

SOME CORRELATES OF UNIVERSITY PERFORMANCE IN A DEVELOPING COUNTRY: THE CASE OF ETHIOPIA¹

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ABSTRACT

Language background, educational backgrounds, and scores on a variety of achievement and aptitude tests were examined for their relation to the first semester performance of 1,213 freshman students at the Haile Sellassie I University in Ethiopia.

Among the test data, proficiency in English language skills was most strongly related to university grades. Scores from all tests requiring English language skills were moderately to strongly inter-related, and showed moderate relations to performance. Scores from tests requiring skill in the official Ethiopian language, Amharic, predicated poorly to university performance, and tests of mathematic-numerical ability showed intermediate but weak predicative utility.

The only language or educational background data related to performance was educational mobility, the students tendency to move to areas of greater educational resources during their pre-university education. This mobility probably reflects strong motivation for education, a factor which deserves further research attention.

A major problem facing developing countries is a scarcity of indigenous, university trained people. Sending students abroad for training has proven an unsatisfactory solution to the problem. Many students fail to return from their studies abroad, and those who do return often suffer serious conflicts in values, resulting in a diminished contribution to development.

Establishing university training within the country has been seen as a more effective long range solution. But for developing countries, higher education represents an enormous expenditure compared with more immediate needs for development. This fact heightens the importance of maximizing the utilization of this scarce and costly training.

The common approach to maximization of training is to carefully screen students for admission to the university, and to admit only those who are most likely of complete their studies. This approach is highly developed in western countries where universities use a variety of fairly objective criteria for admission, such as high school grades and standardized aptitude and achievement tests.

Developing countries have increasingly adopted this approach. However, the myriad of factors which mitigate against development may also limit the value of

1. Data for this study were collected during the 1968-69 academic year while the authors were at the Testing Center of the Haile Sellassie I University, Addis Ababa, Ethiopia. Appreciation is extended to Dr. Robert L. Cooper who collaborated in collection of some of the data and to the Language Survey of Ethiopia for assistance in data analysis.

admission criteria used in western universities. Among these factors are language heterogeneity, primary and secondary education of poor and uneven quality, poor communication about educational opportunities, limited geographic mobility and heterogeneous cultural values.

Although these factors are generally recognized by educators in the developing countries, little is known about the way in which they affect the performance of university students. The research reported here was designed to examine the relation to university performance of both the western criteria of aptitude and achievement tests and two of the factors noted above, the language and educational backgrounds of students.

SETTING OF THE STUDY

Ethiopia is geographically, ethnically and linguistically diverse with an estimated population of 25 million. Three major ethnic groups, the politically dominant Amhara, the Tigrinya speaking peoples from the north, and numerous Galla speaking groups in the central and southern part of the country make up the majority of the total population. The remaining population is divided among many smaller ethnic groups, each having distinct cultural values and usually speaking a unique language.³

Formal government education in Ethiopia has a short history.⁴ The educational system has seen a recent expansion, primarily at the elementary level, but also in secondary schools and the University. In the decade 1957-1967 enrollment in government schools, grades one through twelve, rose from 156,892 to 406,156. By 1968 the Haile Selassie I University, established in 1961, counted 3,234 students in its various programs.⁵

The medium of instruction in grades one through six is Amharic, the official language of the country. English is taught as a subject from grade three and is the medium of instruction in grades seven through university.

"Leaving examinations" are given at the end of grades six and eight and serve as criteria for continuation in the government school system. Another leaving exam at the end of grade 12 currently serves as the principal criterion for admission to the university.

As might be expected, competition among students for places in the higher levels of the system is intense. A secondary school graduate can expect twice the salary of an elementary school graduate, and a university graduate will earn at least twice as much as his fellow student who failed to gain entrance to the University.⁶

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3. Detailed description of modern Ethiopian may be found in George A. Lipsky, *Ethiopia: Its people, its society, its culture* (New Haven: HRAF Press, 1962), and Edward Ullendorf, *The Ethiopians: An Introduction to Country and People* (New York: Oxford, 1960).

4. See the excellent article by Dr. Mulugeta Wodajo, "Postwar reform in Ethiopian education" *Comparative Education Review*, 2, (Feb., 1959), pp. 24-30.

5. These figures are from the Ministry of Education and Fine Arts, Office of Educational Planning and Statistics, *School Census for Ethiopia, part I, 1967-68*.

