

# Research Note: Using PTE Academic to predict achievement and measure proficiency gains in an intensive EAP foundation programme

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## 1. Abstract

This study evaluates how well the Pearson Test of English Academic (PTE Academic) predicts students' performance in a pre-university EAP programme, how much progress students make on the EAP programme in terms of PTE Academic scores, and what individual differences influence their performance. PTE Academic is shown to be a relatively good predictor of student performance, with overall correlations of  $r_s = .58$  between pre-programme PTE Academic scores and performance in end-of-programme assessments. This predictive relationship was shown to be relatively constant across a wide range of student variables. Over the ten-week programme, students improved their PTE Academic scores by between 2.5 (for speaking) and 5.5 (for reading) points. This is in line with findings from previous studies which have measured gains in terms of IELTS bands. Important variables influencing gain scores were the age at which students had started learning English (late starters improved the most), the amount of extra-curricular reading done during the programme and attitudes towards the PTE Academic test.

## 2. Introduction

Students who speak English as a second language make up a large, and increasing, proportion of the UK university student population. Many institutions provide intensive programmes in English for Academic Purposes for applicants whose English language proficiency is deemed not to be sufficient for direct entry to particular degree programmes. It is essential that these institutions (and the higher education institutions which they serve) are able to make informed judgements about the extent to which particular applicants are likely to benefit from particular EAP programmes and the length and type of programme they are likely to need to attend before commencing their degrees.

In most cases, such judgements are made on the basis of widely-available academically-oriented proficiency tests, such as the Pearson Test of English Academic (PTE Academic). It is therefore important to determine: 1) whether and how such tests are able to predict applicants' degree of achievement on an intensive EAP course; 2) the extent to which applicants can be expected to reach the levels of proficiency higher educational institutions require for entry to degree programmes by engaging in a particular EAP course; and 3) how and why the answers to 1) and 2) vary across applicants. This study aims to provide answers to these questions for one particular EAP programme with regard to PTE Academic.

### 3. Literature Review

#### 2.1 Introduction

There are two main strands of previous research directly relevant to these issues: predictive validity studies, which have examined the extent to which scores on language proficiency tests predict later performance in academic programmes, and gain studies, which have looked at the increases in language proficiency achieved by students over a particular course of study. This review will briefly discuss each strand in turn.

#### 2.2 Predicting performance

One of the main aims of the present study is to determine how well scores on the PTE Academic test predict students' later performance in their EAP programme. This aim has parallels with the large body of research which has investigated the relationships between scores in academic language proficiency tests and later performance in academic programmes of study (see, for example, recent reviews in Cho & Bridgeman, 2012; Daller & Phelan, 2013; Humphreys et al., 2012; Ingram & Bayliss, 2007). These have tended to follow quantitative designs, in which some measure of language proficiency is related to the scores participants have achieved in their academic programmes (recent examples include Cho & Bridgeman, 2012; Daller & Phelan, 2013; Humphreys et al., 2012). As other researchers have pointed out (e.g., Ingram & Bayliss, 2007), the correlations found in studies of this sort have tended to be weak and inconsistent for two main reasons. First, the ranges of proficiency scores which serve as predictor variables tend to be rather limited as all participants in these types of study have at least attained the levels of proficiency required for access to their degree programmes. These truncated ranges limit the possibility of attaining strong correlations, and prevent us from drawing any conclusions about the likely performance of learners who have not met existing institutional thresholds. Second, language proficiency is clearly only one variable amongst many (e.g. motivation, content knowledge, programme teaching) which contribute to success in academic programmes. While language proficiency is likely to be highly relevant to academic success, the fact that the latter construct clearly includes much more than the former inevitably limits the correlations which can be found.

Like many studies of this type, the present research uses a correlational design to provide an estimate of the relationship between proficiency test scores and subsequent scores on a programme of study. However, it differs from previous studies in two fundamental ways. First, whereas previous studies have focused on predicting students' performance in degree programmes, the present research looks at performance in a pre-degree EAP programme. Since this programme, like the proficiency test itself, focuses centrally on academic English, rather than on disciplinary subject matter, we should expect to observe higher correlations between proficiency scores and performance on the programme. Second, whereas previous studies have worked only with students who had already attained a sufficient level of proficiency to be admitted to degree programmes, the present study works with students who are still working towards this level, so dealing with a slightly lower, and potentially more diverse, range of proficiencies.

#### 2.2 Score gains

A number of previous studies have investigated gains in EAP proficiency scores achieved through intensive language programmes. An early example is Brown (1998), who looked at developments in IELTS writing scores in nine students on a ten-week IELTS preparation programme and five students on a general EAP

programme of the same length. The IELTS group showed a median improvement of 1.0 band while the EAP group's scores decreased by a median of 0.6 of a band. The small sample sizes in this study obviously prevent any strong conclusions being based on this, however.

Archibald (2001) also looked at changes in writing proficiency, this time in 50 students over the course of an eight-week pre-sessional EAP programme. Using tasks based on Task 2 of the IELTS Academic Writing module and a nine-band writing scale, based on the IELTS grading criteria, he found an overall gain of 1.1 bands (from 4.49 to 5.59). A third study focusing specifically on writing proficiency was conducted by Green (2005, 2009). Tracking 476 students at 15 different institutions studying either IELTS, EAP or IELTS+EAP combined programmes over a course of 4-14 weeks and with 15-28 hours of class per week, he found an overall mean increase of .21 of a band. Those on longer courses saw greater increases and those with lower initial scores tended to improve most. Thus, students on 7-10 week programmes and with a starting score of band 4 saw the greatest increases (at approximately 1.2 bands, reassuringly close to the gains seen by Archibald in a similar length programme), while students on 3-4 week courses with starting scores of band 6 scored marginally less well on their second test.

