



UEMS-CESMA Meeting – November 16th, 2013
Crowne Plaza Brussels – Le Palace



**All you need to know about the European Board
of Ophthalmology (EBOD) examination:
The evaluation process**

Danny G.P. Mathysen (MSc, PhD)

EBOD Assessment & Executive Officer

**Antwerp University Hospital (UZA), Department Ophthalmology
University of Antwerp (UA), Faculty of Medicine and Health Sciences**

Wilrijkstraat 10, B-2650 Edegem (Antwerp), Belgium

✉ danny.mathysen@ebo-online.org



European Board of Ophthalmology
excellence in education





UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



2775

Evaluation remains a key point

D MATHYSEN

Article first published online: 6 AUG 2012

DOI: 10.1111/j.1755-3768.2012.2775.x

2012 Acta Ophthalmologica

Issue



Acta Ophthalmologica

Special Issue: Abstracts from the 2012 European Association for Vision and Eye Research Conference

Volume 90, Issue Supplement s249, page 0, September 2012



SEARCH

In this issue

Advanced > Saved Searches >

ARTICLE TOOLS

- Save to My Profile
- E-mail Link to this Article
- Export Citation for this Article
- Get Citation Alerts
- Request Permissions

Share | [Icons]

Additional Information (Show All)

How to Cite | Author Information | Publication History

Abstract

Cited By

Abstract

Purpose European postgraduate medical assessment have developed during the last 25 years. Currently, all European medical



European Board of Ophthalmology
excellence in education



Universiteit
Antwerpen



UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



ACTA OPHTHALMOLOGICA 2013

Perspectives in Ophthalmology

History and future of the European Board of Ophthalmology Diploma examination

Danny G. P. Mathysen,^{1,2} Wagih Aclimandos,³ Ella Roelant,^{4,5}
Kristien Wouters,⁴ Catherine Creuzot-Garcher,⁶ Peter J. Ringens,⁷
Marko Hawlina⁸ and Marie-José Tassignon^{1,2}

¹Department of Ophthalmology, Antwerp University Hospital, Antwerp, Belgium

²Department of Ophthalmology, Faculty of Medicine and Health Sciences,
University of Antwerp, Antwerp, Belgium

³Department of Ophthalmology, King's College Hospital, London, UK

⁴Department of Scientific Research and Statistics, Antwerp University Hospital,
Antwerp, Belgium



European Board of Ophthalmology
excellence in education



Universiteit
Antwerpen



UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



ACTA OPHTHALMOLOGICA 2013

Perspective in Ophthalmology

Evaluation of adding item-response theory analysis for evaluation of the European Board of Ophthalmology Diploma examination

Danny G.P. Mathysen,^{1,2} Wagih Aclimandos,³ Ella Roelant,^{4,5} Kristien Wouters,⁴ Catherine Creuzot-Garcher,⁶ Peter J. Ringens,⁷ Marko Hawlina⁸ and Marie-José Tassignon^{1,2,4}