6. Data on the relation between education and earning power are reported in Eli Ginzberg and Herbert A. Smith, *A Manpower strategy for Ethiopia* (Addis Ababa: Central Printing Press, 1966).

This competition among students, combined with their linguistic, cultural, and educational heterogeneity, make the question of factors related to university performance a complex and pressing one.

UNIVERSITY STUDENTS

The study is based on 1,123 students who entered Haile Sellassie I University (HSIU) as freshmen in September, 1968, and for whom information about first semester performance was available in the spring of 1969. This group represents only 85 per cent of the entering class; either first semester performance or data on the other variables was not available for the remaining 15 per cent.

As freshmen these students were required to take courses in English and Amharic. Beyond this basic requirement they took courses in a wide range of subjects as required by the various faculties in which they were enrolled.

VARIABLES STUDIED

In all, 19 variables were considered in relation to university performance. These variables can be classified in terms of five categories.⁷

Language Background

About two months after beginning the semester, freshman students completed a language questionnaire which included questions about their educational background, language background, and current language use.⁸ There language background items from the questionnaire were considered in this study:

- (1) Mother tongue, the language first spoken as a child
- (2) Approximate age at which non-native Amharic speakers first started to speak Amharic
- (3) Age at which the study of English was begun

Educational Background

The language questionnaire also asked students where they were born and where they went to elementary and secondary school, providing four variables for this study:

- (4) The province in which the student was born
- (5) The province in which elementary education was taken
- (6) The province in which secondary education was taken
- (7) Educational mobility - a three-point scale based on (4),

7. Students in the sample were enrolled in the faculties of Agriculture, Arts, Business, Building, Education, Engineering, Public Health, Science, Social Work and Theology.

8. A more detailed report of these data may be found in Charles A. Ferguson, Marvin L. Bedder, J. Donald Bowen, and Robert L. Cooper, *Language in Ethiopia* (London and Addis Ababa: Oxford University Press and Haile Sellassie I University, in Preparation).

(5), and (6) above, which ranged from "no mobility" (place of birth, elementary and secondary education in the same province) to "high mobility" (place of birth, elementary and secondary education in three different provinces)

National School Leaving Exams

The Ethiopian School leaving Certificate Examination (ESLCE) are standardized achievement tests prepared annually in a variety of subjects. They are based on the Ministry of Education secondary school curriculum, and are usually taken by students in the spring of their final year of secondary school. In addition to their use as a criterion for university admission, ESLCE scores are considered in admission to other training programs and sometimes by prospective employers. Students must take the ESLCE tests in Amharic and English and those planning to enter a degree program at the University must take three other exams, usually including a mathematics test.

It should be noted that a few special university programs do not require the ESLCE. Therefore, ESLCE scores were not available for all freshmen in this study. Four ESLCE scores were considered:

- (8) ESLCE English - based on multiple-choice structure and grammar items and a controlled written composition
- (9) ESLCE Amharic - based primarily on evaluation of an uncontrolled written Amharic composition
- (10) ESLCE Math-A - based on objectively scored problems reflecting secondary school math course content
- (11) The mean ESLCE score for students taking five tests

Tests Standardized in the U.S.

During the students first semester at the University, scores were obtained on the Davis Reading Test, level 2, form A, and on the verbal reasoning and numerical ability sub-tests of the Differential Aptitude Tests (DAT). Four scores from these tests were considered:

- (12) Davis speed score - total right minus 1-4 wrong
- (13) DAT verbal reasoning raw score
- (14) DAT numerical ability raw score
- (15) DAT verbal and numerical unweighted total score

Experimental Tests for Ethiopian Students

The Testing Center at HSIU has engaged in experimental development of tests with formats similar to American tests but having content and difficulty level appropriate for Ethiopian students.⁹ An experimental aptitude battery F-68, had

9. This testing is part of an ongoing project, under the direction of Professor Charles R. Langmuir, to develop an Ethiopian capacity in testing. The work of that Project is reported in a series of technical memoranda available from the Testing Center, HSIU, P. O. Box 1176, Addis Ababa, Ethiopia.

been administered the previous year to most twelfth grade students taking the ESLCE and scores were available for about half of the students in the study. Three F-68 scores were considered:

- (16) F-68 verbal reasoning - heterogeneous English language items including verbal analogies, and number series
- (17) F-68 Amharic language items including verbal analogies and verbal problems
- (18) Number series (NS) - separate number series items in English

During the fall semester students in the study took a quantitative reasoning test (QR) developed by the Testing Center. The QR test contains items requiring transformation of verbal problems into simple arithmetic or algebraic solutions. It was given to students in equivalent Amharic and English language forms. The QR score, regardless of form, was used:

- (19) QR raw score.