Moving beyond writing scores, Read & Hayes (2003) looked at changes in IELTS scores for listening, reading and writing in nine students over the course of two one-month IELTS preparation courses. Across all three parts of the test, students' scores improved by 0.24 of a band on average, with the greatest improvement in listening (from 5.33 to 6.11). Elder and O'Loughlin (2003) applied complete IELTS tests to 112 students at four different institutions taking 10-12 week courses in general English/EAP. They found mean gains of 0.6 of a band in the global score, 0.78 in listening, 0.55 in writing 0.5 in speaking and 0.4 in reading. Like Green (2005, 2009), they found that students with lower starting scores tended to improve the most.

Overall, it seems that the proficiency gains achieved in intensive language courses comparable in type and length to that which forms the focus of the current study are modest. The largest gains, of around one IELTS band, were found by Archibald (2001) and Green (2005, 2009) in writing tests. Studying a wider range of skills, Read and Hayes (2003) and Elder and O'Loughlin (2003) saw more modest gains of between 0.24 and 0.78 IELTS bands. The present study extends work of this type by introducing a new context (a UK foundation-level programme) and by using PTE Academic, rather than IELTS, as the measure of gain. As PTE Academic scores are reported on a continuous scale of 10-90, in contrast to the 'band' scores used by IELTS, we should also expect this study to provide a more sensitive measure of gains than previous studies.

A small number of studies have also looked at what variables affect proficiency gains achieved on intensive language programmes. Hughes Wilhelm (1997) investigated how well 36 background variables predicted 201 learners' levels of success in a university intensive English programme. She used students' average rate of progression across the levels of the programme to group learners into 'high', 'medium' and 'low' success categories, and identified 20 features which showed some success in predicting student category membership. Proficiency at entry was also found to be an effective predictor. By combining the 20 learner features with three entry proficiency scores, an expert system was able to accurately predict group membership in 65% of cases.

Elder & O'Loughlin's (2003) study of 112 students' IELTS scores before and after a

10-week EAP programme (outlined above) also sought to correlate rates of progress to learner variables. In an initial analysis, they first regressed score gains one-by-one against each of the candidate predictors. They then explored the relative contributions of each factor by performing a backwards stepwise regression analysis. This process was repeated for both the global IELTS gain scores and separately for each skill. Few consistent patterns emerged, and many of the correlations found are hard to rationalize (e.g. 'perceived progress in listening' as a predictor of writing gain; 'perceived importance of writing' as a predictor of listening gain), raising the possibility that some predictors were wrongly ascribed significance due to the inflated error rates associated with separately testing such a large number of variables. The strongest and most consistent pattern was the trend, already noted above, for participants with low initial scores to gain the most. With regard to this, Elder and O'Loughlin acknowledge previous arguments that such patterns may indicate regression to the mean. However, they find that a latent variable analysis, which is argued to correct for this effect, yielded similar results to those found with raw scores, suggesting that this effect was probably not very strong.

In his study of the writing proficiency of 476 students on pre-university courses described above, Green (2009) also related gain scores to a range of variables. Using both pre- and post-course questionnaires, he gathered data on over 100 variables. Of these, 34 were found to correlate significantly with gain scores, though in general these correlations were rather low: with two exceptions, all correlations were between  $-.18$  and  $.21$ . Larger correlations were found for length of course ( $r=.27$ ) and initial writing score ( $r=-.53$ ); the latter correlation mirroring Elder and O'Loughlin's finding that students with the lowest starting scores improve the most. Entering all 34 variables into a neural network-based analysis, Green found that the full set of variables accounted for 41% of variance in writing gains, but a large majority of this was accounted for by initial test scores alone.

The present research will follow the example of these studies in determining which, if any, variables influence the score gains achieved by individual students. It will draw on the findings of these previous studies in determining a list of variables to be included in the analysis. As this study is also interested in the relationship between initial proficiency and course achievement, it will also consider how such variables influence this relationship.

#### **4. Research Questions**

This study aims to answer the following questions:

1. To what extent do scores on PTE Academic at the start of a 10-week EAP programme predict university applicants' achievement in that programme (as measured by in-house tests)?
2. To what extent do students on a 10-week EAP programme make progress in various areas of language proficiency, and their supporting skills, as measured by PTE Academic?
  - a. How much improvement can be expected over a 10-week period of 200 hours of class based tuition?
  - b. Which language skills and supporting skills are most susceptible to positive change?
3. Are 1) the relationship between initial PTE Academic score and course achievement and 2) the extent of students' improvement in proficiency related to potential relevant individual differences between students? Specifically, how are they related to: initial level of proficiency; age; country of origin; first language; accommodation type; amount of self-study; self-

perception; motivation; highest level of previous education; attitude to the study context; self-perceived progress; perceived importance of each skill; attitude to the test?

## 5. Context

The EAP programme around which this study was based was run by a joint venture partnership organisation jointly owned by a university and a private provider. The purpose of this joint venture organization is to provide pre-university language and foundation programmes. This programme was a 10-week course which aimed to prepare students for pre-degree and degree-level study in the UK. Before commencing their studies, students were divided into levels according to their starting proficiency (as determined by incoming proficiency scores and an in-house placement test). The cohort studied in this project was divided across three levels. At all levels, the programme focused both on core elements of the English language and on academic skills, including academic speaking, listening, reading and writing, note-taking, research and project skills, report writing, and presenting. Students took part in 20 hours of class per week, supplemented by tutorial support. During the course, students were expected to complete class homework assignments, guided independent learning tasks and one piece of written coursework which counted towards their final assessment. Successful completion of the course enables students to access degrees in the host university without the need for an external proficiency exam. It also enables guaranteed progression to one of the joint venture's foundation, diploma or graduate diploma programmes.