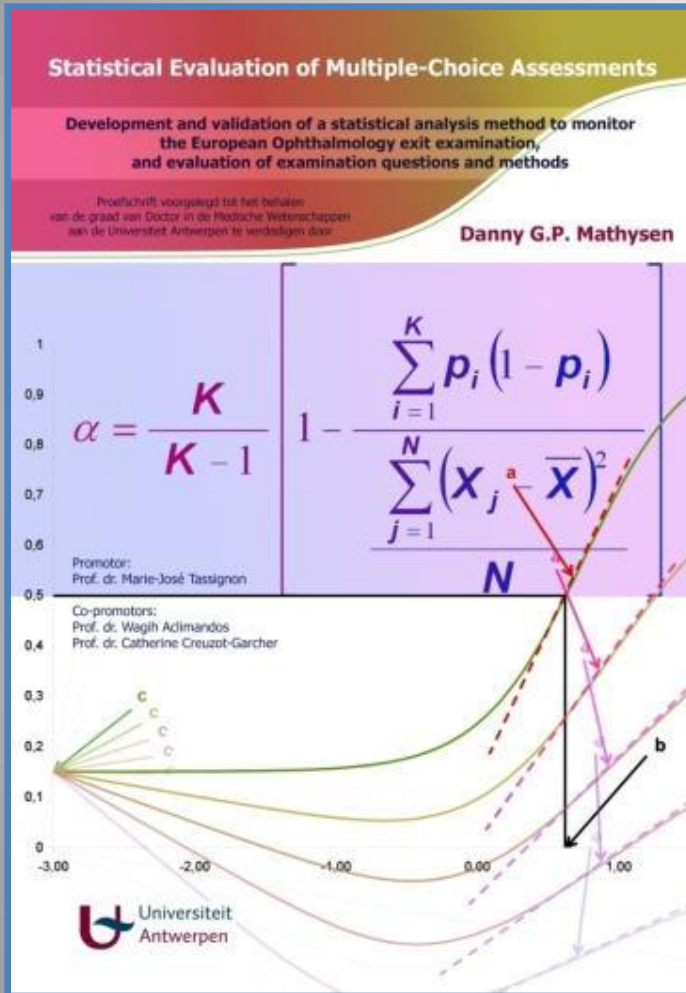
¹Department of Ophthalmology, Antwerp University Hospital, Antwerp, Belgium ²Department of Ophthalmology, Faculty of Medicine, University of Antwerp, Antwerp, Belgium; ³Department of Ophthalmology, King's College Hospital, London, UK; ⁴Department of Scientific Research and Statistics, Antwerp University Hospital, Antwerp, Belgium; ⁵Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK; ⁶Department of Ophthalmology, Centre Hospitalier Universitaire, Dijon, France; ⁷Department of Ophthalmology, Maastricht Universitair Medisch Centrum (MUMC), Maastricht, The Netherlands ⁸University Eye Clinic, Ljubljana, Slovenia



European Board of Ophthalmology
excellence in education



Universiteit
Antwerpen



- **Statistical evaluation of multiple-choice assessments**
Development and validation of a statistical analysis method to monitor the European ophthalmology exit examination, and evaluation of examination questions and methods