University Performance

Students at HSIU receive a letter grade in each course at the end of each semester. Course grades are averaged into a semester grade point average (GPA). The freshmen who completed their first semester were classified by their faculty into three categories:

Pass	- C average or above
Warning Probation	- C or D average
Dismissed	- D or F average

Although the various faculties of the University have slightly different GPA criteria for assigning academic status, GPA is nevertheless the major criterion used. Academic status and GPA were both as criterion variables in this study.

The first semester performance of students was first summarized. Then the relation between each language and educational background variable and performance was subjected to chi-square analysis, using academic status as the performance criterion.

Relations between test performance (ESLCE, standardized U.S. tests, and experimental tests for Ethiopia) and university performance were examined by computing product-moment correlations between students scores on these tests and their first semester GPA's. Since this method is typically used to express such predictive relations, the correlations obtained may be contrasted with similar correlations reported for other samples.

Correlations were also computed among the various test scores themselves, providing an examination of relations among tests similar in content of format.

RESULTS

University Performance

Table 1 presents the first semester performance of the students.

Table 1
First semester academic status and
GPA of HSIU freshmen

Academic status	N	%	Mean GPA*
Passed	775	68.9	2.47
Warning-probation	274	24.4	1.54
Dismissed	74	6.6	.89**
Total	1123	99.9	2.16**

Mean GPA for all students was 2.16, or slightly above a "C" average. Only a few students were dismissed, 6.6 per cent, while 24.4 per cent were placed on warning or probation status. The small number of dismissals reflects a general policy at HSIU of allowing new students several semesters in which to achieve a satisfactory GPA. Students in the warning-probation category who do not improve their performance in succeeding semesters are dismissed from the University.

Language and Educational Background

Of the seven language and educational variables considered, only one, educational mobility, showed a highly significant relation to freshman performance.

Mother tongue and the age at which non-native Amharic speakers started to speak Amharic had no relation at all to academic status. Dismissed students reported beginning their study of English at a later age than students in the pass, warning or probation categories, but this difference did not reach the .05 level of statistical significance.

The study included students from each of the 14 provinces of Ethiopia. Although one or two provinces were slightly under-represented in the pass category, chi-square analysis revealed no overall significant deviations from the expected academic of students born and attending elementary and secondary school in the various provinces.

Table 2 presents the academic status of students having three degrees of educational mobility, ranging from birth, elementary and secondary education in three different provinces. Students not reporting all three items were excluded from the table.

* Letter grade equivalents of GPA are 4.0=A, 3.0=B, 3.0=C, 1.0=D, 0.0=F.

** Semester GPA was not reported for 17 students who were dismissed.

Table 2
Academic Status of Three Educational
Mobility Groups

Mobility	Pass		Probation Warning Dismissed		Total	
	N	%	N	%	N	%
No mobility	228	65.1	122	34.9	350	100.0
Moderate mobility	307	70.2	130	29.8	437	100.0
High Mobility	95	79.8	24	20.2	119	100.0
Total	630		276		906	

$\chi^2 = 9.25$ signific. beyond .01

Chi-square analysis reveals that students having high mobility performed better than expected in the University and students with no province changes performed more poorly than expected. The number of students reporting secondary education in one province, Shoa, far exceeded the number reporting birth and elementary education in that province, indicating that the mobility was in the direction of Shoa.

Test Performance and University Performance

Correlations between test scores and GPA and among the test scores are presented in Table 3 on page 10. Correlations showing predictive relations with GPA are underlined. Because of the large numbers of students involved all correlations between tests and GPA are significantly different from 0 ($p < .05$).

Total ESLCE score, an average of five tests, shows the highest correlation with GPA ($r = .452$). The second highest correlation of test scores with GPA is for the ESLCE English test ($r = .420$). The ESLCE Amharic test shows the weakest relation to GPA of any of the ESLCE scores ($r = .177$), and is the second weakest correlate among the 12 test scores considered.

American test scores show low to moderate relations to GPA, with the Davis Reading test the strongest correlate.

Tests developed thus for Ethiopia show similar low to moderate relations to first semester GPA. The Quantitative Reasoning test, however, is the weakest predictor of university performance among all 12 test scores considered.