## 6. Methods

### 6.1 Design

Four sets of data were collected for this study:

- Results of a PTE Academic test (PTE Academic 1) taken by EAP students immediately prior to commencing their programme of study.
- Results of a second PTE Academic test (PTE Academic 2), taken on completion of the EAP programme.
- Results of in-house end-of-course assessments.
- Results of a questionnaire completed by students on completion of the EAP programme

Research Question 1 will be addressed by comparing the result of the first PTE Academic test with the results of the in-house end-of-course assessment. Research Question 2 will be addressed by comparing the results of the first and second administration of the PTE Academic test. Research Question 3 will be addressed by relating the results from Questions 1 and 2 to individual differences elicited through the questionnaire.

### 6.2 Instruments

#### 6.2.1 PTE Academic tests

Pearson supplied two full PTE Academic practice tests for this project. The tests take around three hours to complete and consist of separate sections predominantly assessing speaking, writing, listening and speaking. All sections are completed online and graded automatically. The scores, which are on a scale of 10-90, are made available to test-takers within a few minutes of test completion.

## 6.2.2 End-of-course assessment

Achievement in the EAP course is evaluated through five different means of assessment:

1. A one-hour writing exam, graded by two markers using score bands. Students write a single text and have a choice of three essay types: compare and contrast essay; two-sided argument; problem/solution.
2. A written project, completed over five weeks. This is a process-based project, with students receiving feedback from both peers and tutors before submitting a final draft. Projects are evaluated by each student's tutor according to score bands. The type of project completed depends on the level of the student.
  - a. Level 1: a 400-450 word compare-contrast essay based on one source.
  - b. Level 2: a 500-550 word two-sided argument essays, based on one source.
  - c. Level 3: an 800-1000 word problem-solution essay, based on several sources. in which students either write an essay or a research project.
3. A 1.5 hour reading exam, comprising two texts, one given one week in advance and the other given in the exam. Texts are adapted from academic articles on general topics. Tasks include: matching topics with paragraphs; identifying the order of ideas; identifying topics mentioned; multiple choice; true/false; vocabulary matching; finding the reference of words.
4. A one-hour listening exam, comprising two parts. The first is a scripted and pre-recorded lecture on a non-specialist topic (e.g. being a student; causes of stress; exam strategies). Students take guided notes before answering questions. They then listen to the lecture a second time to complete any unanswered questions. In the second part, students listen to a semi-scripted seminar discussion on an academic topic. They are given questions in advance and listen to the discussion once only.
5. A speaking assessment. Speaking is graded by two markers according to score bands. Tasks are recorded so that a third marker can be consulted in the case of discrepancies. This task differs across levels:
  - a. Levels 1-2: students take part in a seminar discussion in groups of 3-4. Groups are given written materials relevant to the discussion five minutes before the session starts and are allowed to make notes. After the group discussion, each student is given one long turn.
  - b. Level 3: students give an individual presentation on a topic of their choice.

An overall writing grade is calculated by combining parts 1 and 2. At levels 1 and 2, greater weight is given to the exam (70% exam, 30% extended essay), while at level 3, exam and extended essay are given equal weighting. An overall course grade for students at level four is calculated as the average of grades for the four skills. For level 3, grades are calculated using the following weightings: Speaking 25%; Listening 25%; Reading 20%; Extended essay: 20%; Written exam 10%.

Although the writing and speaking tasks required of students at different levels differ, all levels are graded using the same scales. Meaningful comparisons can therefore be drawn between students studying for different levels of the course and results from the different levels involved in the study will not be treated differentially in the following analyses.

### 6.2.3 Questionnaire

A questionnaire was administered at the end of the study in order to investigate learner variables which may have influenced the gain scores and the predictive validity of PTE Academic. Based on previous research (Elder & O'Loughlin, 2003; Green, 2009; Hughes Wilhelm, 1997), 11 variables of potential interest were identified, as shown in Table 1. Information on variable 1 was available from school records. The remaining variables were elicited through the questionnaire. Table 1 shows which items from the questionnaire (reproduced in Appendix 1) related to which variables.

Table 1: Individual difference variables

Number	Variable	Source
1	Current age	School records
2	Age of onset of learning English	Questionnaire item 3
3	Highest level of previous education	Questionnaire item 2
4	Accommodation type	Questionnaire item 5
5	Amount of self-study	Questionnaire items 6-10
6	Attitude to programme of study	Questionnaire items 14, 18, 19
7	Attitude to host nation	Questionnaire items 12, 16, 17
8	Self-perception of language learning aptitude	Questionnaire items 11, 15, 20
9	Self-perceived progress	Questionnaire items 13, 21-24
10	Perceived importance of each skill	Questionnaire items 25-28
11	Attitude to the test	Questionnaire items 29, 30

The questionnaire included three multi-item scales:

- The *self-perception* scale (items 11, 15 and 20)
- The *attitude to course* scale (items 14, 18 and 19)
- The *attitude to host country* scale (items 12, 16 and 17)

For the self-perception and attitude to host country scale, reliability was rather low (for both, Cronbach's  $\alpha = .61$ ). The attitude to course scale was higher (Cronbach's  $\alpha = .69$ ), but, within this, item 14 (which was negatively worded) dramatically reduced the reliability of the scale (Cronbach's  $\alpha$  with item 14 removed = .77). In the data analysis, therefore, the items making up the self-perception and attitude to host country scales will be treated separately, rather than as parts of scales. Items 18 and 19 will be combined to form the attitude to course scale and item 14 will be treated separately. Questionnaire item 10 ("On average, about how much time do you spend each day *outside of class* studying for your English classes") was intended to elicit overall out of class study times, but appears to have been interpreted by many participants as asking how much time they spend *in* their English classes. Results from this item will therefore be excluded from the analysis.

### 6.3 Procedure

Ethical approval for the study was provided by the researcher's institutional review board in advance of the study. All students taking part in the EAP programme in the autumn term of 2014 were invited to participate in the study on arrival at the university. In return for their help, and to encourage them to take the PTE Academic tests seriously, they were told that any participants who failed to attain the scores they required for progression in the in-house end-of-course assessment would be allowed to submit their best PTE Academic score as alternative evidence of their proficiency. Participants did not know the results of their end-of-course assessments at the time of taking the PTE Academic tests. Students were informed orally about the study either by the researcher or the programme director and were

given written information sheets (Appendix 2). Students volunteering to take part returned completed consent forms (Appendix 3) to the programme director prior to data collection.