- **ISBN: 978-90-572-8414-4**

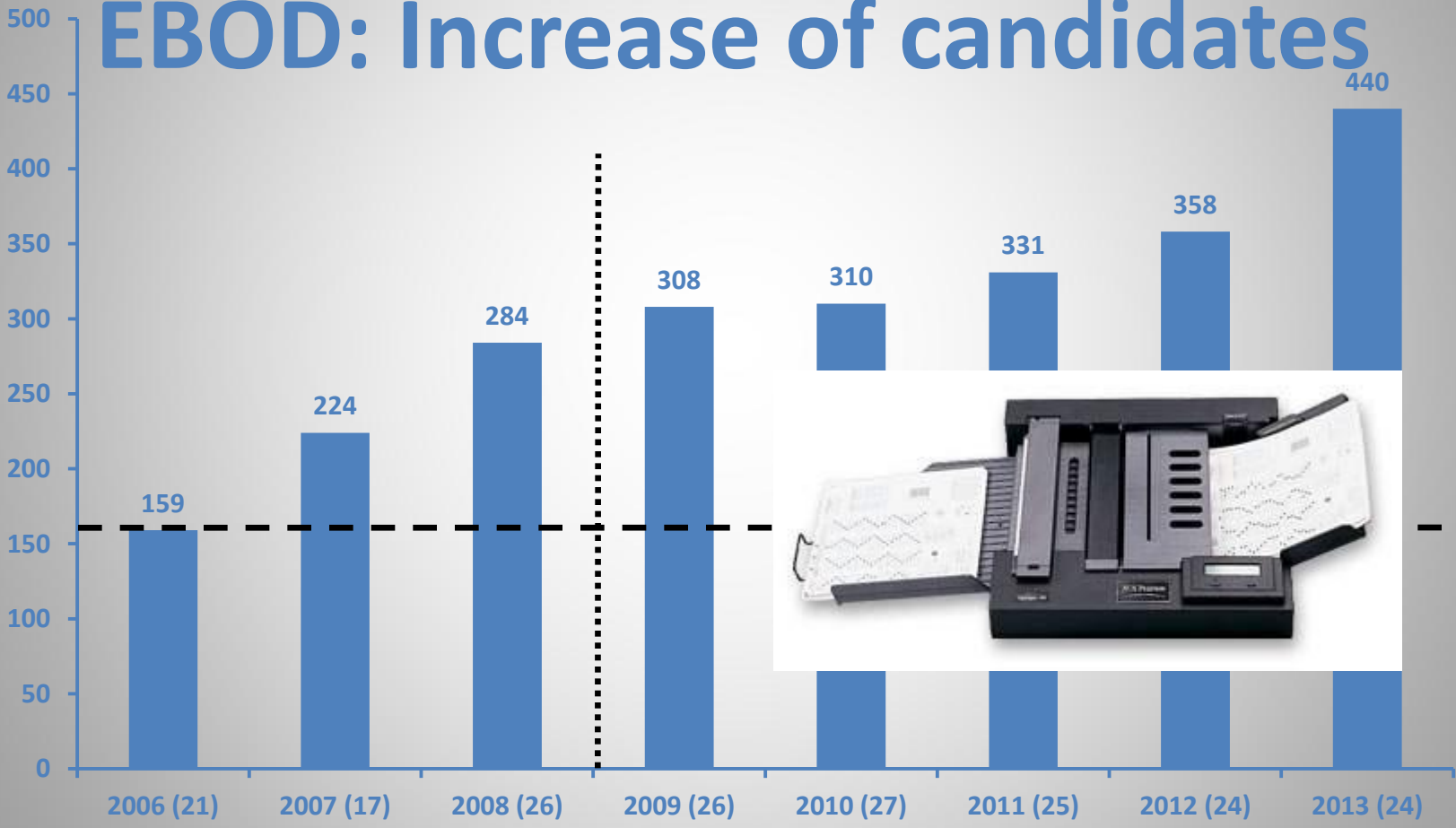


UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



EBOD: Increase of candidates



Increase with 177 %



European Board of Ophthalmology
excellence in education





Structure of the EBOD Examination

- Written examination (MCQ paper)
 - 40 % of the total candidate score
 - 52 questions, each with 5 independent true-false items
 - 10 pre-defined topics
 - Available in English (master), French and German (translations)

	A	B	C	D	E
1	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
2	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
3	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
4	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
5	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D



Structure of the EBOD Examination

- Oral examination (Viva Voce)
 - 60 % of the total candidate score
 - 4 topics
 - Available in English (basic language) and (if possible) in French or German (native languages) and (whenever possible) in other native languages of the candidate



Structure of the EBOD Examination

Table 1. The structure of the written and oral part of the EBOD examination.

Topics of the written part of EBOD

1. Optics, Refraction and Contact lenses
 2. Paediatric ophthalmology and Strabismus
 3. External, Corneal and Adnexal disease
 4. Glaucoma, Cataract and Refractive surgery
 5. Retina, Vitreous and Uvea
 6. Neuro-ophthalmology
 7. Orbital disease and Oculoplastic surgery
 8. General medicine relevant to ophthalmology
 9. Ophthalmic pathology, Microbiology and Immunology
 10. Pharmacology and Therapeutics
-

Topics of the oral part of EBOD

- A. Optics, Refraction, Strabismus and Neuro- ophthalmology
- B. Cornea, External diseases, Orbit and Ocular adnexa
- C. Glaucoma, Cataract and Refractive surgery
- D. Posterior segment, Ocular inflammation and Uveitis

