as an assessment. “Hx of long-term therapy with Plaquenil x 6 years; HVF 10-2 today within normal limits” is appropriate.
7. Even if a test is normal, sometimes you need to list it in your assessment and plan. “History of retinal detachment s/p laser repair 2011 OD” is very appropriate to list as an assessment further

down your list. This way you are aware of it the following year. Another example is “History of narrow angles, open to gonioscopy in 2017 OU” or “History of uncontrolled Type II diabetes mellitus with no retinopathy or CSME.” All of these have an impact on subsequent exams.

The students were split evenly into an experimental group and a control group with a mix at both sites. Before and after the exercise, both groups completed a survey about their comfort level developing an assessment and plan using a 5-point Likert-style scale. They also rated the nine cases on level of difficulty using a 5-point scale as part of the conclusion survey following the study. The study group received three cases from the bank per week, developed an assessment and plan based on the cases provided, then participated in small group discussions about the cases. The small group discussions were outlined to address the knowledge base of the topic, analytical thinking skills, development of differential diagnosis, and final development of an assessment and plan. This pattern continued over 3 weeks until all nine cases were reviewed. The control group then received the same cases after the “study period” so that no students were deprived of a potential learning activity.

Our initial hypothesis was that third-year optometry interns who were given formal guidelines on writing assessments and plans at the beginning of the semester rather than 1 month into their rotation would show a faster learning curve for developing their management plans. As the exercise went through 2 full years of interns, we found no significant difference between the control group (receiving the exercise 1 month into the rotation) vs. the experimental group (receiving 3 cases each week for the first 3 weeks). Our team believes that one factor that negated the difference in timing could be the need for adjustment and acclimation to a new clinical environment and electronic health record system. Therefore, it appears appropriate to allow time for adjustment to the new clinical setting before issuing these case vignettes.

Both groups reported improved comfort in writing an assessment and plan over the 3-week study period. Students consistently said that they found the exercise helpful during any semester. They saw value in hearing what their peers added to each other’s management plans, working toward a collective goal of a comprehensive plan. During the first few cases, some students were timid, but it was evident that the small group setting was less threatening and more comfortable for them to make mistakes or forget to include a certain element. Students started volunteering to read their plans more readily toward the end of the nine cases.

We received other useful feedback about the exercises as well, such as the students’ appreciation of being able to review concepts they had learned in the classroom.

How to Apply These Exercises

Preceptors can release three cases at a time, asking students to use each case as a worksheet. Our students have either written on the side of the case, used a separate notebook or paper, or typed their management plans. This exercise can also be used as a way to improve case presentation skills. In that situation, the case findings would be handed to the students, and they would be given a set amount of time to read the exam details before role-playing in presenting the case to the preceptor.

For management writing, here are some options for proceeding:

1. With 10-15 minutes available in the clinic, gather the students to discuss their assessment and plan, asking for one volunteer per case. (We did not read the case out loud again, in the interest of time, but quickly summarized before discussing the plan.) Each case discussion can take anywhere from 5-25 minutes, depending on case complexity and tangential discussions.
2. Read out loud or present on the screen partial exam findings up to a certain point to quiz students on what further testing may be necessary.
3. The exercise can be used as a worksheet that is turned into the preceptor who reviews it and

hands back written comments. However, discussion is highly encouraged when handing comments to the student.

The Preceptor Guide is used for leading discussions and creating new side discussions based on points raised by the students. We have developed common “side trip” discussions to facilitate deeper analysis. A survey can be done pre- and post-exercise to measure learning outcomes for the students’ comfort level in writing management plans or presenting case findings.

To request copies of all the cases currently in our case bank, email Dr. Amy Moy or Dr. Jennifer Reilly.

Case 1 and Sample Preceptor Feedback for Student

Figure 1 shows Case 1 as presented to the students. **Figure 2** shows one student’s response. The following preceptor comments were conveyed verbally to the student in a mini-discussion setting.

Figure 1. Case 1 as presented to the students. Click to enlarge

Figure 2. One student’s worksheet in response to Case 1. Click to enlarge

From Dr. Moy: This looks very comprehensive. I would use caution to order the assessment items in order of how we would code for this exam. Since this exam is a routine eye exam and the patient’s chief complaint is blurry vision with glasses, then the refractive error item goes first. I would include dry eye in tandem with the meibomian gland dysfunction (MGD) diagnosis, and rate the severity of this condition as moderate severe, due to the low TBUT and 1+ MGD. I like that the student included the brand of artificial tear recommended to the patient. This is really key when we follow up on her dry eye symptoms later on and potentially adjust the kind of drops used. The presence or lack of macular edema should also be noted in the assessment and plan for any diabetic patient. I like how the cataract findings were written such that it’s clear that there is visual impact and there is a plan to follow up due to the progression of the cataract density.

