REPORT ON CUT SCORE DETERMINATION
FOR THE
COMMISSION ON PARAOPTOMETRIC CERTIFICATION
FOR THE
CERTIFIED PARAOPTOMETRIC EXAMINATION FORM 094-21-A1-ENG, CERTIFIED PARAOPTOMETRIC ASSISTANT EXAMINATION FORM 088-21-A1-ENG, CERTIFIED PARAOPTOMETRIC TECHNICIAN EXAMINATION – PART 1 FORM 089-21-A1-ENG, AND CERTIFIED PARAOPTOMETRIC TECHNICIAN EXAMINATION – PART 2 FORM 242-21-A1-ENG

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PROFESSIONAL TESTING CORPORATION ® *1350 BROADWAY • SUITE 800 • NEW YORK, NY 10018*

Introduction

The Commission on Paraoptometric Certification (CPC) was established by the American Optometric Association in 2000 and is responsible for the continual development and maintenance of a Paraoptometric Certification Program. In collaboration with the Professional Testing Corporation, CPC prepares and administers the following paraoptometric certification examinations: Certified Paraoptometric Examination (CPO), Certified Paraoptometric Assistant Examination (CPOA), Certified Paraoptometric Technician Examination (CPOT)– Part 1 Written and Part 2 Clinical, and Certified Paraoptometric Coding Examination (CPOC).

This report summarizes the methodology used by the CPC to determine the appropriate passing standard for the Certified Paraoptometric Examination Form 094-21-A1-ENG, Certified Paraoptometric Assistant Examination Form 088-21-A1-ENG, and Certified Paraoptometric Technician Examination – Part 1 Form 089-21-A1-ENG and Part 2 Form 242-21-A1-ENG. The examinations were developed based on the test specifications derived from the latest role delineation study conducted in 2019. The examinations will be administered starting in 2021. The passing scores were determined during separate meetings for each program held from December 2020-March 2021. The meetings were facilitated by Vicki Gremelsbacker, President, and Weiyi Cheng, Psychometrician, of the Professional Testing Corporation (PTC).

Purpose

A high stakes examination, such as a certification examination, must have a defensible passing or cut score. There are typically two different types of approaches that are used to set the standard for examinations – a relative (norm-referenced) testing standard or an absolute (criterion-referenced) testing standard. The norm-referenced standard is set by holding the passing rate consistent from administration to administration. In other words, the actual number of items required to pass the exam may vary depending on the level of competency of the group testing in order to have a specific number or percentage of candidates pass the exam. On the other hand, a criterion-referenced standard is set by determining the absolute number of items that must be answered correctly in order to pass the examination. Since the passing score should distinguish between adequate and inadequate performance, should signify that the candidate meets the knowledge and skill standards set by the credentialing body to ensure effective practice (AERA, APA, NCME, 2014, p. 176), and should be empirically justified, a criterion-referenced standard is more suitable for determining the passing standard for credentialing examinations. Criterion-referenced standards are also set before the examination is administered and do not depend on the candidate scores or passing rate on the examination. The methods used in the study were consistent with best practice industry standards (AERA, APA, NCME, 2014).

According to the Handbook of Test Development (2016, p. 221), "The most thoroughly researched and documented standard-setting method is attributed to William Angoff. The Angoff method remains the most commonly used method for setting cut scores in credentialing contexts." This method suggests that the panel of judges review and evaluate each item on the examination and estimate the probability of a borderline, or minimally competent, candidate answering the item correctly. This study used a modification of the Angoff method.

Panel of Judges

The Commission on Paraoptometric Certification (CPC) identified qualified individuals to serve as judges in these studies (see Tables 1-3). These panels of judges represent different areas of paraoptometric expertise, settings, geographical locations, and other demographic factors throughout the United States.

In addition, many of the judges supervise or train entry-level professionals, so they are quite familiar with the knowledge needed to exhibit competence at the minimum eligibility level.