Of particular interest are the relations among tests having similar content. Tests involving English language skills (ESLCE English, Davis Reading, DAT verbal reasoning, and F-68 verbal reasoning) show the strongest relations to GPA. Further, these English language content tests are strongly inter-related with correlations ranging between .449 and .622.

The other content groupings of tests, Amharic language skills and mathematic-numerical skills, show weaker relations among themselves and weaker individual

Table 3

Product-moment Correlations Among First Semester University GPA, Twelfth Grade Leaving Exams, U.S. Standardized Tests, and Experimental Tests

	SCHOOL LEAVING EXAMS				U.S. STANDARDIZED TESTS				EXPERIMENTAL TESTS				QR
	1st Sem.	ESLCE Tot	ESLCE Amh	ESLCE Eng	ESLCE Math-A	DAVIS Reading	DAT VR	DAT NA	DAT VR+NA	F-68 VR	F-68 AM	F-68 NS	
1st Sem. GPA	...	.452	.177	.420	.297	.356	.312	.230	.334	.342	.250	.264	.154
ESLCE Tot	(645)	...	.443	.628	.744	.527	.477	.514	5.93	.406	.400	.372	.232
ESLCE Amh	(673)	(672)	...	.233	.193	.200	.173	.177	.211	.114	.348	.110	.087
ESLCE Eng	(701)	(682)	(698)	...	.356	.605	.507	.261	.487	.504	.322	.262	.188
ESLCE Math-A	(693)	(663)	(679)	(702)	...	.303	.336	.512	.544	.262	.282	.386	.204
DAVIS Reading	(999)	(632)	(658)	(675)	...	.622	.249	.547	.449	.330	.249	...	.340
DAT VR	(942)	(605)	(628)	(651)	(650)	(896)	...	.332	.832	.512	.350	.257	.198
DAT NA	(942)	(605)	(628)	(651)	(650)	(896)	(996)	...	.766	.128	.325	.513	.237
DAT VR+NA	(942)	(605)	(628)	(651)	(650)	(896)	(996)	(996)	...	.452	.390	.426	.268
F-68-VR	(636)	(660)	(652)	(666)	(644)	(622)	(594)	(594)	(594)	...	.209	.211	.195
F-68-AM	(625)	(650)	(652)	(654)	(632)	(610)	(583)	(583)	(583)	(663)	...	.266	.130
F-68-NS	(635)	(659)	(651)	(665)	(643)	(620)	(594)	(594)	(594)	(674)	(662)	...	.269
QR	(928)	(590)	(614)	(637)	(636)	(885)	(963)	(963)	(963)	(580)	(569)	(579)	...

Correlation co-efficient is in upper right section

Ns for each correlation are in lower left section

relations to GPA. The two Amharic content tests (ESLCE Amharic and F-68 Amharic) are correlated only .348, and show marginally significant relations to GPA. The mathematic-numerical content tests (ESLCE Maths-A, DAT numerical ability, F-68 number series, and Quantitative Reasoning) show variable inter-relations, .237 to .513, and much weaker relations to GPA than tests of English language skills.

Relations between tests of English language skills and aptitudes and the two Amharic language tests are low, correlations ranging from .114 to .350.

DISCUSSION

Interpretation of these results are limited somewhat by problems common to many retrospective studies of academic performance. First, students scoring low on the ESLCE or having very poor language skills are unlikely to gain admission to the University. Such restriction on range of predictor variables operates to suppress relations with the criterion variable. Second, there is increasing evidence that students academic performance may not be stable over the four to five years of their university work.¹⁰ Finally, results are reported for all freshmen together, even though the various faculties in which they were enrolled have different grading standards and require different academic skills and aptitudes. Even with these limitations, the findings provide some important insights into factors affecting Ethiopian students' university performance.

The best test predictors of GPA are the English language achievement and aptitude tests. Although the ESLCE average of five sub-tests has the highest correlation with GPA, the correlation for the ESLCE English score is not significantly lower and would serve as well in predicting student performance. Such a finding is not surprising. In Ethiopia as in many developing countries, the language of instruction at the University level, English, is not the native language of the students. In a Testing Center survey of 870 freshmen entering HSIU in Fall, 1966, 51 per cent of the students reported English as a second language, 41 per cent as a third language and 8 per cent as a fourth or fifth language.¹¹ English as a medium of instruction begins in grade seven. This late start is reflected in a finding that ninth grade Ethiopian students' English reading comprehension and passive vocabularies are far below the levels of students in native English speaking countries.¹¹ There is preliminary evidence that such a gap, perhaps a larger one, exists for students at the University level.¹¹ This situation in which there is a low general level of skill in the language of University instruction would give distinct advantage to the student who has a relatively good grasp of English.