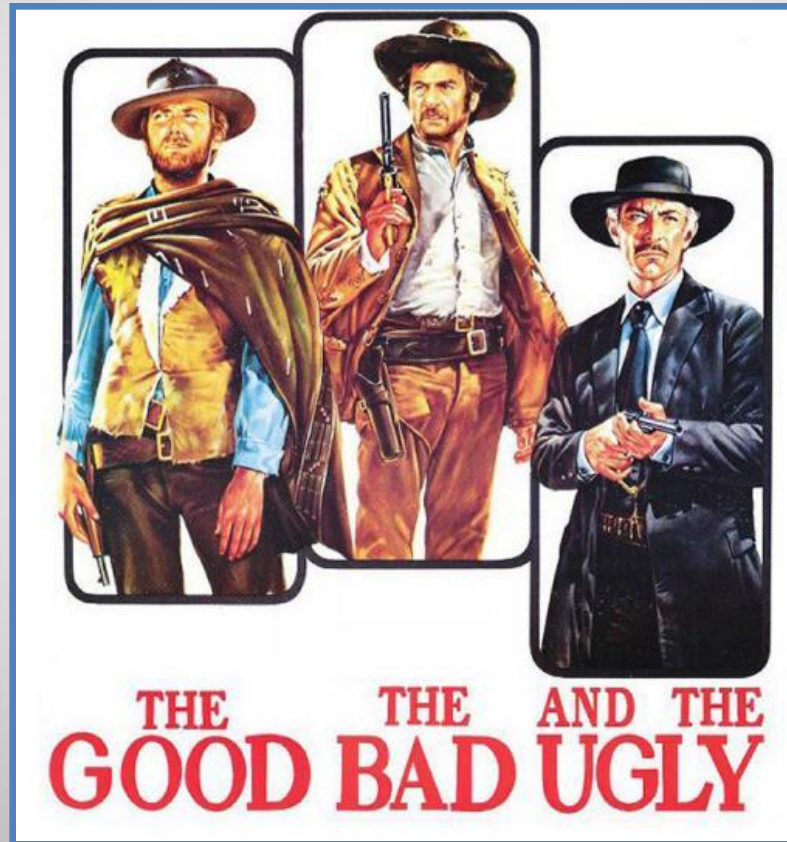


UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



Multiple independent T/F items






European Board of Ophthalmology
excellence in education





Multiple independent T/F items

- Advantages for EBOD candidates
 - Reliable in case of translation   
⇒ *choice of language ≠ (dis)advantage*
 - Accessibility (e.g. dyslexia)
⇒ *not too complicated for candidates*
 - Duration of the examination (less MCQ's)
⇒ *reduced stress level of candidates*
 - Assessment of partial knowledge
⇒ *not knowing the answer of 1 item is not a disadvantage*





Multiple independent T/F items

- Disadvantage for EBOD candidates
 - Probability of guessing right: 50 % (20-25 % for SBA)
⇒ *level of (weakest) candidates is overestimated (oral examination)*
- How to overcome this disadvantage?
 - Introduction of negative marking for incorrect/blank answers
⇒ *Increase of discriminative power of assessment*
⇒ *Reduction of (wild) guesses (weakest candidates)*





EBOD Examination: Scoring rules

- Score of +1 in case ONLY the correct answer has been indicated
- Score of 0 in case ONLY the “don’t know” option has been indicated
- Score of -0.5 in ALL other cases

	A	B	C	D	E
1	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
2	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
3	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
4	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D
5	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D

	A	B	C	D	E
1	<input checked="" type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D	<input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> D



EBOD Written Examination

The **EBO written MCQ** examination:

- The pass mark of the MCQ paper (i.e. score of 6) is set at the average minus 1 standard deviation (SD):

	2006	2007	2008	2009	2010	2011	2012	2013
MCQ								
Average	189 ± 14	191 ± 15	184 ± 15	204 ± 13	146 ± 25	134 ± 23	159 ± 24	148 ± 24
± Stdev								

