

# An Investigation of Pacing on the International Foundations of Medicine® (IFOM®) Clinical Science Examination for Examinees Testing in Multiple Languages

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# Background

- NBME<sup>®</sup> International Foundations of Medicine<sup>®</sup> (IFOM<sup>®</sup>) program provides medical schools internationally with tools for measuring examinees' understanding of the medical sciences
- IFOM Clinical Science Examination (CSE) assesses the medical knowledge and understanding of clinical science considered essential for the provision of safe and effective patient care

# Background

- IFOM CSE is intended to determine an examinee's relative areas of strength and weakness in general areas of clinical science
- Medical schools use for both formative and summative purposes – low stakes
- Also used to make decisions for residency program selection – high stakes

# Background

- Examination is administered in international English, Spanish, Portuguese, and Italian
- Examination is administered in both web and paper-and-pencil format
- Two separately timed 80-item sections; 160 items total
- Two hours per section; 4 hours total

# Research Questions

- How well do students pace themselves on a standardized exam like IFOM CSE?
- Do students run out of time at the end of a section?
- What is the relationship between word count and item duration?
- Do the results differ by language?

# Method

- Sample included 1,535 students who took IFOM CSE between 1/28/2012 and 11/25/2014
- Analyses based on test form that was administered in international English, Spanish, and Portuguese
  - Added a second English form that had same word count so English sample would be more similar to other language samples in terms of ability

# Method

- Analyses by Language
  - Word count
  - Mean overall item duration
  - Mean item duration by sequence in section
  - Mean p-value by sequence in section
  - Omits
- Analyses by Ability Level

# Results: Word Count by Language

<b>Form</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min - Max</b>
English Form 1	129	122	45	50 - 220
English Form 2	130	122	44	54 - 223
Spanish Form 1	152	144	53	61 - 304
Portuguese Form 1	141	134	48	60 - 299



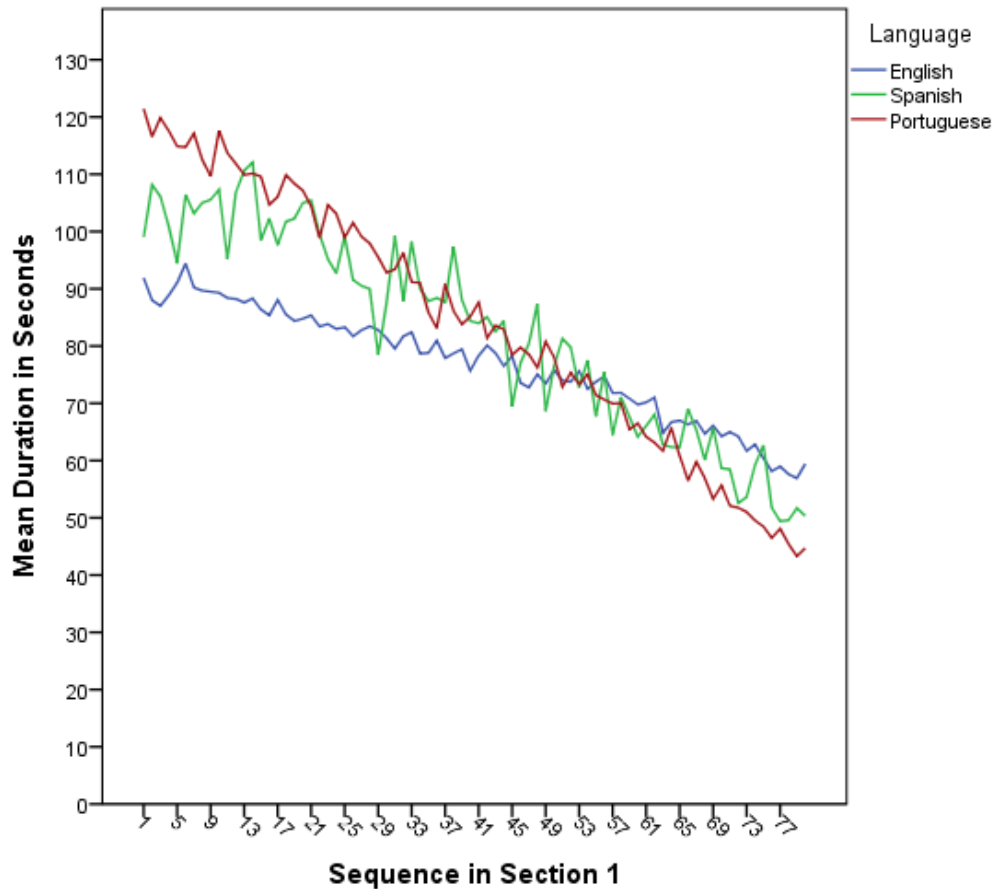
# Results: Item Duration by Language

Language	N	Mean	Median	SD
English	1036	78	84	14
Spanish	67	79	82	9
Portuguese	432	79	83	12

