3   A Comparison of IELTS and TOEFL as Predictors of Academic Success.

Kathryn Hill, Neomy Storch and Brian Lynch
The University of Melbourne

Abstract

With increasing numbers of international students enrolling in universities in English speaking countries such as Australia, the question of the level of English language proficiency (ELP) necessary for academic success becomes critical. The main question for this study was the usefulness of IELTS and TOEFL (the two main measures of ELP used for selection to universities in Australia) respectively as predictors of readiness for the Australian academic context. However, earlier research suggests that ELP is only one of a number of factors impinging on academic success (Davies 1990; Criper & Davies, 1988). This study was, therefore, also concerned with additional factors which may influence academic progress, such as the effect of English language support. The research was carried out at the University of Melbourne. Data for the study included students' IELTS and/or TOEFL scores and Grade Point Average as well as questionnaire and interview data. The relationship between GPA and IELTS scores was found to be moderately strong whereas the correlation between achievement and TOEFL score was relatively weak. These results appear to be consistent with the results of previous studies. In the interview and questionnaire data students identified non-linguistic factors affecting their academic performance which may help to explain the weak correlations between ELP score and academic success.

IELTS
English for International Opportunity

Publishing details

**International English
Language Testing System (IELTS)**

Research Reports 1999

Volume 2

1.0   Introduction

This research investigates the relationship between English language proficiency and academic performance for international NESB students at the University of Melbourne.

As universities in Australia pursue policies aimed at internationalisation, increasing the numbers of international students and exchanges with overseas institutions, the question of the level of English language proficiency (ELP) necessary for academic success becomes critical.   The aim of this research was to investigate the relationship between ELP and academic success for international NESB students[27] at the University of Melbourne.   For the purposes of university selection, and therefore for this project, ELP is defined as a score on IELTS and/or TOEFL and 'academic success' is defined by Grade Point Average (GPA).

Central to this research is the issue of measuring the level of ELP necessary for successful university study.   All applicants to the University of Melbourne are required to demonstrate their competence in English language.   International NESB students may do this by gaining a suitable score on the International English Language Testing System (IELTS), the Test of English as a Foreign Language (TOEFL) or a pass in the Victorian Certificate of Education (VCE) English/ESL (or equivalent within Australia).

The ELP requirement springs from an assumption that a certain degree of English language competence is a pre-requisite to academic success.   However, research has been inconclusive regarding the minimum level of ELP required.   A number of studies have indicated that ELP is a better predictor of academic success for low proficiency than for higher proficiency students (Graham, 1987; Elder, 1993) and that the relationship is strongest at the end of first semester (Light et al, 1987; Elder, 1993).   Research also suggests that the relationship between ELP and academic success may vary between academic majors, depending on their linguistic demands (Palmer & Woodford, 1978; Graham, 1987; Light et 9 1987; Criper & Davies, 1988; Elder, 1993; Davies 1988, 1990).   What does emerge from these studies, however, is the suggestion that ELP is only one of a number of factors impinging on academic success (Davies 1990; Criper & Davies, 1988).   Finally, it should be noted that the majority of relevant studies have involved TOEFL (rather than IELTS) and only one of them (Elder 1993) was done in Australia.

The main question for this study was the usefulness of IELTS and TOEFL respectively as predictors of readiness for the Australian academic context.   However, the study was also concerned with additional factors which may influence academic progress, such as the effect of English language support, which have not been taken into account in the earlier studies. Hence, whilst the focus of this project was on a quantitative, quasi-experimental approach, use was also made of qualitative data in an effort to gain a better understanding of the role of language and other factors in the academic lives of international NESB students.

---

[27] 'international NESB student' is defined as full fee-paying students from non-English-speaking countries.

2.0   Research Questions

Two main research questions were addressed in this study:

1 .   the degree to which each of the measures (i.e. IELTS and TOEFL) predicts academic performance,

2.   the role of other factors, such as English language support, in facilitating academic success.

3.0   Methodology

In July, 1997 all first year international students were sent a questionnaire (asking for their view of the types of language skills necessary for academic success at university), a form (asking for volunteers for interviews), and a consent form (requesting permission to access the students' semester one grades) (Appendix 3.1). Due to the unsatisfactory response, a second letter was mailed out with the consent form only. Interviews were scheduled and conducted, and student grades (along with IELTS or TOEFL scores) were compiled from the University's MERLIN system for those students who had given consent.