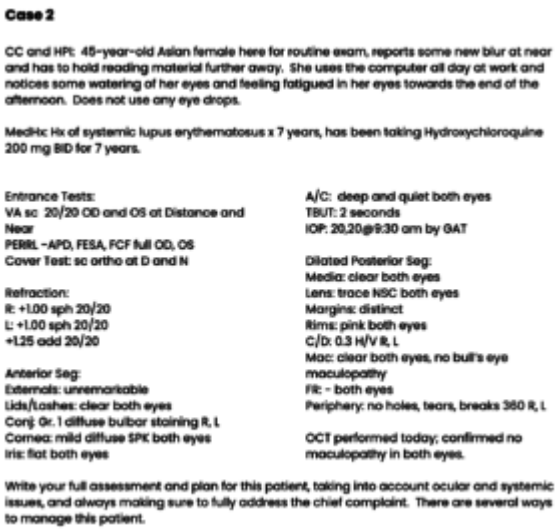
From Dr. Reilly: This is very thorough, but I would aim to make some of the plan components more concise. For example, the blood sugar education under the refractive error can likely be excluded in that line item since it is already discussed under diabetes in assessment #2. The diabetic line item should also specify presence or absence of macular edema. I often do not comment on mild pingueculae in an assessment unless there is an abnormality present to be addressed. I would reorder the assessment items to reflect the refractive error first, and then work my way anterior to posterior segment addressing any medical diagnoses.

From Dr. Pham: The cataract grade is appropriate for the patient’s age; therefore, it is not “likely related to uncontrolled diabetes,” and there is no evidence for that. Cortical cataracts are more likely related to diabetes than nuclear sclerotic cataracts. I would comment on whether or not the cataracts are visually significant, which would determine whether or not a referral is warranted. I would recommend UV eye protection to reduce cataract progression. For diabetes without retinopathy, it is missing right, left, or both eyes. It is also important to note whether or not there is CSME and include last A1c and last glucose reading. It is important to include how many years the patient has had diabetes, as this determines their level of risk. Additionally, it is good to mention whether or not it is controlled or uncontrolled. Meibomian gland dysfunction is missing the right, left, or both eyes. There is a dry eye

component, since there is reduced TBUT, so it should include type, severity, and diagnosis of dry eye.

Case 2 and Sample Preceptor Feedback for Student

Figure 3 shows Case 2 as presented to the students. **Figure 4** shows one student's response. The following are sample preceptor comments.



Case 2

CC and HPI: 45-year-old Asian female here for routine exam, reports some new blur at near and has to hold reading material further away. She uses the computer all day at work and notices some watering of her eyes and feeling fatigued in her eyes towards the end of the afternoon. Does not use any eye drops.

MedHx: Hx of systemic lupus erythematosus x 7 years, has been taking Hydroxychloroquine 200 mg BID for 7 years.

Entrance Tests:
VA sc: 20/20 OD and OS at Distance and Near
PERRL -APD, FESA, FCF full OD, OS
Cover Test: sc ortho at D and N

Refraction:
R: +1.00 sph 20/20
L: +1.00 sph 20/20
+1.25 add 20/20

Anterior Seg:
Externals: unremarkable
Lids/Lashes: clear both eyes
Conj: Gr. 1 diffuse bulbar staining R, L
Cornea: mild diffuse SPK both eyes
Iris: flat both eyes

A/C: deep and quiet both eyes
TBUT: 2 seconds
IOP: 20,20@9:30 am by GAT

Dilated Posterior Seg:
Media: clear both eyes
Lens: trace NSC both eyes
Margins: distinct
Rims: pink both eyes
C/D: 0.3 H/V R, L
Mac: clear both eyes, no bull's eye maculopathy
FR: + both eyes
Periphery: no holes, tears, breaks 360 R, L

OCT performed today; confirmed no maculopathy in both eyes.

Write your full assessment and plan for this patient, taking into account ocular and systemic issues, and always making sure to fully address the chief complaint. There are several ways to manage this patient.