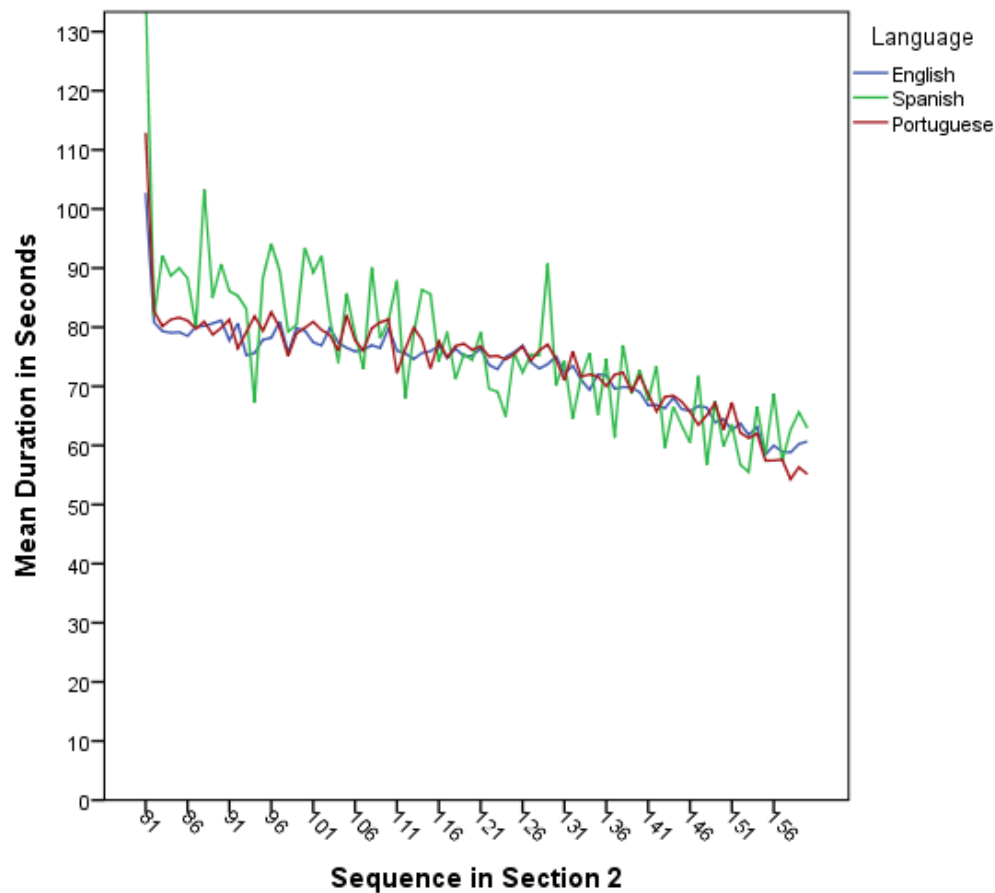
# Results: Correlation of Word Count & Mean Item Duration

Language	Correlation
English	.75
Spanish	.80
Portuguese	.76

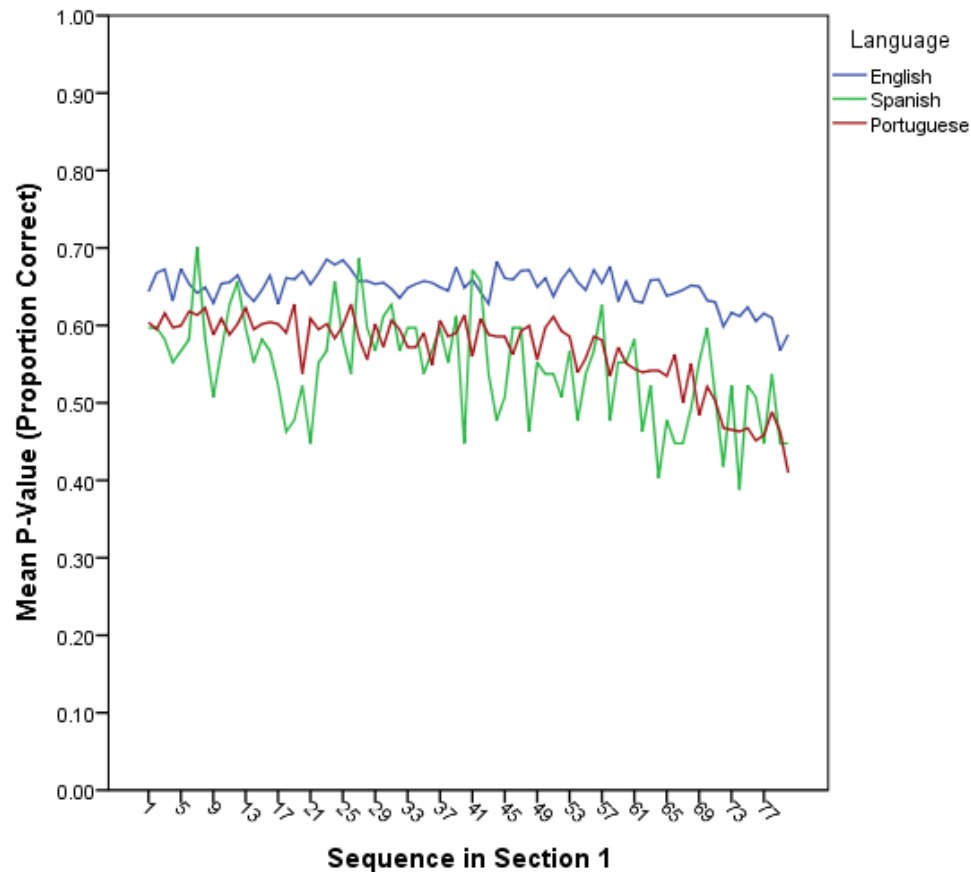
# Results: Mean Item Duration by Sequence in Section - Section 1