Students who chose to take part in the study were provided with links to the PTE Academic guidance and preparation materials at <http://pearsonpte.com/test-takers/test/test-format/> and <http://pearsonpte.com/test-takers/preparation/> and advised to review the test format in advance. They completed the first PTE Academic test during their induction week, prior to commencing the EAP programme.

When nearing completion of the programme, all students who had participated in the first PTE Academic test were invited to take a second version of the test during the final week of the EAP programme. Again, participating students were provided with links to the PTE Academic guidance and preparation materials. On completion of the second test, students also completed the questionnaire.

## 6.4 Participants

81 students (45 female; 36 male) completed the first PTE Academic test. Participants' mean age was 22.8 years (SD=4.7; min=17; max=40). 51 students (30 female; 21 male) completed the second PTE Academic test. Participants' mean age was 23.0 (SD=4.7; min=17; max=40). The countries of origin of participants in the two tests are shown in Table 2.

Table 2: Participants' countries of origin

<i>Country of Origin</i>	<i>Number of Participants PTE Academic 1</i>	<i>Number of Participants PTE Academic 2</i>
P. R. China	28	23
Japan	23	11
Kazakhstan	10	7
Saudi Arabia	8	2
Hong Kong	2	0
Oman	2	2
Taiwan	2	2
Thailand	2	1
France	1	1
Russia	1	1
UAE	1	1
Ukraine	1	0

## 7. Results and Discussion

### 7.1 How well does PTE Academic predict performance in the end-of-course assessment?

Several participants reported to invigilators that they had encountered technical problems during the PTE Academic 1 test. Problems included involuntarily skipping questions, headsets which did not function and computers automatically restarting during particular sections of the text. This was reflected in the test scores, where some students received baseline scores (of 10) for particular skills. As these scores appear to indicate problems encountered during the test, rather than students' actual abilities, where a student received a baseline score on a particular skill, their data is not included in the analysis of results for that skill. For the 'total' score, which combines scores from all skill sections, data are only included where



participants did not score 10 on any skill.

Descriptive statistics for the PTE Academic 1 test are shown in Table 3. As data for some skill areas were not normally distributed, non-parametric statistics are provided.

Table 3: Results of the PTE Academic 1 test

Country of Origin	Number of Participants	Score			
		Median	IQR	Min	Max
Total	62	35	7	21	52
Speaking	64	39	9	14	55
Listening	77	34	10	11	52
Writing	77	32	7	12	53
Reading	77	30	9	12	49

Descriptive statistics for the in-house end-of-course test are shown in Table 4. As these data are included for the purpose of comparison with PTE Academic 1 results, only participants whose data were included in Table 3 are included here. As data from some skill areas were not normally distributed, non-parametric statistics are provided.

Table 4: Results of the EAP assessment

Country of Origin	Number of Participants	Score			
		Median	IQR	Min	Max
Total	62	58	5	44	66
Speaking	64	56	6.25	45	69
Listening	77	59	5	42	68
Writing	77	56	6	45	64
Reading	77	59	8	44	67

The first research question concerned the relationship between the PTE Academic 1 scores and scores on the end-of-course assessment. To answer this, Table 5 shows the spearman correlations between each part of the two assessments.

Table 5: Correlations between PTE Academic 1 and EAP assessment

Skill	Number of Participants	Correlation
Total	62	$r_s = .58$
Speaking	64	$r_s = .55$
Listening	77	$r_s = .45$
Writing	77	$r_s = .47$
Reading	77	$r_s = .44$

all  $ps < .001$

Moderate correlations were found between the two assessments in all skill areas, with the strongest correlation in speaking ( $r_s = .55$ ) and the weakest in reading ( $r_s = .44$ ). The correlation between the global scores for the two sets of assessments is a little higher, at  $r_s = .58$ . This indicates that between 19% (for reading) and 30% (for speaking) of variance in the end-of-course scores is accounted for by starting proficiency, as this is measured by the PTE Academic, with the overall score accounting for 34% of variance. Performance on the PTE Academic therefore appears to be a reasonably good guide to students' later performance on the EAP

programme.

It is unsurprising that the strongest correlations are seen in the overall grades. The internal reliability of each test is higher for the overall score than for any of the individual components as it is based on a larger number of items (i.e. the total of items across all components). Since the ceiling for the correlation between the two texts is the product of the reliabilities of each, this implies that correlations between overall scores will naturally be higher than those for individual skills. In practical terms, this implies that overall grades are probably a better guide for admissions decisions than grades achieved in particular skills sections.

Perhaps rather more surprising is the fact that achievement in productive skills (writing and, especially, speaking) is more closely related to PTE Academic scores than achievement in receptive skills (reading and listening). The use of automated grading for productive skills in PTE Academic may well raise concerns in some users as to the validity of these sub-tests. However, the present data suggest that these measures are at least as valid as the more traditional tests of receptive skills.

## 7.2 How did participants' scores change between PTE Academic 1 and PTE Academic 2?

Table 6 compares participants' scores in the first and second administrations of the PTE Academic test. Only participants who participated in both tests are included in the analysis. As before, baseline scores in any particular skill were discarded from the analysis.