Figure 3. Case 2 as presented to the students.
Click to enlarge

Figure 4. One student's worksheet in response to Case 2. Click to enlarge

From Dr. Moy: This student made a great start. She has hit the right elements of the assessment and plan. I would ask her what testing needs to be done to confirm a separate Rx for computer glasses. I would also ask her about what it means when a patient has lupus and dry eye, in terms of next steps for long-term treatment (testing for a secondary Sjogren's syndrome and considering Restasis or Xiidra). I would also discuss considering inclusion of the cumulative dose in her assessment for the history of hydroxychloroquine treatment. She should be complimented for recognizing that it is an Asian patient and that an HVF 24-2 may at first be more appropriate than an HVF 10-2 for extramacular defects.

From Dr. Reilly: Wonderful attempt at the assessment and plan. I like the specification of latent hyperopia due to uncorrected 20/20 vision in each eye. I might have cut the script slightly at distance and wrote the Rx in bifocal/progressive form to allow for other glasses purchase options. I do agree with the student on performing a 24-2 instead of a 10-2 for a patient taking hydroxychloroquine of Asian descent, but I would have them back in 2-4 weeks for a baseline rather than 1 year. I would also list the cumulative dose of the medication and daily dose by weight if that information is available. Finally, I would have recommended a specific artificial tear and visual hygiene on the computer as the student did, but I would not have recommended warm compresses due to no evidence of meibomian gland dysfunction.

From Dr. Pham: This is a very detailed and thought-out assessment and plan. I would disagree that the severity of dry eye is "severe." While this patient has a reduced TBUT of 2 seconds, the grading of SPK is "mild diffuse SPK," which should fall into the category of mild dry eye, especially if we are only treating with artificial tears. I would recommend being more specific with medication instructions, such as

“Refresh ATs 1 gtt TID-QID OU.” In addition to HVF 24-2, I would also perform a HVF 10-2, as it is more visually threatening than parafoveal defects.

A Flexible and Expandable Tool

We see our original case bank as a springboard for other case banks that can be used as shorter time-sensitive exercises for clinical preceptors. In the future, it would be valuable to compile case banks of pediatric vignettes, contact lens vignettes, interdisciplinary vignettes, and more. Other variations could include exam documentation for different types of exams, such as optical coherence tomography findings, visual field visits, and dry eye follow-ups for second-year level. Residents or new preceptors could also use the case banks as practice for leading small group discussions to boost their precepting skills.

The overarching goal for the case vignettes is that they provide optometric preceptors with a time-sensitive method for testing students’ case presentation and management skills early in each semester, especially for third-year interns.

Dr. Moy [moya@neco.edu] is an Associate Professor at New England College of Optometry (NECO), an attending optometrist at Martha Eliot Health Center, and Director and Chief Clinical Compliance Officer for NECO’s Health Center Network.

Dr. Reilly is an Assistant Professor at New England College of Optometry (NECO) and an attending optometrist at the NECO Center for Eye Care Roslindale and Commonwealth practices.

Dr. Pham is an Assistant Professor at New England College of Optometry (NECO) and an attending optometrist at the NECO Center for Eye Care in Roslindale and Martha Eliot Health Center.

Industry News

Desiree Ifft | Optometric Education: Volume 47 Number 1 (Fall 2021)

Industry News

New Website Aims to Educate and Prepare Patients for Presbyopia

According to a recent survey commissioned by Allergan, an AbbVie company, 65% of adults age 40-55 who reported having near vision issues say they were not prepared to have their eyesight worsen as they got older, and a quarter of them admitted they were in denial that their near vision was getting worse. (The survey, conducted by Wakefield Research, involved 1,000 nationally representative U.S. adults age 40-55 who reported having near vision issues.)
To raise awareness of the fact that near vision issues in this age group may be due to presbyopia and to provide individuals with information for discussing the issue with their eye doctors, Allergan launched a new website, BlurryNearVision.com. Among the site's features are an interactive component that shows how people see text up close when they have presbyopia and a quiz to uncover how the condition could be affecting their daily lives.

CooperVision's Best Practices program, with an Enhanced Structure, Open for Applications

U.S. independent and corporate optometry practices currently fitting any brand of contact lenses have until Nov. 30, 2021, to apply to be recognized in CooperVision's 2022 Best Practices program.