Table 1

Standard Setting Panelists for the Certified Paraoptometric Examination

Name	Years of Experience/ Years Certified	Position	Employer	Credentials	Geographic Location
Cheryl Bruce	40/30	Optometric consultant & educator	Self	BS, CPOT, LDO, ABOC, NCL	Spokane, WA
Sally Greeley	36	Billing Specialist	Newport Eye Care	AS, CPOT, ABOC, NCLEC	Newport, ME
Janet Millis	10/8	Patient Care Manager	Fairbury Vision Center	CPOT, ABOC	Fairbury, IL
Emily Sattig	4/3	Trainer	MarCyn Corp	AS, CPO	Springfield, OR
Darian Ilias	5/3	CPO	Bauer & Clausen Optometry	AS, CPO	Billings, MT
Kim Roberts	26/23	Optical Management	Drs. Akre and Clark Family Eyecare	CPO, ABOC	New Ulm, MN
Taylor Winterton	3/2	CPO	Haywood Family Eye	CPO	Waynesville, NC

Table 2

Standard Setting Panelists for the Certified Paraoptometric Assistant Examination

Name	Years of Experience/ Years Certified	Position	Employer	Credentials	Geographic Location
Tami Franklin	35/34	Senior Director Education	Dr. Jason Webb & Vision Source	CPOT, ABOC	Bridgeport, NE
Beth Bouska	35/6	Office Manager	Black Hills Vision Care	Diploma Optical Technology, ABO, CPOA	Belle Fourche, SD
Beverly Roberts	20/14	Clinic Director	Dr. Steven Reed	CPOT, ABOC	Magee, MS
Amie Robinson	29/29	Optical Manager	Spring Hill Eyecare	ABOC, CPOA	Spring Hill, TN

Brandy Cherry	5/2	Office Manager	Valley Eye Care	CPO, CPOA	Corvallis, OR
Jonathan Hellems	4/3	Optometric Assistant	Troyer Eye Care, LLC	CPOA	Lewisburg, WV
Nicole Royal	6/4	Clinic Team Lead	Midwest Eye Consultants	CPOT	Marion, IN
Jessica Shorey	7/3	Office Manager	Vision Center of Lake Norman	AS, CPOA	Mooresville, NC
Amy Parker	4/4	Lead Ophthalmic Technician	Vision Pendleton	CPOA	Pendleton, OR
Delia Cogdill	23/17	Clinic Manager	Looks, PA	CPOA, ABOC, CPOC, OSC, NCLE	Las Cruces, NM

Table 3

Standard Setting Panelists for the Certified Paraoptometric Technician Examination

Name	Years of Experience/ Years Certified	Position	Employer	Credentials	Geographic Location
Aaron Szabo	6/5	Certified Paraoptometric Technician	Professional Visioncare	CPOT	Columbus, OH
Amanda Hill	4.5/4.5	Certified Paraoptometric Technician	Isthmus Eye Care	CPOT, COA	Middleton, WI
Amber Freundschuh	13/10	Office Manager	Ridgefield Vision Center	CPOT	Richmond, VA
Bailey Woodson	4/1	Lead Scribe/ Certified Paraoptometric Technician	Dr. Joseph Sugg OD	CPOT	Heber Springs, AR
Betty Caruso	9/7	Certified Paraoptometric Technician	Dr. John Mertzhufft	CPOT	Tampa, FL
Bradley Louk	15/1	Optometry NCOIC	USAF	CPOT	Shaw Air Force Base, SC
Candace Rebenneack	22/12	Certified Paraoptometric Technician	Dr. Brandon Armstrong, OD	CPOT	Greenwood, IN
Courtney Williams	4/0.5	Scribe	Midwest Eye Consultants	CPOT	Marion, IN