A total of 130 completed consent forms were received. Unfortunately, of the students granting consent, only 55 had both Grade Averages (i.e. had completed coursework) and IELTS or TOEFL scores. For these students, a grade average (using their percentage marks) was computed and correlated with IELTS or TOEFL scores (separately). Grade Average was then regressed on IELTS and TOEFL scores (separately) to explore the viability of those tests as predictors of academic success.

To look at the role of English language support, students were categorised into two groups: those who received language tuition from the Centre for Communication Skills & English as a Second Language (CCS & ESL), and those who did not[28]. Grade Averages for these two groups were compared using Analysis of Covariance (Minitab, General Linear Model, for unbalanced designs) with IELTS or TOEFL scores (standardised) as the covariate.

Finally, data from the questionnaire survey were entered into Excel. Fixed response items were then coded and analysed using Minitab. Open responses were analysed manually. Interviews were recorded and notes made from the recordings. On the basis of these notes, students were then divided into two groups: academically successful and the less unsuccessful (i.e. students who had failed one or more subjects in Semester 1). Data from these two groups were then compared to see which factors appeared to distinguish them.

4.0   Results

4.1   Student profile

As shown in Table 1, 35 of the subjects had taken IELTS and 27 had taken TOEFL (Note: 7 students had done both tests). A comparison by sex, course level, course type and first language showed the composition of the two groups to be very similar. Although the intention had been to survey undergraduate students exclusively, it transpired that almost half of the respondents were postgraduates (Appendix 3.2(a)). The subjects comprised equal

---

[28] The CCS&ESL offers three forms of ESL support: Credit-bearing ESL subjects, non-credit support courses and individual tutorials (see Appendix 3.3).

numbers of males and females and represented 17 different first languages (Appendices 3.2(b) & 3.2(c)).   The majority of respondents were enrolled in either Science/Engineering or Commerce faculties with smaller numbers from Arts, Law and 'others' (Appendix 3.2(d)).

	Number	MEDIAN	STDEV
IELTS	35	6.5	0.834
TOEFL	27	597	39.63

Table 1.   Range of scores by test type

4.2   Statistical analyses of Test Scores and Grade Point Average

4.2.1   The relationship between language proficiency and student achievement

The first area of investigation was the relationship of language proficiency (as measured by IELTS and TOEFL) and student achievement (as measured by Grade Average).   These relationships were explored using the Pearson Product Moment Correlation. The relationship between Grade Average and IELTS score was found to be moderately strong (r = .540). An examination of the scatterplot for Grade Average with IELTS score revealed a weakly linear relationship between the two variables.   The correlation between achievement and TOEFL score was found to be weak (r = .287). An examination of the scatterplot for Grade Average with TOEFL score revealed a somewhat curvilinear relationship between the two variables. Regressing IELTS scores on Grade average revealed that the model was weak in its predictive ability (R^2=.291).   According to Davies "the typical predictive correlation with academic examination criteria is about 0.3" (1988: 34).   Hence, these results appear to be consistent with the findings of previous studies.   An examination of the scatterplot of standardised residuals with the dependent variable and with predicted values confirmed that the model was not well fitted to the data (i.e. assumptions of the regression model had been violated). Regressing TOEFL score on Grade Average revealed that this model was also very weak in its predictive ability ($R^2 = .082$). An examination of various scatterplots suggested a violation of certain assumptions of the regression model.

4.2.2   The relationship between student achievement, language proficiency and ESL support

The next area of interest was the degree to which seeking ESL support could be seen to be related to student achievement (again, as measured by Grade Average).   Students were classified into two groups: those seeking assistance from the CCS&ESL and those who did not. The descriptive statistics for Grade Average for these two groups are given in Table 2. On average, those international students who sought language tuition and assistance from the ESL Program had a lower Grade Average than those who did not.   In addition, there was greater variability in Grade Average for CCS&ESL students. Parallel to the Grade Average statistics, on average those students who sought language tuition and assistance from the ESL Program had a slightly lower IELTS score than those who did not, although the range of scores for both groups was similar (despite the small number of students in the CCS&ESL support group).   Likewise, on average those students who sought language tuition and assistance from the ESL Program had a lower TOEFL score than those who did not, although the discrepancy in size between the two groups (only 2 out of 22 sought CCS&ESL support) makes the comparison difficult.   The descriptive statistics for the support groups (with CCS&ESL and without CCS&ESL) are presented for the three measures (Grade Average, IELTS, and TOEFL) in Table 1.

