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THE ACADEMIC PERFORMANCE OF FIRST YEAR UNIVERSITY STUDENTS: A COMPARATIVE ANALYSIS

ABSTRACT: The purpose of this paper was to compare the academic performance of regularly admitted first-year university students who were arranged in three groups according to their average performance on senior matriculation examinations with that of "mature" students who did not meet regular academic admission requirements. The results showed that while the "mature" students had scored some of the lowest results on the College Qualification Test, they were the second highest of the four groups for the Fall, Spring, and Accumulative Grade Point average. The data suggests that if "mature" students concentrate on their studies in the arts and humanities they may be quite successful.

A study conducted at the University of Lethbridge in 1971 compared the academic performance of regularly admitted students with that of "mature" students. The regularly admitted students in that study were grouped on the basis of the number of senior matriculation subjects written and passed (Perkins, 1971). A more effective manner for grouping students for studying academic predictive results would seem to be on the basis of the average percentage attained on senior matriculation results — an external exam developed and administered by the Alberta Department of Education. As Williamson and Cole (1966, p. 965) stated, "It seems possible that high school rank is our best single predictor of later academic success precisely because it is in large part an outcome also of academically relevant non-intellectual issues."

That high school grades or senior matriculation results are highly related to university performance tells us only that whatever variables account for performance in high school probably are operative also on the college level. Practically predictive information can be useful not only for the traditional tasks such as admissions but also as the basis for modifying organizational structure, thus aiding in the attainment of educational goals (Lavin, 1965).

Since regularly admitted students have to attain a 60 percent or better average on five matriculation subjects, grouping students by average senior matriculation performance seemed to be a worthwhile way in which to analyse the academic attainment of first year university students.

It was the purpose of this study, then, to compare the academic performance of "mature" students with several groups of regularly admitted freshmen grouped on the basis of average senior matriculation results, on the College Qualification Test (CQT) and on the Fall, Spring, and Accumulative grade point average (GPA).

Procedure

Since regularly admitted students had attained an average of 60 percent or better on the senior matriculation examinations, it was decided to group regularly admitted students on the basis of their senior matriculation average. The students were grouped as follows:

Group I was comprised of 34 students who had attained an average of 60 percent to 69 percent on their senior matriculation examinations.

Group II was comprised of 32 students who had attained an average of 70 percent to 79 percent on their senior matriculation examinations.

Group III was comprised of 16 students who had attained an average of 80 percent to 89 percent on their senior matriculation examinations. This group was smaller than the others because of the limited number of first-year students enrolled during that particular year with an average of over 80 percent. There were no students with averages over 89 percent.

Group IV was comprised of 22 mature students (non-matriculants), 21 years of age and older, who were admitted on the basis of an interview with the investigator, their previous school record, their work experience, and recommendations from their employer, previous teacher, or principal attesting to their ability to profit from university work.

Sample

The sample consisted of 104 first-year students subdivided into the four groups mentioned. A random sample was obtained for the students in Groups I and II, but Groups III (80 percent to 89 percent) and IV (mature) consisted of the total population. The average age of the mature students was 31 years, with a range of 21 years 9 months to 49 years.

Tests Used

The College Qualification Test is published by the Psychological Corporation, New York, and it was normed in 1956 on 22,000 freshmen college students. It is an objective multiple choice test. The several subtests include: (1) Verbal which takes 15 minutes and consists of antonyms and synonyms, (2) N or Mathematics which takes 35 minutes and includes general arithmetic and elementary algebra, and (3) Information which takes 30 minutes and can be subdivided into science and social studies. The total test time, then, is 80 min-

utes and the total possible test score of 200 is subdivided as follows: Verbal 75, Math 50, Information 75. Information was subdivided into Social Studies, 37, and Science, 38.

Administration

The students participating in this study were asked to report for writing the CQT prior to registration in the fall of 1968. Senior matriculation averages and GPA's were obtained from the Registrar's Office.

Analysis of the Data

To determine whether there were any differences among the four groups, a one-way analysis of variance was computed for each CQT subtest, total test, and grade point average for each semester (fall and spring), and the combined semesters (Accumulative GPA). When an F test in a one-way analysis of variance indicated a significant difference, a Duncan multiple range test was computed to determine which pairs of means were significantly different.

Results

Because of the detailed nature of analysis of variance tables only summary tables are presented here.

For convenience and ease of comparison, Table 1 presents a summary of the CQT subtests and total test (aggregate of subtests) means and standard deviations for the four groups and the total group. The "mature" students had the second highest score of the four groups on the Verbal subtest, the third highest on the Information Social Studies, and the lowest on the Mathematics, Information Total, and Information Science. The "mature" students also had the lowest mean score of the four groups on the CQT total score. It is interesting to note that Group III, the students who averaged between 80 and 89 percent on the senior matriculation examination (the highest average of the three senior matriculation groups) scored consistently higher than the other groups in all subjects and total tests except social studies information.

