

Research Note: Concurrent and predictive validity of Pearson Test of English Academic (PTE Academic)

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1. Introduction

This study fills the gap in the literature by reporting a validity study of the newly launched PTE Academic. The study bears significance given that Australian universities and institutes of higher education have started to recognise PTE Academic along with IELTS Academic and TOEFL-iBT; and this trend is likely to spread more widely across Australian universities and institutes of higher education in the future. Accordingly, it is imperative for different stakeholders to have more empirical evidence at their disposal related to this test in order to be better informed in their decision-making. Moreover, this study contributes to our knowledge base of test validation by focusing on a newly launched large-scale and high-stakes test. While there are quite a lot of validity studies on the two more established language proficiency tests (IELTS and TOEFL), there is a scarcity of such studies for PTE Academic after its formal launch in 2009. This, indeed, may be due to the fact that the test is new. The study reported here aims to investigate concurrent and predictive validity of PTE Academic. Concurrent and predictive validity are essentially two types of criterion-related validity (Hughes, 2003); the former seeks correlations between two tests (the test and the criterion), which are almost simultaneously administered, and the latter concerns the extent to which a language test can predict the future (academic) performance of test-takers. Since IELTS Academic is by default the test recognised by Australian higher education institutions, it was used as the criterion in the present study.

1.1 Purpose and research questions

Based on the review presented above, this study pursues two main goals: the first goal is to study the concurrent validity of PTE Academic, and the second goal is to study its predictive validity. These two general goals are translated into the following research questions:

1. Is there any relationship between the participants' PTE Academic and IELTS Academic scores in terms of their overall scores and on individual scores of listening, reading, speaking, and writing?
2. Is PTE Academic able to differentiate between the two proficiency groups (higher and lower) as formed by participants' IELTS Academic scores?
3. Is there any relationship between participants' PTE Academic scores and their academic achievement as measured by their first semester grade point average (GPA) and as compared to a native-speaker norm group?

- a. Is there any significant relationship between participants' PTE Academic scores and their first semester GPA in terms of their overall scores and the four communication skills scores?
- b. What percentage of participants with PTE Academic scores in the A2, B1, B2, and C1 and higher range of the CEFR levels reach academic norm as compared to the norm group's GPA?

2. Research Methods

Data were collected from 60 non-native international undergraduate (n= 37) and postgraduate (n= 23) students at Macquarie University in Australia. Both female (n= 45) and male (n= 15) students of various nationalities were recruited from three major academic disciplines: Sciences (n= 10), Business and Economics (n= 40), and Arts and Humanities (n= 10). Their ages ranged from 18–36 years (mean= 23.05; SD= 3.38). These participants had already taken IELTS Academic as a requirement for their entry into university. Those volunteer students who had taken the test at most six months prior to their taking of PTE Academic were selected. This criterion was set to facilitate data collection as it was not feasible to recruit all participants who had taken IELTS just prior to sitting for PTE Academic. The time range between taking PTE Academic and IELTS Academic was two to six months with a mean of 4.7 months. Data included participants' IELTS scores, PTE Academic Scores, their first semester GPA, and a norm-group GPA. In order to answer the second part of the third research question, participants' PTE Academic scores were classified according to CEFR levels (A2, B1, B2, and C1 and above) based on Pearson (2012). This categorisation was then used to calculate the percentages of the participants in each level who reached or exceeded the norm group's GPA.

Pearson correlation was used to answer the first research question, which seeks possible relationships between participants' IELTS Academic and PTE Academic scores. Moreover, an independent t-test was used to investigate whether PTE Academic was able to differentiate between the two proficiency groups as was formed by using the median of the IELTS scores to answer the second research question. Finally, we used Pearson correlation to answer the first part of the third research question, which looks for possible relationships between participants' PTE Academic scores and their academic achievement.

3. Results

RQ1: *Is there any relationship between the participants' PTE Academic and IELTS Academic scores in terms of their overall score and on individual scores of listening, reading, speaking, and writing?*

Table 1 presents the descriptive statistics of the participants' scores on IELTS Academic and PTE Academic.

Table 1: Descriptive statistics for participants' IELTS Academic and PTE Academic test scores

		Minimum	Maximum	Mean	SD	Median	Mode
IELTS Academic	Listening	4.5	9	7.43	1.15	7.5	8.5
	Reading	4.5	9	7.52	1.11	7.5	8.5
	Speaking	4.5	8.5	6.76	0.90	6.5	6
	Writing	5	8	6.43	0.68	7.25	6
	Total	5.5	8.5	7.12	0.82	7.25	7.5
PTE Academic	Listening	37	90	64.65	14.66	64.5	71a
	Reading	30	84	60.33	14.73	63	68
	Speaking	10	90	66.92	17.10	67	90
	Writing	33	88	60.5	13.27	62	56a
	Total	36	90	63.42	14.10	64	50

a Multiple modes exist. The smallest value is shown

As can be seen from Table 1, this cohort of participants had a mean score of 7.12 and 63.42 for their overall performance on IELTS Academic and PTE Academic respectively. While they achieved their highest score (mean= 7.52) from the reading section of the IELTS, they had their highest score (mean= 66.92) from the speaking section in the PTE.