	With CCS & ESL Support			No CCS & ESL Support		
	Grade Average	**IELTS**	**TOEFL**	**Grade Average**	**IELTS**	**TOEFL**
Mean	66.48	6.688	573.5	75.830	7.060	620.45
Standard Deviation	6.78	0.458	19.1	10.07	.458	33.96
Number	10	8	2	45	25	20
Range	52.8 – 74	6 – 7.5	560 – 587	52.5 - 95	6 – 8.5	570 -677

Table 2. Descriptive Statistics - Achievement and Proficiency by ESL Support Group

The relationship between ESL support and student achievement was further investigated using an analysis of covariance (ANCOVA). The results for the differences in Grade Average between those seeking CCS&ESL assistance and those not, after correcting for pre-existing differences in language ability (using the standardised. scores for IELTS and TOEFL as the <u>covariate)</u> are given in Table 3. There was a significant difference (alpha level for significance set at .05) between the two groups, with the non-CCS&ESL group obtaining a higher Grade Average than the CCS&ESL group.

Source	**DF**	**Seq SS**	**Adj SS**	**Adj MS**	**F**	**P**
Covariate	1	198.22	76.78	76.78	0.83	0.366
ESL Support Group	1	594.24	594.24	594.24	6.44	0.014*
Error	52	4800.81	4800.81	92.32		
Total	54	5593.28				

Table 3. Analysis of Covariance - Differences in Grade Average by CCS&ESL Group

4.3 Investigating achievement by language ability grouping

In order to analyse the relationship between student achievement (as measured by Grade Average) and language proficiency (as measured by the TOEFL and IELTS) in greater detail, the international students in this dataset were grouped into four levels of English language ability, based on their IELTS or TOEFL score, as displayed in Table 4.

Language Ability Group	**IELTS Score**	**TOEFL Score**
1	6.0	560-590
2	6.5	591-620
3	7.0	621-650
4	7.5-8.5	651-680

Table 4. Language Ability Groups

The relative achievement of these Language Ability Groups was then investigated by comparing their Grade Averages. The descriptive statistics Grade Average by Language Ability Group are presented in Table 5. The Grade Average increases with an increase in language ability, with the largest increase for the highest language ability group, in the case of the IELTS group. For the TOEFL group, there is a slight decrease in Grade Average from the group defined by scores 576-600 and the group defined by the higher scores of 601 - 630.

Language Ability Group	Grade Average (IELTS Group)				Grade Average (TOEFL Group)			
	n	Mean	Std. Dev	range	n	Mean	Std. Dev	range
1	2	65.50	2.47	64-67	7	73.54	10.89	55-91
2	12	68.87	9.15	53-82	7	77.04	7.36	68-91
3	11	72.02	7.50	53-80	3	76.33	16.36	59-92
4	8	81.18	9.48	70-92	5	79.05	13.94	58-95

Table 5. Descriptive Statistics Grade average by Language Ability Group

These differences in Grade Average across the Language Ability Groups were then investigated using analysis of variance (ANOVA). The ANOVA results for the IELTS Language Ability Groups indicated that there were significant differences on Grade Average (Table 6). Pairwise comparisons (Fisher's) for the Language Ability Groups indicated that only the differences between the high ability group (IELTS = 7.5 to 8.5) and the other 3 groups were significant (at the individual error rate of .05). For the TOEFL Language Ability Groups, the ANOVA for Grade Average by Language Ability Group was not significant (see Table 7), and so no pairwise comparisons were made.

Source	DF	SS	MS	F	P
Ability Group	3	860.07	286.7	3.92	0.018*
Error	29	2118.78	73.1		
Total	32	2978.85			

Table 6   Analysis of Variance - Grade Average by Language Ability Group (IELTS)

Source	DF	SS	MS	F	P
Ability Group	3	95	32	.24	0.865
Error	18	2350	131		
Total	21	2445			

Table 7.   Analysis of Variance - Grade Average by Language Ability Group (TOEFL)

5.0   Analysis of questionnaire data

66 students returned completed questionnaires.   In the first part of the questionnaire, respondents were asked to give details of 2 subjects they were enrolled in Semester 1.   The majority of respondents attended 2 or 3 lectures, and up to 3 tutorials per week for each subject.