The central role of English language ability in Ethiopian student's academic performance has implications both for test development and for development of Ethiopian higher education. Further test development should carefully assess the extent to which the instruments used depend on specific language skills. In addition, the University should consider the extent to which success in its programs is contingent on skill in a language not native to Ethiopia. Perhaps the level of

10. A recent article by Lloyd G. Humphries, "The fleeting nature of the prediction of college academic success," *Journal of Educational Psychology*, 59, (1968), pp. 375-380, documents this point.

11. Results of these researches are available as technical memoranda from the HSIU Testing Center. See footnote 9.

English required at the university is so high that it prevents otherwise competent student and motivated students from performing successfully.¹² Students who fail to complete their training because they are weak in English represent a wasted resource of development.

The finding that tests in Amharic, the official language and the language of instruction in elementary school, do not relate similarly to GPA suggests that students performing well at the University probably did so because of their specific mastery of English, rather than a general verbal or linguistic aptitude. Further evidence for this interpretation is the weak relation found between performance on Amharic language tests and performance on English language tests.

In addition to pointing out the importance of English language proficiency, the findings indicate that separate use of either American tests or tests developed thus far for Ethiopian students would not improve on the existing criterion for University admission, the ESLCE total score. However, considering the moderate correlations among the ESLCE, American, and experimental tests it is likely that their simultaneous use would improve prediction to GPA. Use of multiple correlation techniques to identify combinations of scores showing stronger relations to GPA is a logical next step.

Although tested ability in English is related to University performance, the language background variables in this study fail to discriminate students' first semester academic status. These findings suggest that proficiency in English is not related to the age at which it was learned or to native language background. However, such an interpretation must remain tentative in the absence of more detailed analyses of the way in which students, English skills fit into their overall patterns of language acquisition.

As in most developing nations, the quality of formal education in Ethiopia varies considerably among the different provinces of the country. This variation is reflected dramatically in differences in the training of teachers, student-teacher ratios and the proportion of students from the various provincial schools who pass the leaving exams required for continuance in the school system.¹³ Therefore, relations could be expected between University performance and the provinces in which students received their pre-University education. The findings reveal a more complicated picture. Taken separately, province of birth, elementary education and secondary education do not show significant relations to University performance. However, educational mobility is related to better than expected performance. Mobility was in the direction of Shoa Province, the geographic area of the country including the capital, Addis Ababa, and having, the highest concentration of educational resources. This educational mobility finding suggests two interpretations. The first possibility is that originally posted; that students moving to that area may have performed better at the University because they received better secondary school preparation. If this interpretation were correct, one would expect a strong relation between province of secondary education and University performance. Such a relation is not indicated in the data.

12. The effects of instruction in a non-native language are discussed in some detail by John MacNamara, "The effects of instruction in a weaker language" *Journal of Social Issues*, 23, (April, 1967), pp. 121-135.

13. These differences are documented in the Ministry of Education and Fine Arts, *op. cit.*

An alternative interpretation is that students who twice changed provinces in pursuing their education are extremely highly motivated, and this level of motivation was instrumental in their better performance at the University. In Ethiopia, as in many developing countries, one is impressed with the large number of students who value education so highly that they continue in school in the face of hardships that in developed countries seem insurmountable. It is not unusual to hear of an Ethiopian student who, at the age of eight or nine, left his family and town in a remote area of the country to attend elementary school several hundred miles distant. Such a student will typically have supported himself from that age on, perhaps moving to other towns or provinces for junior and senior secondary school.

Unfortunately this motivation interpretation cannot be tested directly in this study, as information was not obtained on students' motivation or attitudes concerning education. However, a clearer understanding of this and other non-academic factors would provide a basis for modifying the University program so that it might retain students who have adequate academic skills. In addition to a reconsideration of the level of English language skill required in instruction, the extensive use of counseling and vocational guidance to enhance and direct student motivation for education might be indicated. Such services are now offered at HSIU on a very limited basis.

While the findings reported in this paper were obtained in Ethiopia, they are also relevant for higher education in many developing countries that share Ethiopia's linguistic and educational heterogeneity.