- The result of the MCQ paper counts for 40 % of the final score





Overall performance of EBOD

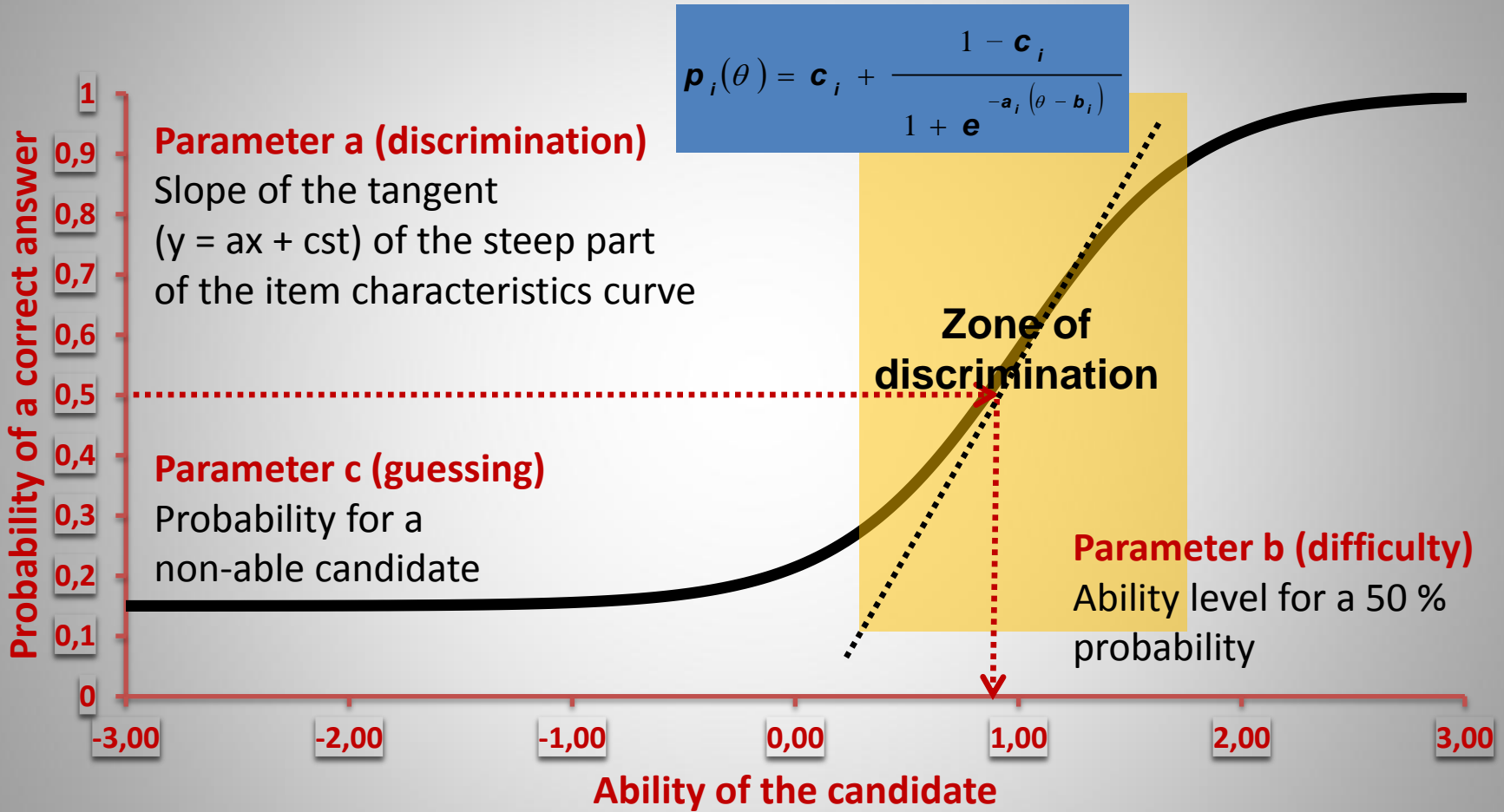
- Kuder-Richardson-20: **Reliability** of the examination
 - Increase from 0.78 (EBOD 2009)
to 0.92 (EBOD 2010)
0.91 (EBOD 2011)
0.92 (EBOD 2012)
0.92 (EBOD 2013)

Use of
negative marking



UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace





Success rate of EBOD Examination

The EBOD examination **success rate**:

- Good candidate level ⇨ high success rate:

	2006	2007	2008	2009	2010	2011	2012	2013
Success Rate	88.1 %	89.2 %	90.8 %	88.6 %	92.0 %	91.5 %	89.6 %	89.5 %

- Until 2009 no negative marking was used
- Introduction of **negative marking** since EBOD 2010
- Pass rate remained stable over the years





Is negative marking discriminating?

- The main argument against **negative marking** as formulated in literature is that it would be **discriminating** towards **female candidates**, as they are expected to take less risks (educated guesses)
- On the other hand, **no objective data** are available in literature to support this hypothesis...





Is negative marking discriminating?

- Different **strategies** to complete EBOD MCQ-test?
Assessed by evaluating the use of **“DON'T KNOW”**
option



Is negative marking discriminating?

- Statistically **significant** difference between ♂ and ♀
 - EBOD 2010 / 2011 / 2012:
 - ♂ : 13.57% / 13.37% / 10.84% of test items
 - ♀ : 16.47% / 15.85% / 11.27% of test items **p < 0.05**
 - EBOD 2013:
 - ♂ : 13.65 % of test items
 - ♀ : 14.90 % of test items **p < 0.05**



Is negative marking discriminating?

EBOD 2010 / 2011 / 2012

- Average absolute MCQ-scores ($p > 0.05$)

– ♂ :	148.21 (n = 168)
	136.24 (n = 159)
	160.62 (n = 183)
– ♀ :	143.36 (n = 142)
	132.25 (n = 172)
	158.24 (n = 175)

EBOD 2013

- Average absolute MCQ-scores ($p > 0.05$)

– ♂ :	147.42 (n = 209)
– ♀ :	147.89 (n = 231)



Is negative marking discriminating?