Jaclyn Goblirsch	9/6	Certified Paraoptometric Technician	Madelia Optometric	CPOT	Madelia, MN
Jessica Caballero	15/13	Scribe/ Certified Paraoptometric Technician	Premier Family Eye Care	CPOT	Indian Trail, NC
Kareema Palmer	18/11	Ophthalmic Technician	Air Force	CPOT	Wright Patterson Air Force Base, OH
Katherine Ramsey	17/7	Lead Optometric Technician/Scribe	Ridgeland Eye Care Center	CPOT, OSC	Ridgeland, MS
Mary Love	6/2	Diagnostic/Lead Technician	Kirman Eye	CPOT	Hummelstown, PA
Nicole Royal	6/0.5	Technician/Team Lead	Midwest Eye Consultants	CPOT	Marion, IN
Teya Keener	5.5/5	Certified Paraoptometric Technician	Dr. Jeri Schneebeck	CPOT	Aurora, CO

Standard-Setting Method

A separate standard setting study was conducted for each program. At the beginning of each meeting, each committee was given an overview of the exam development process and standard setting procedure. The review of the examinations and the setting of the passing scores involves a rigorous analysis of individual item content to ensure that the items reflect the critical thinking process required at each of the eligibility levels. Each group spent some time reviewing the eligibility criteria for each examination.

For each session, the judges for each examination level were instructed to envision a candidate with the minimum amount of theoretical and practical knowledge required to exhibit competence and pass the examination. A profile of the just qualified candidate, as compared to the well qualified and not qualified candidates, was discussed in great detail. The panelists were encouraged to thoroughly discuss and refine their conceptualizations of a minimally competent candidate for the examination. They were advised to recall their own qualifications when they just started out, as well as to think about others who meet these definitions. The panel continued developing a profile of the just qualified candidate by reviewing the content outline for the exam and noting the differences in ability and performance that would be exhibited by the minimally competent candidate, as compared to the well qualified and not qualified candidate. These differences were discussed and reviewed in great detail. The purpose of this activity was to develop a consensus in terms of the resulting hypothetical examinee to be used as the basis for the judges' ratings of the examination.

After the profile was developed and discussed, judges were instructed to review each item on the examination and to keep in mind the profile of the *just qualified/minimally competent* candidate when reviewing, evaluating, and determining the difficulty of each item on the exam. With this method, panelists were asked to rate individual examination items, with respect to what percentage of *just qualified/minimally competent* candidates would answer the question correctly. The judges individually recorded their responses on a scoring sheet provided by PTC. They were instructed to not only evaluate

the content of the item but also to look at all aspects that would affect the difficulty of the item, such as the quality of the distractors, which may impact the difficulty of the item. Item performance statistics were provided to judges to use as a general guide. All judges were aware that these statistics were based upon all candidates who tested, not just the minimally competent, and that the statistics should not be used to influence their ratings, just to be used as a reference guide.

The judges were also asked to consider each examination form as a whole and indicate the estimated range of acceptable values for high and low passing scores as well as highest and lowest acceptable passing rates for candidates taking the examination (Hofstee Range Estimation). These scores were used to determine the highest and lowest acceptable (comfortable range) passing standards for each examination form, and the acceptable (comfortable range) passing rates.

Results

The results of the modified Angoff and the Hofstee Range Estimation scores and percentages are shown in Tables 4-7.

Table 4
Data Ratings for Certified Paraoptometric Examination Form 094-21-A1-ENG

Number of Judges	7
Number of Items	100
Angoff Recommendation	83.53 (83.53%)
Standard Error of Measurement	2.00
95% Confidence Interval of Estimation	79.6-87.45
Hofstee Estimated Pass Score Range	76.7-91.6
Hofstee Estimated Pass Rate Range	65.0-94.1

Table 5
Data Ratings for Certified Paraoptometric Assistant Examination Form 088-21-A1-ENG

Number of Judges	9*
Number of Items	200
Angoff Recommendation	147 (73.29%)
Standard Error of Measurement	1.22
95% Confidence Interval of Estimation	141.81-151.36
Hofstee Estimated Pass Score Range	147.5-186.4
Hofstee Estimated Pass Rate Range	62.7-84.8

*One judge was excluded as an outlier with ratings two standard deviations below the average.