Table 6: Change in scores between PTE Academic 1 and PTE Academic 2

	<i>Number of Participants</i>	<i>PTE Academic 1 Median</i>	<i>PTE Academic 2 Median</i>	<i>Gain</i>	<i>Wilcoxon signed-rank test</i>
Total	41	35	37	2	V=32.5, p<.001
Speaking	42	39.5	42	2.5	V=81, p<.001
Listening	51	34	38	4	V=119, p<.001
Writing	51	31	35	4	V=220.5, p<.001
Reading	51	30	35.5	5.5	V=100, p<.001

Small but significant gains were seen in all skills. In line with previous studies, the skill with the lowest initial score (reading) improved the most and the skill with the highest initial score (writing) improved the least. As much of the previous work into proficiency gains in similar EAP courses has used IELTS as the measure of improvement, it is worth considering how these scores would translate into IELTS scores. IELTS equivalents for the median scores from Table 6 are shown in Table 7. These conversions are based on the guide provided by Pearson<sup>1</sup>.

Table 7: Change in scores between PTE Academic 1 and PTE Academic 2 – IELTS equivalents

	<i>PTE Academic 1 Median IELTS equivalent</i>	<i>PTE Academic 2 Median IELTS equivalent</i>
Total	5.0	5.0

<sup>1</sup> Retrieved from <http://pearsonpte.com/test-takers/results/> on 31<sup>st</sup> March 2015

Speaking	5.0	5.5
Listening	4.5	5.0
Writing	4.5	5.0
Reading	4.5	5.0

Based on these equivalences, participants showed increases of 0.5 bands in all skill areas, but no improvement in global score. These results are very much in line with the findings of Elder and O'Loughlin (2003), the most directly comparable previous study, who found mean gains of 0.6 of a band in the global score, 0.78 in listening, 0.55 in writing 0.5 in speaking and 0.4 in reading. It is important to note, however, that the broad band scores hide differences between skills: the speaking gain of 0.5 bands was achieved despite rather low levels of improvement because the initial score was already close to the boundary between 5.0 and 5.5. in contrast, the gain in reading represents a shift from the bottom of the 4.5 band to the bottom of the 5.0 band.

### 7.3(a) Is the relationship between PTE Academic 1 and course achievement mediated by individual differences?

We have already seen that there is a moderate correlation between scores on PTE Academic at the beginning of the programme and scores in end-of-course assessment (see Table 5). Table 8 shows the results of a simple regression, with overall EAP scores as the outcome variable and PTE Academic 1 scores as the predictor variable. As the previous analysis would lead us to expect, PTE Academic 1 is a significant predictor of EAP outcomes, with an adjusted  $R^2$  of .27.

Table 8: PTE Academic 1 as a predictor of overall EAP results: simple regression

	<i>Adjusted R<sup>2</sup></i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>p</i>
Model	0.27				
Constant		44.05	2.78		<.001
PTE Academic 1		0.38	0.08	.53	<.001

The aim of research question 3a was to explore whether and how the relationship between PTE Academic 1 scores and performance on the end-of-course assessment differed when the individual variables detailed in Table 1 are controlled for. To determine this, a multiple regression was performed with the individual variables described in Table 1 incorporated as additional predictor variables. Table 9 shows the outcome of this analysis. PTE Academic 1's standardized beta ( $\beta$ ), which shows the influence of this variable on the outcome, changes only marginally when all other variables are controlled for (from .53 to .55), suggesting that its relationship with course outcomes is consistent across the other variables measured. Overall, the addition of extra variables made only a small contribution to the accuracy of the model, and no variables other than PTE Academic 1 score made a statistically significant contribution, suggesting that they had little influence on the final EAP scores.

Table 9: PTE Academic 1 and individual differences as predictors of overall EAP results – multiple regression

		<i>Adjusted R<sup>2</sup></i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>p</i>
Model		0.31				
Constant			57.79	16.92		<.005
PTE Academic 1			0.39	0.14	.55	<.01
Age	Age of onset		-0.07	0.17	0.12	>.05
	Current age		0.09	0.18	0.09	>.05
Education	Level of education		-1.26	2.00	0.28	>.05
Accommodation	Lived with L1-speaking students		0.32	2.45	0.03	>.05
	Lived with non-L1-speaking students		-2.25	2.15	0.25	>.05
	Lived with family		-7.65	7.51	0.24	>.05
	Lived with host family		3.64	3.65	0.32	>.05
	Lived alone		0.00	5.02	0.00	>.05
Self-study	Self-study: speaking		0.01	0.02	0.09	>.05
	Self-study: TV		0.01	0.02	0.13	>.05
	Self-study: listening		-0.09	0.04	0.68	>.05
	Self-study: reading		0.06	0.04	0.47	>.05
Attitudes	Attitude to course		3.26	2.27	0.83	>.05
	Course not useful		0.27	1.59	0.14	>.05
	Happy living in Anglophone country		-2.40	2.38	0.53	>.05
	Enjoy meeting British people		1.34	1.55	0.37	>.05
	Not like British culture		1.64	1.80	0.82	>.05
	Good at language learning		-2.29	1.67	0.85	>.05
Self-perception	Better than other students		0.17	2.28	0.06	>.05
	Learning English difficult		-3.42	1.80	1.24	>.05
	Overall		1.52	2.72	0.41	>.05
Perceived progress	Writing		-0.86	2.11	0.25	>.05
	Reading		-1.98	3.30	0.58	>.05
	Speaking		-3.29	4.48	0.91	>.05
	Listening		-1.30	2.36	0.40	>.05
	Writing		-0.17	2.42	0.04	>.05
Perceived importance	Reading		-3.03	4.65	0.66	>.05
	Speaking		-0.48	2.29	0.09	>.05
	Listening		3.90	2.17	0.92	>.05
	PTE Academic is accurate		2.25	2.39	0.75	>.05

	PTE Academic is important		2.43	2.40	0.87	>.05
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### 7.3(b) Are changes in participants' scores between PTE Academic 1 and PTE Academic 2 related to individual differences?

Research Question 3b aimed to determine whether gains in proficiency over the length of the course were associated with any of the individual variables listed in Table 1. Table 10 shows the correlations between gain scores and each of the variables. As many of the variables were non-parametric, spearman correlations are used throughout.