In order to determine if there is any relationship between participants' scores, overall and for each of the four communication skills, Pearson correlation was run between the participants' scores in the two tests. Table 2 presents the results of the correlation.

Table 2: Relationship between PTE Academic and IELTS Academic scores (n= 60)

	IELTS Listening	IELTS Reading	IELTS Speaking	IELTS Writing	IELTS Total Score
PTE Listening	0.661**				
PTE Reading		0.677**			
PTE Speaking			0.723**		
PTE Writing				0.686**	
PTE Total Score					0.824**

**Correlation is significant at the 0.01 level (2-tailed)

Table 2 shows that there is significant moderate to high correlation between participants' PTE Academic and IELTS Academic scores. The highest correlation (r= 0.824) was observed between participants' overall scores in the two tests showing a common variance of almost 68%. The next highest correlation was observed between participants' speaking (r= 0.723) and writing (r = 0.686) skills of the two tests.

RQ2: *Is PTE Academic able to differentiate between the two proficiency groups (higher and lower) as formed by participants’ IELTS Academic scores?*

To answer this question, independent t-test was run to check if there are any significant differences between the two groups of higher and lower proficiency groups in terms of their PTE Academic scores. Table 3 presents the results.

Table 3: Results of the independent t-test for the two proficiency groups

PTE Academic	Group	N	Mean	SD	t	df	Eta2
Listening	Lower	25	55.56	13.31	- 5.51**	50	0.38
	Higher	27	74.26	11.13			
Reading	Lower	24	48.79	10.60	- 6.22**	50	0.44
	Higher	28	69.04	12.54			
Speaking	Lower	19	52.21	15.65	- 6.75**	45	0.50
	Higher	28	78.71	11.30			
Writing	Lower	27	52	10.77	- 6.65**	44	0.50
	Higher	19	71.84	8.67			
Overall	Lower	30	54.03	10.09	- 6.89**	58	0.45
	Higher	30	72.80	10.99			

**significant at $p < 0.001$

Table 3 shows that PTE Academic was able to significantly differentiate between the lower and higher proficiency groups as formed by participants’ IELTS Academic scores, overall and in each of the four communication skills.

RQ3: *Is there any relationship between participants’ PTE Academic scores and their academic achievement as measured by their first semester grade point average (GPA) and as compared to a native-speaker norm group?*

a. *Is there any significant relationship between participants’ PTE Academic scores and their first semester GPA in terms of their overall score and the four communication skill scores?*

Table 4 presents descriptive statistics for the participants’ PTE scores and their academic GPA as well as the norm group’s GPA.

Table 4: Descriptive statistics for participants’ PTE Academic scores, their GPA, and the norm group’s GPA

	PTE Listening score	PTE Reading score	PTE Speaking score	PTE Writing score	PTE total score	Participants’ academic GPA	Native speakers’ GPA
Mean	64.65	60.33	66.91	60.50	63.41	70.37	66.57
SD	14.66	14.72	17.10	13.27	14.10	8.26	6.12
Minimum	37.00	30.00	10.00	33.00	36.00	46.00	54.60
Maximum	90.00	84.00	90.00	88.00	90.00	90.00	80.88

Table 4 shows that participants' highest performance was in the speaking skill (mean = 66.91) followed by their performance in the listening skill (mean = 64.65). Accordingly, we can infer that this cohort of participants performed better in their PTE Academic oral skills of speaking and listening compared to their writing and reading skills. However, the lowest dispersion was observed in participants' writing performance (SD= 13.27), which implies that they were more homogenous in their writing skill.

Table 4 also shows that participants of the study (international students) outperformed native-speaker students as relates to their academic achievement with their mean GPA being 70.37 compared to the native speakers' mean of 66.57. Results of a paired t-test showed that this difference between the two groups' GPA was significant ($t = 2.88, df = 59, p < 0.01$). Figures 1 and 2 present the distribution of participants' and native speakers' GPA.