5.1   Assessment

Respondents were also asked to indicate how each subject was assessed (i.e. by exam, written assignment or some other method) and whether their grades were as they expected.

	Subject 1	Subject 2
as expected	22	29
better than expected	16	18
worse than expected	19	14

Table 8.   Grades compared to expectation

As Table 8 shows, most respondents indicated that their results had been as good as, or better than, expected.   Those whose results were worse than expected were asked to suggest why this was the case.   In many cases (n= 15), respondents attributed their poor performance to factors other than language.   These included inadequate background knowledge (including cultural assumptions and knowledge of local conditions), poor study skills or time management, difficulties in adjusting to a new culture and style of education and insufficient application.

Language related problems cited included difficulty in following lectures and understanding native speakers in discussion, lack of familiarity with the relevant genre (i.e. for written assignments) and difficulty with reading speed.   Some other problems listed, such as not understanding what was expected or difficulty in completing, seem to be at least partly linguistic in nature.

5.2.   English Language Proficiency

In the next part of the questionnaire respondents were asked about their ELP Test scores

	N	MEAN	STDEV	MIN	MAX
IELTS	35	6.79	0.88	4.5	9.0
TOEFL	27	593.04	39.63	500	657

Table 9.   Respondents' IELTS/TOEFL scores

5.2.1   Self Assessment

Respondents were asked to rate their English language proficiency on a scale of 1 (excellent) to 5 (weak). Table 10 shows that, on average, respondents rated themselves around the mid-point of 3.   Table 11, which compares the ratings by respondents who had sought ESL support (1) with those who did not (0), shows that the former group rated themselves slightly

higher than the group who did not seek ESL help. However, this difference was not statistically significant (t=-1.64, p=0.11, DF= 25)

	N	MEAN	STDEV	MIN	MAX
Self assess	63	2.937	0.914	1.000	5.000

Table 10.   Self assessment of ELP

	ESL	N	MEAN	STDEV	MIN	MAX
Self assess	no	49	2.878	0.971	1.000	5.000
	yes	12	3.250	0.622	2.000	4.000

Table 11.   Comparison of self assessments of ELP for ESL and non-ESL students

5.4   ESL Support

Twelve respondents indicated that they had used ESL services in Semester 1. Of these 6 had attended individual tutorials, 5 had enrolled in lunchtime classes and 2 had enrolled in credit courses. For respondents who had not used ESL services, the most common response was that they did not feel that they needed help with their English (n=25). One respondent commented that, whilst his/her speaking ability was poor, this did not effect his/her academic performance. Another frequently cited obstacle to seeking ESL help was shortage of time, due either to workload or timetabling constraints (n=14). Finally, 7 respondents indicated that they had not been aware of the services by provided by ESL.

	N	MEAN	STDEV
Reading			
difficulty	64	2.30	0.78
importance	64	4.47	0.99
Writing Assign.			
difficulty	64	3.16	0.89
importance	64	4.41	0.97
Exams			
difficulty	61	3.07	0.98
importance	60	4.33	1.10
List. & Note-taking			
difficulty	65	2.91	1.01
importance	62	4.29	1.00
Speaking			
difficulty	64	2.98	1.02
importance	63	4.19	0.95

Table 12.   Perceived difficulty and importance of specific language skills

Respondents rated the difficulty of different academic language skill areas on a scale from 1 (very easy) to 5 (very difficult). Table 12 shows that, apart from reading, which was given a slightly lower difficulty rating, there was little difference in the ratings for each skill. When asked to rate the importance of the nominated language skill areas on a scale from 1 (not important) to 5 (very important),all skill areas were rated highly. Likewise, when asked to rate the difficulty of a range of non-linguistic factors (Table 13), all were rated around the mid-point of 3.

	N	MEAN	STDEV
Workload difficulty	62	3.07	0.92
Concepts difficulty	64	2.86	1.02
Resources difficulty	64	2.55	0.79
Teachers difficulty	64	2.55	0.99

Table 13.   Perceived difficulty of non-linguistic factors

5.4   General comments

It is worth noting that 48 of the 66 respondents took advantage of the space provided at the end of the questionnaire to provide feedback on the factors they felt affected their academic progress. Almost half of the respondents noted that they had difficulties with English (n=23). Specific problems included understanding and communicating (both formally and socially) with native speaker students, listening and notetaking, reading (including reading speed), and writing (including problems with expression, style and organisation).