As in previous studies (Elder & O'Loughlin, 2003; Green, 2009; Hughes Wilhelm, 1997, 1999), relationships between score gains and individual differences were small. However, a few interesting patterns did emerge. Specifically:

- Age of onset showed positive correlations with gains in the overall assessment score ( $r_s=.37$ ), such that students who had started learning English later in life benefited most from the course. An intuitive conclusion from this finding may be that students who started learning at a later age started the course from a weaker position and that the correlation is therefore a by-product of the relationship already noted between starting proficiency and gain scores. However, follow-up analyses showed that age of onset is not correlated with PTE Academic 1 scores ( $r_s=.07$ ,  $p>.05$ ), suggesting that the effects are independent.
- The amount of time spent watching TV or listening to radio/podcasts outside of class did not show any correlations with proficiency gains; nor did the amount of time spent speaking English outside of class. However, the amount of time spent reading outside of class showed positive correlations with overall score gains ( $r_s=.33$ ), and gains in speaking ( $r_s=.28$ ). It also showed a correlation with improvements in reading ( $r_s=.22$ ) which approached significance ( $p<.06$ ).
- Positive attitudes towards the course were associated with gains in speaking ( $r_s=.37$ ) and listening ( $r_s=.24$ ). Negative attitudes towards the course were inversely correlated with gains in writing ( $r_s=-.24$ ).
- Though most aspects of attitudes towards the host nature were not related to gains, participants who reported being 'happy living in an English-speaking country' showed greater gains in listening ( $r_s=.29$ ).
- Self-perceived aptitude was not, in general, associated with greater gain scores, though participants who saw themselves as 'usually doing better than other students' tended to show greater gains in reading ( $r_s=.31$ ).
- Students who believed that they had learned a lot from the course tended to show larger gains overall ( $r_s=.30$ ) and in listening ( $r_s=.27$ ), writing ( $r_s=.23$ ) and reading ( $r_s=.24$ ). While this suggest that students have a good overall sense of their progress, this relationship is less reliable at the levels of individual skills: students' perceptions of their progress in writing were not significantly correlated with gain; gains in listening were correlated with perceptions of progress in reading ( $r_s=.24$ ) and speaking ( $r_s=.31$ ), while gains in writing were associated with perceptions of improvement in listening ( $r_s=.27$ ).
- Students' attitudes to the PTE Academic test itself were associated with gains in performance. Students who believed PTE Academic was an accurate measure of their proficiency showed greater gains overall ( $r_s=.26$ ) and in speaking ( $r_s=.26$ ) and listening ( $r_s=.27$ ), while students who saw their performance in PTE Academic as important for them showed greater gains overall ( $r_s=.27$ ), in listening ( $r_s=.31$ ) and in reading ( $r_s=.27$ ).

Table 10: Correlations between individual differences and gain scores

		<i>Spearman's rho (p)</i>				
		Total	Speaking	Listening	Writing	Reading
Age	Age of onset*	<b>0.37</b> <b>(0.02)</b>	0.18 (0.26)	0.21 (0.14)	0.25 (0.08)	0.01 (0.92)
	Current age*	0.13 (0.42)	0.09 (0.58)	0.15 (0.30)	-0.06 (0.68)	0.23 (0.10)
Education	Level of education*	0.09 (0.58)	0.15 (0.34)	0.14 (0.34)	-0.04 (0.76)	0.23 (0.12)
Accommodation	Lived with L1-speaking students*	-0.03 (0.84)	0.00 (0.98)	0.15 (0.30)	0.00 (0.98)	-0.12 (0.40)
	Lived with non-L1-speaking students*	0.02 (0.9)	-0.07 (0.66)	-0.17 (0.22)	0.17 (0.22)	-0.01 (0.92)
	Lived with family*	0.07 (0.68)	0.14 (0.40)	-0.03 (0.84)	-0.08 (0.60)	0.14 (0.34)
	Lived with host family*	-0.15 (0.34)	-0.25 (0.12)	-0.21 (0.14)	-0.06 (0.66)	-0.20 (0.16)
	Lived alone*	0.07 (0.68)	0.24 (0.12)	0.25 (0.08)	0.01 (0.94)	0.10 (0.48)
Self-study	Self-study speaking**	0.02 (0.44)	-0.21 (0.10)	0.15 (0.15)	0.14 (0.18)	-0.11 (0.24)
	Self-study TV**	-0.06 (0.36)	-0.02 (0.44)	-0.04 (0.38)	-0.04 (0.40)	0.03 (0.41)
	Self-study listening**	0.1 (0.27)	-0.01 (0.47)	0.16 (0.14)	0.09 (0.27)	0.10 (0.25)
	Self-study reading**	<b>0.33</b> <b>(0.02)</b>	<b>0.28</b> <b>(0.03)</b>	0.08 (0.30)	0.17 (0.12)	0.22 (0.06)
Attitudes	Attitude to course**	0.24 (0.07)	<b>0.37</b> <b>(0.01)</b>	<b>0.24</b> <b>(0.05)</b>	0.06 (0.33)	0.09 (0.26)
	Course not useful**	-0.14 (0.19)	-0.06 (0.36)	-0.17 (0.12)	<b>-0.24</b> <b>(0.05)</b>	0.05 (0.36)
	Happy living in Anglophone country**	0.10 (0.26)	0.13 (0.21)	<b>0.29</b> <b>(0.02)</b>	0.08 (0.30)	0.09 (0.28)
	Enjoy meeting Brits**	-0.01 (0.48)	0.10 (0.27)	-0.03 (0.41)	0.02 (0.44)	0.09 (0.26)
	Not like British culture**	0.06 (0.35)	-0.07 (0.33)	-0.10 (0.25)	-0.05 (0.36)	-0.06 (0.35)
Self-perception	Good at language learning**	-0.11 (0.24)	-0.02 (0.45)	-0.22 (0.06)	-0.12 (0.21)	0.01 (0.47)
	Better than other students**	0.04 (0.40)	0.06 (0.36)	-0.08 (0.29)	-0.05 (0.35)	<b>0.31</b> <b>(0.01)</b>
	Learning English difficult**	-0.11 (0.24)	-0.13 (0.21)	0.03 (0.42)	-0.13 (0.18)	0.09 (0.27)
Perceived progress	Overall**	<b>0.30</b> <b>(0.03)</b>	0.14 (0.19)	<b>0.28</b> <b>(0.03)</b>	<b>0.23</b> <b>(0.05)</b>	<b>0.24</b> <b>(0.05)</b>
	Writing**	-0.01 (0.47)	0.08 (0.31)	-0.07 (0.32)	-0.09 (0.27)	-0.15 (0.15)
	Reading**	0.20	0.10	<b>0.24</b>	-0.05	0.15