This is CooperVision's seventh annual search for the nation's Best Practices, and this year honorees will be recognized in five categories: industry advancement, community impact, patient experience, specialty services and team building. "We look forward to learning how more of today's practices are finding success despite the enormous challenges of the last two years, then giving them the platform to share that with others," Michele Andrews, OD, the company's Vice President, Professional & Government Affairs, said. The 2022 honorees will join a diverse group of 60 Best Practices who have each forged various pathways to success. According to CooperVision, honorees not only gain broad industry recognition, but are given exclusive opportunities to collaborate with and learn from other creative and motivated practices, enabling further growth and discovery of new ways to serve patients, the profession

and their communities. For example, they are brought together at the annual Best Practices Summit, which provides an opportunity for education and collaboration on a variety of practice management and clinical topics.

For more information about the Best Practices initiative, to review stories from past honorees, or to apply, visit www.coopervision.com/practitioner/best-practices. For full Best Practices terms and conditions, including eligibility requirements, refer to https://coopervision.com/practitioner/best-practices.

Last year, CooperVision introduced a Best Practices scholarship program, which provides third-year optometry students with the opportunity to attend the educational summit. Applications for this aspect of the program will be opened by the end of 2021.

Working to Increase Representation of People of Color in the Eyecare Industry

Johnson & Johnson VISION CARE, INC.

Johnson & Johnson Vision announced a collaboration with Black EyeCare Perspective, a not-for-profit organization dedicated to redefining the color of the eyecare industry 1% at a time. As part of the collaboration, Johnson & Johnson Vision signed the 13% Promise, an initiative to increase equity and representation in the eyecare industry and in optometry schools by increasing the number of Black students to mirror the 13% of Black people in the U.S. population.

According to data from Black EyeCare Perspective, only 3.2% of students and 3.8% of faculty in optometry colleges are Black or African American, and this number drops to only 1.8% among practicing optometrists. Johnson & Johnson Vision is the first major eye health company to sign the 13% Promise, furthering a longstanding commitment to diversity, equity and inclusion through awareness, education and empowerment in collaboration with associations and public and community organizations.

Johnson & Johnson Vision will contribute to the 13% Promise by continuing to:

- support sponsorships and new programs to improve representation of people of color in optometry
- bring more diversity and equity into the eyecare industry
- create more culturally relevant information and eye health education materials

To learn more about Johnson & Johnson Vision visit www.jjvision.com.

Get to Know the Student Optometric Leadership Network

The Student Optometric Leadership Network (SOLutioN) was formed in 2010, and VSP Global has been a dedicated supporter since the beginning.

The purpose of SOLutioN, a non-profit organization, is to provide national unification and recognition of student optometric private-practice and practice-management organizations, support and connect local organization leaders, and promote the future of private-practice optometry. SOLutioN provides common resources for leadership training among the student leaders of optometric private-practice and practice-management organizations. It connects optometry students with networking and career opportunities and exists to support students in their pursuit of private-practice optometry.

The primary goal of SOLutioN is to make the optometric profession stronger by encouraging student leaders to share the valuable knowledge they obtain at the SOLutioN conference with their private-practice organizations and like-minded peers. Schools and colleges of optometry work hard to build great doctors, but SOLutioN attempts to take this learning one step further and instill in students the business knowledge they need to keep every practice modality, including private practice, an open career option.

Each year, SOLutioN invites two student leaders from each optometry school to attend an annual conference. Each conference consists of 3 packed with specially designed lectures, networking and great food. The 2021 conference was held in Houston, TX, at the Hilton Americas Hotel. Sponsors, including VSP, traveled from far and wide to share their knowledge with SOLutioN's student leaders. Students were given the opportunity to not only get to know their peers across the country, but also to meet with industry leaders supporting private-practice optometry.

Find more information about SOLutioN here.

Editorial

Positive Changes in Applicant Pool Follow ASCO's *Optometry Gives Me Life* Campaign

Aurora Denial, OD, FAAO, DipOE | Optometric Education: Volume 47 Number 1 (Fall 2021)

Aurora Denial, OD, FAAO, DipOE

In the spring of 2019, the Association of Schools and Colleges of Optometry (ASCO) launched the *Optometry Gives Me Life* campaign. The objective of this public awareness campaign is to develop a robust, diverse and highly qualified pool of applicants to ASCO member schools and colleges of optometry. Early results were promising, and the most recent data indicate the campaign's success is continuing.