EBOD 2010 / 2011 / 2011

- Converted MCQ-scores
 - All scores: $p > 0.05$
 - Pass-fail: $p > 0.05$

EBOD 2013

- Converted MCQ-scores
 - All scores: $p > 0.05$
 - Pass-fail: $p > 0.05$



Is negative marking discriminating?

- Until 2009 negative marking was not applied
- But even without negative marking ...

... significant differences between male and female candidate scores were NOT observed!



UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



Alan Ridgway Award (MCQ's)

2010
Female candidate
(Austria)

2011
Male candidate
(Greece)

2012
Female candidate
(Turkey)

2013
Male candidate
(Germany)



European Board of Ophthalmology
excellence in education





UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



European Board of Ophthalmology
excellence in education





Evaluation remains a key point ...

- For the **European Board of Ophthalmology** as organiser of the EBOD Examination:
 - Reliability of the EBOD Examination
 - Statistical performance parameters of the individual test items
- For the **candidates** of the EBOD Examination
 - Guessing by less competent candidates
 - Discrimination towards female candidates



UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



European Board of Ophthalmology
excellence in education





UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



European Board of Ophthalmology
excellence in education

EUROPEAN BOARD OF OPHTHALMOLOGY (EBO)

*Permanent working group of the Ophthalmology Subspecialty Section
of the European Union of Medical Specialists (UEMS)*

REPORT FOR THE APPRAISAL BY THE UEMS COUNCIL OF EUROPEAN SPECIALIST MEDICAL ASSESSMENTS (CESMA) OF THE EUROPEAN BOARD OF OPHTHALMOLOGY DIPLOMA (EBOD) 2014 EXAMINATION



European Board of Ophthalmology
excellence in education





UEMS-CESMA Meeting – November 16th, 2013

Crowne Plaza Brussels – Le Palace



Thank you ...

Faleminderit shumë (Albanian) Shterakravetsun (Armenian) Eskerrik asko (Basque)
Mnogo blagodarya (Bulgarian) Dzãkujã (Cassubian) Moltes gràcies (Catalan) Merastawhy (Cornish)
À ringraziavvi (Corsican) Hvala lijepa (Croatian) Děkuji (Czech) Mange tak (Danish) Dank u wel (Dutch)
Thank you (English) Ic sæcge eow pancas (English, old) Dankon al vi (Esperanto) Aitäh (Estonian)
Paljon kiitoksia (Finnish) Merci beaucoup (French) Tanke wol (Frisian) Graciis (Friulian) Grazas (Galician)
Mèrczi (Gallo) Merci (Gascon) Besten dank (German) Merci villmahl (German: Zurich Switzerland)
Ευχαριστώ (Greek) Toda raba (Hebrew) Nagyon köszönöm (Hungarian) Takk fyrir (Icelandic)
Gratias (Interlingua) Qujanaq (Inuttut) Go raibh mile maith agaibh (Irish Gaelic) Gratias tibi ago (Latin)
Liels paldies (Latvian) Mouchou gratzia (Lingua Franca) Labai achiu (Lithuanian) Merci (Luxembourgish)
Grazzi hafna (Maltese) Gura mie mooar ayd (Manx) Merçi (Monegasque) Gràzzie (Napulitano)
Dziękuję (Polish) Obrigado (Portuguese) Mercé plan (Provençal) Nais tuke (Romani: gypsy)
Oven saste (Romani) Mulțumesc (Romanian) Grazia fitgun (Romantsch) Спасибо (Russian)
Giitus eanat (Saami Lappish) Moran taing (Scottish Gaelic) Grazzii (Sicilian) Dakujem vám (Slovak)
Hvala lepa (Slovenian) Dz'akujo so (Sorbian) Muchas gracias (Spanish) Dankeschee (Swabian)
Tackar så mycket (Swedish) Çok teşekkür ederim (Turkish) Moltes gracies (Valencian)
Merci (Walloon) Diolch yn fawr iawn (Welsh) A dank aych (Yiddish)



European Board of Ophthalmology
excellence in education



Universiteit
Antwerpen