		(0.10)	(0.26)	<b>(0.04)</b>	(0.35)	(0.15)
	Speaking**	<b>0.31</b> <b>(0.03)</b>	0.07 (0.34)	<b>0.31</b> <b>(0.01)</b>	0.19 (0.09)	0.12 (0.19)
	Listening**	0.24 (0.06)	0.01 (0.47)	0.16 (0.13)	<b>0.27</b> <b>(0.03)</b>	0.12 (0.21)
Perceived importance	Writing**	0.05 (0.38)	0.24 (0.06)	-0.06 (0.34)	-0.05 (0.36)	-0.07 (0.31)
	Reading**	0.12 (0.24)	0.16 (0.15)	0.01 (0.47)	-0.11 (0.21)	-0.03 (0.42)
	Speaking**	0.06 (0.36)	0.05 (0.37)	0.01 (0.48)	-0.1 (0.25)	0.01 (0.48)
	Listening**	0.14 (0.19)	-0.07 (0.33)	0.12 (0.19)	0.02 (0.44)	0.02 (0.45)
Test	PTE Academic is accurate**	<b>0.26</b> <b>(0.05)</b>	<b>0.26</b> <b>(0.05)</b>	<b>0.27</b> <b>(0.03)</b>	0.00 (0.49)	0.18 (0.10)
	PTE-A is important**	<b>0.27</b> <b>(0.05)</b>	0.17 (0.14)	<b>0.31</b> <b>(0.01)</b>	0.10 (0.25)	<b>0.27</b> <b>(0.03)</b>

## 8. Conclusions

This study started with a number of practical questions regarding the use of PTE Academic in making decisions about admitting applicants to pre-degree EAP programmes. Specifically, it addressed the questions of how well pre-programme PTE Academic scores predict applicants' levels of achievement on an EAP programme, how much progress students make in terms of PTE Academic scores over the length of the programme, and what variables influence each of these. It is now possible to answer these questions.

PTE Academic demonstrated good predictive-validity, showing moderate to strong correlations with students' final achievement in the course. On individual skills, correlations ranged from  $r_s=.44$  (for reading) to  $r_s=.55$  (for speaking). The strongest correlation was seen for the overall score ( $r_s=.58$ ). Overall PTE Academic scores therefore seem to offer a good means of estimating applicants' likely levels of achievement on the EAP programme studied here. Multiple regression analysis showed that the relationship between PTE Academic score and course achievement was relatively constant across a wide range of individual differences.

Students were seen to progress by between 2.5 (for speaking) and 5.5 (for reading) points on average. When translated into corresponding IELTS grades, these findings are seen to be in line with those of Elder and O'Loughlin (2003), who studied EAP programmes across a similar length of time and found gains of around 0.5 bands in all areas.

Gain scores were slightly or moderately influenced by a number of factors. Most prominent amongst these were the age at which students had started to learn English (later starters profited more from the programme) and the amount of time students spent reading outside of class (with students who read more improving more). Positive attitudes towards the course and the host country also had some influence on achievement, as did attitudes towards PTE Academic itself, with students who believed the test was accurate and who believed it was important for them improving the most.

These findings are, of course, limited in that they refer to predictive validity and gain in the context of a single cohort on a single EAP programme. It would be of

interest to learn to what extent, and in what ways, these differ across a broader range of student groups and programmes. It is hoped that future studies will cumulatively expand our knowledge base and provide a picture which is both more robust and allows us to better understand any moderating variables which influence predictive validity and gain. It is also important to acknowledge that purely quantitative studies of the sort presented here run the risk of 'averaging out' important variations in learners' performances (Larsen-Freeman & Cameron, 2008) and abstract away from the classroom realities as they are experienced by the students and teachers involved. Studies of this sort therefore need to be complemented by qualitative work to provide a more rounded picture of how proficiency test scores relate to performance and improvement in EAP programmes. Again, it is hoped that future research will address these limitations.

Finally, as other researchers have noted, it is important to bear in mind that, though they are clearly strongly related, EAP programmes are not usually intended to address precisely the same constructs as those tapped by academic proficiency tests, such as PTE Academic (Turner, U, Cartner, Jenner, & Mann, 2009). While the present study has identified a great deal of shared variance between these two constructs, it would be of both theoretical interest and practical importance to further understand how the abilities fostered by EAP programmes diverge from academic language proficiency and how each relates to students' later performance on their degree programmes.