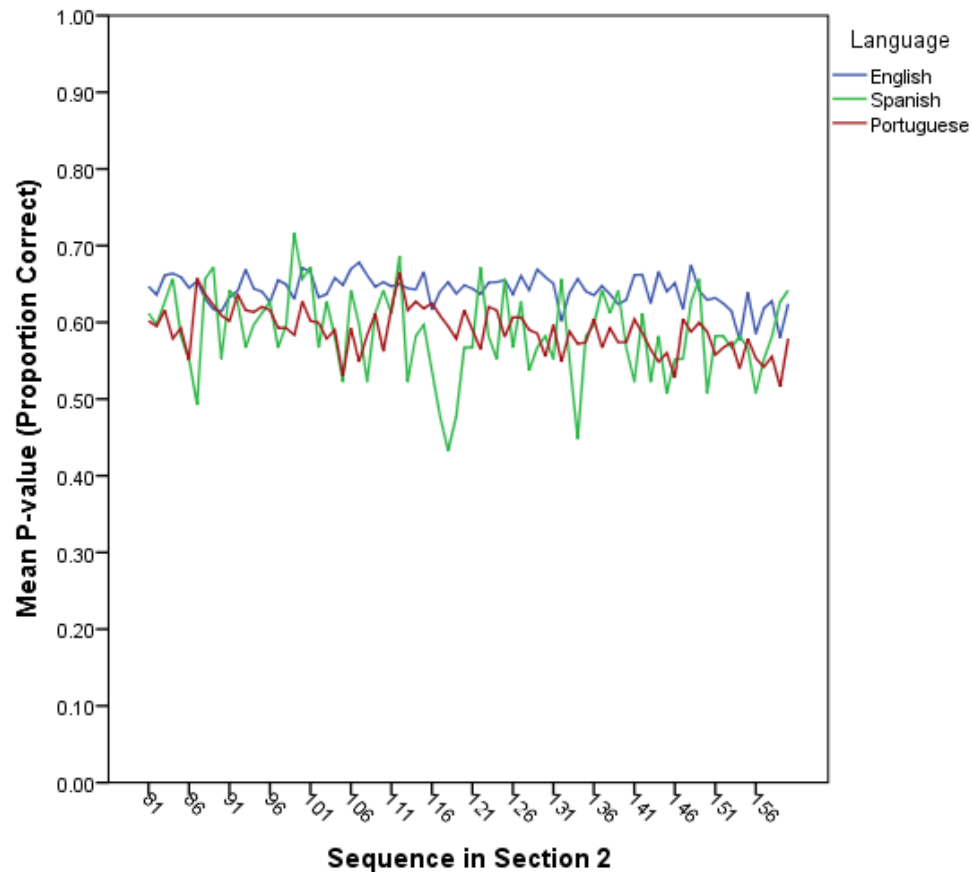
# Results: Mean Item Duration by Sequence in Section - Section 2



# Results: Mean P-value by Sequence in Section - Section 1



# Results: Mean P-value by Sequence in Section - Section 2



# Results: Omits in Last 10 Items

Language		Section 1		Section 2	
	N	Mean	SD	Mean	SD
English	1036	0.34	1.52	0.05	0.41
Spanish	67	0.63	2.01	0.25	1.48
Portuguese	432	1.39	3.15	0.15	1.06

# Results: Mean Item Duration by Ability Level

Section & Sequence	Lowest Scoring 1/3		Middle Scoring 1/3		Highest Scoring 1/3	
	Mean	SD	Mean	SD	Mean	SD
S1 First 10	116	2	99	2	90	2
S2 First 10	89	14	85	7	82	6
S1 Middle 60	85	19	82	9	79	5
S2 Middle 60	75	7	78	4	75	3
S1 Last 10	45	3	59	3	67	3
S2 Last 10	54	2	64	3	67	2



# Conclusions

- Pacing issues in first section for all languages
- Pacing improved in second section as students became more familiar with the format and timing
- Lowest ability students have more issues with pacing than higher ability students

# Conclusions

- Recommend that medical schools provide students with practice opportunities prior to taking IFOM CSE using assessments that emulate the format and timing of standardized assessments like IFOM CSE