Table 6
Data Ratings for Certified Paraoptometric Technician Examination – Written Form 089-21-A1-ENG

Number of Judges	15
Number of Items	225
Angoff Recommendation	170 (75.5%)
Standard Error of Measurement	1.33
95% Confidence Interval of Estimation	164.5-176.2
Hofstee Estimated Pass Score Range	161.3-201.9
Hofstee Estimated Pass Rate Range	65.7-87.3

Table 7

Data Ratings for Certified Paraoptometric Technician Examination – Clinical Form 242-21-A1-ENG

Number of Judges	15
Number of Items	100
Angoff Recommendation	78.3 (78.3%)
Standard Error of Measurement	2.00
95% Confidence Interval of Estimation	74.4-82.3
Hofstee Estimated Pass Score Range	73.3-92.7
Hofstee Estimated Pass Rate Range	65.7-87.9

The Passing Point Decision

After the data analysis was completed for each program, PTC initiated a discussion, during separate meetings for each program, regarding the resulting ratings with each SME panel. The panelists reviewed, discussed, and provided feedback on the final passing scores respectively for the Certified Paraoptometric Examination Form 094-21-A1-ENG, Certified Paraoptometric Assistant Examination Form 088-21-A1-ENG, and Certified Paraoptometric Technician Examination – Part 1 Form 089-21-A1-ENG and Part 2 Form 242-21-A1-ENG, and recommended passing scores ensued.

The results of the passing point studies were brought to the CPC, who then reviewed and discussed the results of each study. After discussion and consideration of all relevant factors, the CPC voted and approved the final passing scores for the Certified Paraoptometric Examination Form 094-21-A1-ENG, Certified Paraoptometric Assistant Examination Form 088-21-A1-ENG, Certified Paraoptometric Technician Examination – Part 1 Written Form 089-21-A1-ENG, and Certified Paraoptometric Technician Examination - Part 2 Clinical Form 242-21-A1-ENG.

The final passing scores considered factors such as average ratings across judges, quality of items, including difficulty and distractors, and consideration for existing passing scores.

The CPO Certified Paraoptometric Examination Form 094-21-A1-ENG passing score was set at 80/100 (80%). This score fell within acceptable ranges of the current study, including the 95% confidence interval and the Hofstee Estimation, as well as historical trends.

The CPOA Certified Paraoptometric Assistant Examination Form 088-21-A1-ENG passing point was set at 148/200. This score fell within acceptable ranges of the current study, including the 95% confidence interval and the Hofstee Estimation, as well as historical trends.

For the CPOT-Part I Written: Certified Paraoptometric Technician Examination – Part 1 Form 089-21-A1-ENG, it was discussed that the ratings from the study were too high and unattainable for the just qualified candidate. Upon analysis of the impact data of the first administration of the CPOT examination, the item level statistics, the examination level statistics, and the impact data of the new passing score were

analyzed. Further studies were done to compare the examination against the 2020 examination and it was found that the 2021 examination form was more difficult. The CPC discussed and voted to set the passing point for the CPOT written at 155/225 (69%).

For the CPOT – Part 2 Clinical: Part 2 Form 242-21-A1-ENG, it was decided to set the passing score at 75/100 (75%). This passing point fell within acceptable ranges of the current study, including the 95% confidence interval and the Hofstee Estimation, as well as historical trends.

The final passing scores are:

- Certified Paraoptometric Examination (CPO) Form 094-21-A1-ENG: 80/100 (80%)
- Certified Paraoptometric Assistant Examination (CPOA) Form 088-21-A1-ENG: 148/200 (74%)
- Certified Paraoptometric Technician Examination – Written Part 1 (CPOT) Form 089-21-A1-ENG 155/225 (69%)
- Certified Paraoptometric Technician Examination – Clinical Part 2 (CPOT–2) Form 242-21-A1-ENG: 75/100 (75%)

The standards fit comfortably with the range estimation ratings, further indicating that these passing scores are acceptable for these forms of the examinations.

References

American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. Standards for Educational and Psychological Testing, 2014.

Handbook of Test Development, 2nd ed, 2016. Ed. Lane, S., Raymond, MR, Haladyna, TM. Routledge.