As ASCO previously reported, in the first 4 months of the campaign, its online ads were viewed more than 19 million times, 76% of its video views were to the end (a completion rate much higher than the 30% benchmark), and there were 50,000 visits to the campaign's landing page FutureEyeDoc.org.[1] According to the latest data, after 2 years, more than 100 million ads have been viewed, the video completion rate is 79.19%, and there have been 331,576 visits to FutureEyeDoc.org.[2] In addition, 604,040 social engagements, such as likes, reactions, shares, comments or follows, have been made with ads.[2]

As of September 2021, the campaign has garnered 3,123 applicant leads and 172 verified applicants, the latter representing an 11% increase.[2] Other changes in the applicant pool since the launch of *Optometry Gives Me Life* are as follows.[2]

	2019-2020 OptomCAS application cycle	2020-2021 OptomCAS application cycle
Change in size of applicant pool	+3.7%	+4.7%
Change in number of Black and Latino/Hispanic applicants	+10% (from 384 to 424 applicants)	+18% (from 424 to 499 applicants)
Percentage of applicants with GPA ?3.0	83%	81%

To achieve its goals, *Optometry Gives Me Life* raises awareness of optometry as a career option among the key target audience of college juniors and seniors enrolled in a science, technology, engineering and mathematics (STEM) curriculum. The campaign presents online to individuals fitting this profile in response to their search history and age. It utilizes specialized and targeted social media outreach, publications, ancillary promotional materials, emails, direct mail and the landing page at FutureEyeDoc.org. It keeps prospective students engaged while supporting them in taking the first step in the application process. Videos highlight, through the experiences of three practicing Doctors of Optometry, what an optometric careers offers, including work-life balance, personal fulfillment and job

security. The videos provide insight into the personal, social and professional lives of the doctors.

Expect Additional Strategies and Initiatives in the Coming Months

The *Optometry Gives Me Life* Campaign is ongoing, and ASCO says new strategies and initiatives are on the way. Connecting with and supporting future optometry students and graduates will always be important as they are essential to the viability of the profession.

References

1. Denial A. Reaching out to generation Z: ASCO launches Optometry Gives Me Life campaign. Optometric Education. Summer 2019;44(3).
2. Pence P. Recruiting the future doctors of optometry. Presentation to ASCO Student Affairs Committee; Oct. 6, 2021.

Dr. Denial [deniala@neco.edu], Editor of *Optometric Education*, is a Professor and Chair of the Department of Primary Care at New England College of Optometry and a Clinical Instructor at a community health center in Boston.

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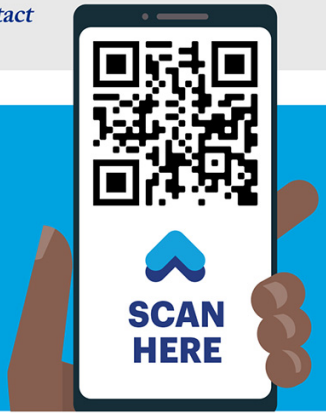
Dr. Denise Whittam, OD

Join us in honoring and celebrating the life-changing impact eye doctors have on their patients every day through an annual eye exam. Visit the ACUVUE® Facebook page to watch Dr. Denise Whittam, OD tell her story of how she impacted the life of a child name Zachary whose mother was concerned that he might be on the autistic spectrum. Zachary would shy away from team sports and appeared to have difficulty concentrating, but Dr. Whittam thankfully discovered through a comprehensive eye exam that "all he needed was a pair of glasses, followed with vision therapy. Now that he's into sports, he will be fit in contact lenses, and he's doing extremely well."

> *"all he needed was a pair of glasses, followed with vision therapy. Now that he's into sports, he will be fit in contact lenses, and he's doing extremely well.*

For every **like, share or comment** of this video on the ACUVUE® Facebook page, **we'll donate $1.00 to Sight For Kids to help provide eye exams to children in underserved communities.***



Sight For Kids, a nonprofit program co-founded by Johnson & Johnson Vision and Lions Clubs International Foundation nearly 20 years ago, has provided more than 37 million children with access to eye health education and treatment services.

Visit prioritizeyoureyes.com to learn more about the J&J Vision Global Eye Health Survey

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*Like, share, or comment on the video on the ACUVUE® Facebook page by 12/13/21, and we will donate $1.00 to Sight For Kids (max donation of $50,000). See terms at prioritizeyoureyes.com.

Important Safety Information: ACUVUE® Brand Contact Lenses are indicated for vision correction. As with any contact lens, eye problems, including corneal ulcers, can develop. Some wearers may experience mild irritation, itching or discomfort. Lenses should not be prescribed if patients have any eye infection, or experience eye discomfort, excessive tearing, vision changes, redness or other eye problems. Consult the package insert for complete information. Complete information is also available from Johnson & Johnson Vision Care, Inc. by calling 1-800-843-2020, or by visiting JNJVISIONPRO.com

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