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**Appendix 1: End of Course Questionnaire**

*In this questionnaire, we would like to find out some information about you and your experiences during the EUS programme. This is to help us understand what things affect students' success.*

*The questions should take about 10 minutes to finish. If you don't understand anything, please ask your teacher.*

*We need your name to help us organize our information, but we won't tell anyone about the information you give here or include your name in our reports.*

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1. What is your name? \_\_\_\_\_  
 \_\_\_\_\_  
 (given name) (family name)

2. What is the highest level of education you have completed? (please tick)

High School	<input type="checkbox"/>
Bachelors degree	<input type="checkbox"/>
Masters post degree	<input type="checkbox"/>
Doctorate	<input type="checkbox"/>

3. How old were you when you started to learn English? \_\_\_\_\_ years

4. Please tell us why you decided to take this course:  
 'I am doing this course because I want  
 to \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

5. During the course, I have been living ... (please tick all that apply)

with other students who speak my first language	
with other students who don't speak my first language	
with my family	
with a host family	
alone	

On average, about how much time do you spend each day *outside of class* doing the following things:

- 6. Speaking with people in English \_\_\_\_\_  
minutes/day
- 7. Watching TV/films in English (without subtitles) \_\_\_\_\_  
minutes/day
- 8. Listening to the radio/podcasts in English \_\_\_\_\_  
minutes/day
- 9. Reading in English \_\_\_\_\_  
minutes/day
- 10. Studying for your English classes \_\_\_\_\_  
minutes/day

Look at these statements and tell us how much you agree or disagree with each:

		strongly agree	agree	neutral	disagree	strongly disagree
11.	I am good at language learning					
12.	I am happy to be living in an English speaking country					
13.	My English has improved a lot during this course					
14.	I DON'T think this course has been useful					
15.	I usually do better in English classes than other students.					

16.	I usually enjoy meeting British people					
17.	I do NOT like British culture					
18.	I have enjoyed this course					
19.	I'm glad I did this course					
20.	Learning English is difficult for me					
21.	My WRITING skills have improved during this course					
22.	My READING skills have improved during this course					
23.	My SPEAKING skills have improved during this course					
24.	My LISTENING skills have improved during this course					
25.	WRITING skills are very important for me					
26.	READING skills are very important for me					
27.	SPEAKING skills are very important for me					
28.	LISTENING skills are very important for me					
29.	The PTE Academiccademic test gives a good picture of my ability in academic English					
30.	It is important for me to do well on the PTE Academiccademic test					

31. Did you have any difficulties doing the PTE Academiccademic test? If YES, please explain.

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## Appendix 2: Participant Information Sheet



**Graduate School of Education  
in collaboration with XXX**

**Research Study into the Pearson Test of English: Academic**

**This is an information sheet for XXX students who are continuing on their English programme in the September – December 2014 term**

### ***Introduction***

We would like to invite you to take part in some research being carried out by XXXX and the University's Graduate School of Education.

The research will study the Pearson Test of English: Academic (PTE Academic). This is a test of academic English (similar to IELTS or TOEFL), which can be used in applications to universities ( <http://www.pearsonpte.com>).

We are trying to find out how students' scores on this test compares with their scores in the XXX exams and how much their scores on the test increase during the programme.

### ***The benefits of taking part***

PTE Academic is a new alternative to IELTS and TOEFL, recognized by a large number of universities. By taking part in this study, you will have the chance to experience this exam and decide whether you would like to take it at a later date. Because you will do the exam twice, you will also be able to use your scores to see how far your English proficiency progresses over the course of your XXX programme. Also, as long as you complete the second test, you will be able to use this score for progression to your pathway programme if it is higher than your end-of-course XXX score.

### ***What will you do if you take part?***

If you agree to take part in this study:

- you will take two PTE Academic tests: one at the beginning of your course and one at the end. These will be identical to real PTE Academic tests but, because you are not taking them at a PTE centre, you won't be able to use the scores for admissions purposes to other institutions.
- you will not have to pay for these tests - they are being provided by Pearson for free.
- you will complete a short questionnaire at the end of the programme.

You should be aware that:

- you do not have to agree to take part in this study. Your decision to take part or not will not affect your status on the XXX programme
- if you decide to take part, your PTE Academic test scores and questionnaire responses will not negatively affect your XXX programme or your XXX assessment, but you will be able to use this score for progression to your pathway programme if it is higher than your end-of-course XXX score.

If you do agree to take part in the test research, your first PTE test will be:

on **Friday 19<sup>th</sup> September**

**at 9:15 am** (finishing at approximately 12:30)

**in the XXX Building, computer room 0:04 / 0:03**

You don't have to prepare if you don't want to, but if you do want to learn more about the test and look at practice materials, you can go to this web-site:

<http://pearsonpte.com/test-takers/preparation/>

We will email this link to you, along with test practice files.

The Pearson PTE: Academic Test has a different format from other tests, but it is good practice for anyone who is going to take an IELTS or TOEFL test.

**Appendix 3: Consent Form**

**Using PTE Academic to predict achievement and measure proficiency gains in an intensive EAP foundation programme**

I have been fully informed about the aims and purposes of the project.

I understand that:

there is no compulsion for me to participate in this research project and, if I do choose to participate, I may at any stage withdraw my participation

I have the right to refuse permission for the publication of any information about me

any information which I give will be used for the purposes of this research project, which may include publications

the information which I give may be shared between any of the other researcher(s) participating in this project in an anonymised form

I may use the scores from my second PTE Academic test for progression to my pathway programme

my XXX programme and assessment will not be negatively affected by my performance in the test

the information which I give will be shared with Pearson Education Ltd.

all information I give will be treated as confidential

the researcher(s) will make every effort to preserve my anonymity

.....  
 .....

(Signature of participant )  
 (Date)

.....

(Printed name of participant)

One copy of this form will be kept by the participant; a second copy will be kept by the researcher(s)

Contact phone number of researcher(s):...XXXX.....

If you have any concerns about the project that you would like to discuss, please contact:

Philip Durrant (Graduate School of Education): p.l.durrant@exeter.ac.uk

OR

XXXX (XXX): XXXX

Data Protection Act: The University of Exeter is a data collector and is registered with the Office of the Data Protection Commissioner as required to do under the Data Protection Act 1998. The information you provide will be used for research purposes and will be processed in accordance with the University's registration and current data protection legislation. Data will be confidential to the researcher(s) and will not be disclosed to any unauthorised third parties without further agreement by the participant. Reports based on the data will be in anonymised form.