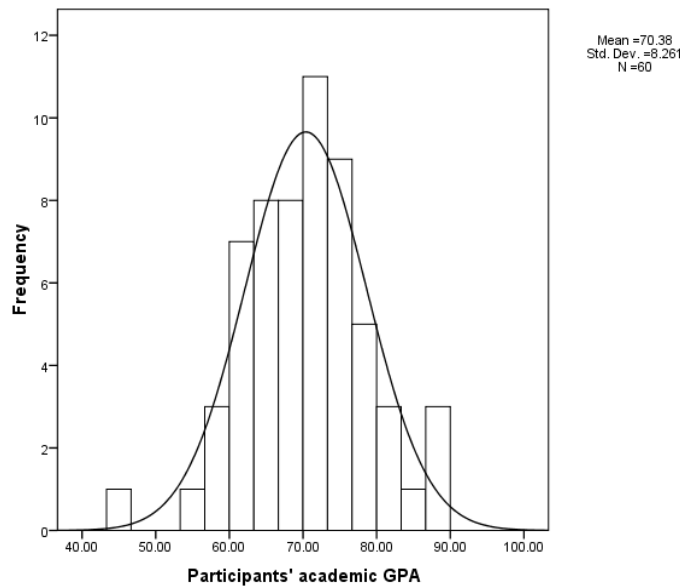


Figure 1: Distribution of participants' GPA

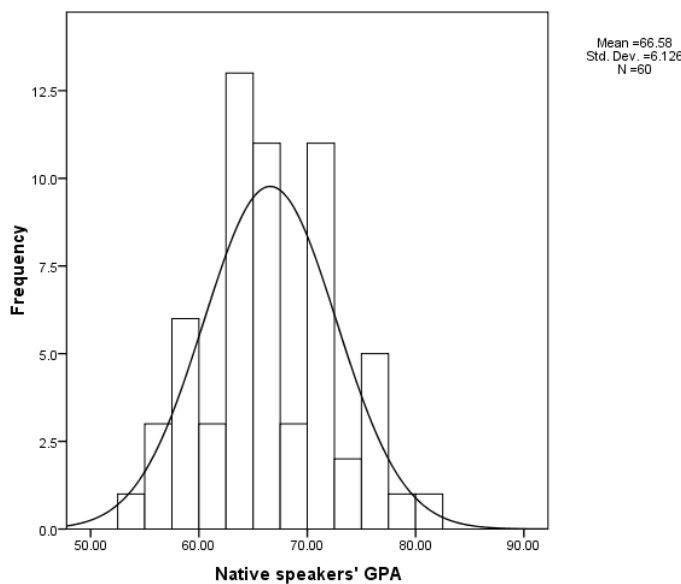


Figure 2: Distribution of native-speakers' (norm-group) GPA

In order to determine if there is any significant relationship between the participants' PTE Academic scores and their academic GPA Pearson correlation was run. Results of the Pearson correlations are presented in Table 5.

Table 5: Relationship between participants' GPA and their PTE Academic scores

	Listening	Reading	Speaking	Writing	Overall PTE score
	0.286*				
		0.350**			
GPA			0.291*	0.292*	0.344**
r²	0.082	0.122	0.085	0.085	0.118

*Correlation is significant at 0.05 level (2-tailed)
 **Correlation is significant at 0.01 level (2-tailed)

Table 5 shows that the participants' performance on PTE, overall and in each of the four communication skills, had a significant relationship with their academic achievement as measured by their GPA. The highest relationship ($r = 0.350$) was observed between participants' reading scores and their GPA followed by overall score ($r = 0.344$), writing ($r = 0.292$), speaking ($r = 0.291$), and listening ($r = 0.286$).

RQ3 b: *What percentage of participants with PTE Academic scores in the A2, B1, B2, and C1 and higher of the CEFR levels reach academic norm as compared to the norm group's GPA?*

In order to answer this research question, the participants were categorised into four CEFR categories using the Pearson PTE-CEFR alignment guidelines (Pearson, 2012). Then, both the international participants' and the norm group's GPA was used to determine the percentage of the participants who reached or exceeded the norm group's GPA. Table 6 presents the number of participants in each CEFR level based on their PTE Academic score and the frequency and percentage of those who reached or exceeded the norm group's GPA.

Table 6: Categorisation of participants' overall PTE Academic scores according to CEFR levels

CEFR Level	PTE Academic score range	Frequency and percentage	Number and percentage of the participants reached or exceeded the norm group's GPA
A2	30-42	4 (6.7%)	2 (50%)
B1	43-58	17 (28.3%)	10 (58.82%)
B2	59-75	29 (48.3%)	19 (65.51%)
C1+	≥76	10 (16.7%)	10 (100%)

Table 9 shows that the largest group of participants (48.3%) were at Level B2 followed by Level B1 (28.3%), C1+ (16.7%), and A2 (6.7%). The last column shows the number of the participants' who reached or exceeded the norm group's academic performance. The percentage increase of participants who reach or exceed the norm group's GPA is directly proportional to their overall language

proficiency as represented by their PTE Academic scores. Interestingly, the observed pattern shows that as participants' proficiency goes up from A2 to C1+ they reach or exceed the norm group's academic performance so that all ten participants in the C1+ category outperformed native speakers academically.

4. Conclusions

Notwithstanding the limitation, this study provides useful results that contribute to our understanding of a newly developed language proficiency test. The study reported in this paper was conducted as a posteriori study to seek validity evidence for PTE Academic by focusing on criterion-related validity. The findings of the study complement other studies reviewed in the literature review section and particularly that of Zheng and De Jong's (2011) study, which was an a priori study conducted during PTE test development and which sought validity evidence using field test data.

References

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http://pearsonpte.com/PTEAcademic/scores/Documents/PTEA_Score_Guide.pdf
- Zheng, Y., & De Jong, J. (2011). Research note: Establishing construct and concurrent validity of Pearson Test of English Academic (PTE Academic). Retrieved 12 June 2011 from: <http://www.pearsonpte.com/research/Pages/ResearchSummaries.aspx>