However, as before, a range of other, non-linguistic, factors were also cited by respondents. A number of these were problems related to 'settling in', for example, finding suitable accommodation and dealing with cultural differences. Respondents also experienced difficulties adjusting to the new educational environment and to working out "what lecturers like".

Academically, respondents reported a lack of assumed background knowledge and difficulty with critical thinking and problem solving skills, as well as with understanding concepts. Pacing, workload and unsatisfactory timetabling also caused problems.

In terms of study skills, a number admitted problems with time management and consistency. Some had experienced health or emotional problems. Finally, one respondent complained about the availability of resources (nb. computers) and another that lecturers didn't give out notes.

6.0   Interviews

Follow-up interviews were conducted with a sample of students from each group (CCS&ESL and non-CCS&ESL students) to gain a greater understanding of the factors which they perceived as contributing to their success or failure at university.

22 respondents were interviewed. Of these, 13 were enrolled in post-graduate courses and 9 in undergraduate courses.   Whilst the post-graduates were drawn from a number of disciplines, the undergraduates either came from Commerce (n=7) or Engineering (n=2). When interviewing had been completed, students' comments were divided into two main groups: factors contributing to academic success and factors inhibiting success.

In line with the questionnaire data, responses are organised under three main headings: language related factors, study-related factors and acclimatisation factors. For some students specific language problems were avoided, e.g. by enrolling in subjects where there are not many written assignments (see literature on the linguistic demands of different academic majors) and by concentrating on articles that they could understand. Others appeared keen to take the opportunity to improve their English, e.g. by actively participating in class

discussions. Successful students were also prepared to seek assistance, e.g. from native speaker peers or by borrowing lecture notes.

Study-related factors included familiarity with subject matter and a high level of satisfaction with the standard of teaching. One student found reading guides very helpful. One student always made sure he clarified any problems with his lecturer. Finally, having many friends was felt to help substantially.

Reasons cited for poor performance echoed the questionnaire data. Language problems included difficulty understanding the tutor, difficulty with new terminology and difficulties with both oral and written expression[29]. Study-related problems again included difficulties with workload, time management, assumed background knowledge and in understanding and applying concepts. Accommodation problems were again seen to impact on academic outcomes.

Finally, students interviewed were asked to comment on IELTS or TOEFL, depending on which they had taken. Generally speaking, IELTS appeared to have high face validity. However, a student who had done both commented that, whilst IELTS presented a 'good model', TOEFL was probably a better benchmark because it was more standardised!

7.0   Discussion

According to Davies (1988: 34) "it is not necessary that performance in the subject of study is criterial for English proficiency". So, while this study found a moderately strong relationship between ELP (as measured by IELTS) and academic success (as measured by the average of first semester grades at university), the predictive relationship between the two variables (as estimated by linear regression) is not strong. Furthermore, both interpretations need to be considered in light of the weakly linear relationship between the two variables and the suggestion that certain assumptions of the regression model may have been violated (as revealed by the residuals analysis).

Whilst these results are consistent with the findings of previous studies, there were a number of serious limitations which need to be highlighted. First of all, the comparison in this study was made between the global IELTS score (i.e. Reading, Writing, Listening and Speaking combined) and the basic TOEFL score (Reading and Listening only). Whilst a Test of Written English (TWE) score of 4.5 is required by the University of Melbourne, neither the breakdown of IELTS scores nor the TWE score is recorded on the data base (Merlin). For this reason is was not possible, for example, to compare the predictive validity of IELTS writing subscore and TWE or to see if the addition of TWE scores would have improved the predictive ability of TOEFL overall.

Sampling limitations also need to be borne in mind. The most serious constraint is that the sample was truncated, i.e. it excluded students with IELTS/TOEFL scores below the cut-off for admission to the University. Furthermore, in order to get permission to use both language proficiency scores and semester one grades, we have had to rely on students completing and returning their consent forms. The result is a small sample that may not adequately represent the first year international student population.

Sampling was also problematic in collecting interview data in that the students who volunteered for interview tended to be either post-graduates (who understand the difficulties of recruiting research subjects) and/or those who were relatively confident about their language ability. It is difficult to see how to avoid this problem when relying on volunteers.

---

[29] One student acknowledged that problems with expression was not helped by speaking L I at home.

Another shortcoming of the study is that, as it was felt important that students be able to complete questionnaires anonymously, it was not possible to directly cross-reference score, interview and questionnaire data. However, what the questionnaire and interview data suggest is that the relationship between entering English language proficiency, as measured by IELTS or TOEFL, and eventual academic success, as measured by grade average, is likely to be complex. The students who can be identified as having sought assistance from the CCS&ESL can be seen not only to take up different levels of support, but to have different reasons for seeking that support, different prior experience with ESL tuition, and different expectations and self assessments of their language ability.

In examining the potential effect of ESL tuition, as provided by the CCS&ESL, on academic success, our findings suggest that students who voluntarily seek assistance from the ESL Program achieve significantly lower grades in their first semester at Melbourne University than students who do not seek assistance. We attempted to control for pre-existing differences in English language proficiency through the use of Analysis of Covariance, with IELTS or TOEFL score (standardised) as covariate. Thus, even after adjusting for differences in language ability, the students who sought language assistance at the CCS&ESL did not perform as well as those students who did not get such assistance. This could be considered as a failure of the ESL Program to have a significant "effect" on academic success. However, studies (e.g., Campbell & Erlebacher 1970) have suggested that the use of ANCOVA will underestimate the effect of a treatment (in this case, the ESL Program) when the treatment group (those students seeking assistance from the CCS&ESL) are the less advantaged group (that is, the group, in this case, that has lower English language proficiency to begin with).

Another interpretation of our findings is that those students who should be seeking language tuition and assistance from the CCS&ESL are doing so. Students with lower IELTS and TOEFL scores, and students who are receiving lower first semester grades are coming to the ESL Program for help in greater numbers than those with higher scores and grades. It is likely that a single semester of ESL tuition will be enough to have an immediate effect on a student's academic achievement. Also, our analysis of the students showed that none of the students in our dataset who did seek assistance at the CCS&ESL had taken an ESL credit subject (5 hours per week for one semester). They had all either taken a one-to-two hour a week support class (no academic credit given) for six weeks of the semester (often only attending for half of the total sessions), or had participated in the individual tutorial program (one hour sessions with an ESL tutor on a particular written assignment). Neither of these options in the ESL Program represent the intensity of tuition that would be necessary to have an effect on academic achievement over the course of a single semester.

In conclusion, notwithstanding the various constraints mentioned earlier, the many non-linguistic factors affecting academic performance help to explain why neither IELTS nor TOEFL appeared to be particularly good predictors. This being said, nobody would argue that ELP has no role to play in academic achievement and, furthermore, these instruments may be used to help identify students who should be encouraged to seek ESL assistance or to participate in intensive pre-course ESL.

Bibliography

Campbell, D. T. and A. E. Erlebacher. (1970). 'How regression artefacts in quasi-experimental evaluations can mistakenly make compensatory education look harmful.' In J Hellmuth (Ed.) *Compensatory education: a national debate*. New York: Bruner/Mazel.

Criper, C. & A. Davies. (1988). Research Report 1 (i). ELTS Validation Project Report Cambridge: British Council/UCLES.

Davies, A. (1984). 'Validating Three Tests of English Language Proficiency.' *Language Testing.* 1, 1: 50-69

Davies, A. (1988). 'Operationalising Uncertainty in Language Testing, an Argument in Favour of Content Validity.' *Language Testing.* 5, 1: 32-48.

Davies, A. (1990). *Principle of Language Testing.* Oxford: Blackwell

Educational Testing Service. (1997). *Test and Score Manual*. Princeton, NJ: ETS.

Elder, C. 1993. 'Language Proficiency as a predictor of performance in teacher education.' *Melbourne Papers in Language Testing* 2 (1), 68-85.

Graham, L G. (1987). 'English language proficiency and the prediction of academic success.' *TESOL Quarterly,* 21(3), 505-521.

Light, R.L., M. Xu & J. Mossop (1987). 'English proficiency and academic performance of international students.' *TESOL Quarterly,* 21(2), 251-256.

Palmer, L.A. & P.E. Woodford (1978). 'English tests: their credibility in foreign student admissions.' *College and University,* 53: 500-510.