The *F* values reported in Table 2 were highly significant ($p < .01$) in the area of Verbal, Mathematics, Information Total, Science Information, and CQT Total. The groups which showed significant difference are shown in the last column of Table 2 with the first mentioned group of pairs having the largest mean difference, and the first mentioned group having the largest mean score of each pair of groups. It is interesting to note that Group IV, the "mature" group, was significantly different from Group I on the Verbal Subtest. There were significant differences among groups in all of the subtests except Social Studies Information. The CQT Total score also indicated significant differences among groups. Groups III and II, the two with the highest senior matriculation average, were significantly different from the other two groups. Also Group I, the group with the lowest senior matriculation average, was significantly different from the mature students on the CQT Total score. In other words, the mature students had the poorest performance on the CQT.

TABLE 1

Means and Standard Deviations for Four Groups and Total Group on Subtests and Total CQT

Group	N	V (verbal)		N (math)		Info. Tot.		Info. Sc.		Info. S.S.		Tot. CQT	
		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
I.....	34	54.29	10.52	38.97	4.86	53.32	8.46	28.24	4.55	25.09	4.92	146.59	16.45
II.....	32	60.03	9.01	41.59	6.33	57.38	5.56	31.16	2.90	26.22	3.58	159.00	12.82
III.....	16	66.25	6.05	43.69	5.53	61.13	4.18	32.56	3.37	28.57	2.58	171.00	11.89
IV.....	22	61.14	8.19	22.18	8.88	52.55	6.75	26.82	4.80	25.73	4.21	141.86	15.66
Tot.....	104	59.34	9.73	38.22	8.33	55.61	7.28	29.50	4.44	26.11	4.17	153.16	17.47

Group I 60 — 69% Senior Matriculation Average 64.1%
 Group II 70 — 79% Senior Matriculation Average 73.5%
 Group III 80 — 89% Senior Matriculation Average 83.8%
 Group IV Mature Students No Senior Matriculation Data Available

TABLE 2
 Analysis of Variance Summaries of
 CQT Subtests and Total Tests

	<i>df</i>	Sum of Squares	Mean Square	<i>F</i> Ratio	Groups with Significant Differences		
Verbal	3	1715.88	571.96	7.04**	III, I IV, I II, I	III, II	III, IV
Mathematics	3	3078.44	1026.15	24.81**	III, IV II, IV I, IV	III, I	
Total Information	3	970.63	323.54	7.14**	III, IV II, IV	III, I II, I	III, II
Science Information	3	450.38	150.13	9.40**	III, IV		
Social Studies Information	3	135.31	45.10	2.70		Nil	
CQT Total	3	10459.00	3486.33	16.38**	III, IV II, IV I, IV	III, I II, I	III, II

** $p < .01$

The first group mentioned in each pair of groups has the largest mean score; the largest mean difference is between the pairs of groups mentioned first e.g. Verbal III, I.

In Table 3 the fall, spring, and accumulative GPA are summarized for the four groups, with Group III, the highest average senior matriculation group, attaining the highest fall, spring and accumulative GPA. It is interesting to note, though, that Group IV, the "mature" group, who had the lowest CQT Total score, attained the second highest GPA after Group III for the fall, spring and accumulative GPA.

The *F* values presented in Table 4 for the four groups in spring, fall and accumulative GPA were significant at the $p < .05$ and $p < .01$ level. The first group mentioned in each pair of groups in the last column has the largest mean score. The largest mean difference is between the pairs of groups mentioned first in each group, e.g. fall, 3.1. As the last column of Table 4 shows, Group III, the group with the highest senior matriculation average, was consistently significantly different from the other three groups.

Discussion

Three groups of regularly admitted first-year university students who were grouped according to the average scores on their senior matriculation examinations (Group 1, 64.1 percent, Group II, 73.5 percent, and

TABLE 3

Means and Standard Deviations for Four Groups on Fall, Spring, and Accumulative GPA

	Senior	N	Fall GPA		Spring GPA		Accumulative GPA	
	Matric. Aver.		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
Group I	64.1%	34	1.93	.75	2.37	.56	2.04	.69
Group II	73.5%	32	2.47	.43	2.44	.61	2.45	.44
Group III	83.8%	16	3.53	.39	3.60	.37	3.56	.36
Group IV	N/A	22	2.52	.54	2.63	.66	2.57	.54
Total Group		104	2.47	.76	2.65	.71	2.51	.72

Group III, 83.8 percent) were compared at the University of Lethbridge during 1968-69 with specially admitted "mature students" for whom no equivalent senior matriculation averages were available, because they had either not attempted or not completed five senior matriculation examinations.

Comparison of the four groups on the College Qualification Test, a standardized achievement battery, and the fall, spring and accumulative grade point average (GPA) revealed some interesting results.

Tables 1 and 2 clearly indicate that Group IV, the mature student group, had the poorest performance on the CQT Total score and on three of the subtests: Mathematics, Total Information, and Science Information. On the Verbal subtest, Group IV was significantly better than Group I, the group with the lowest senior matriculation average, 64.1 percent, but were not significantly better than Groups II or III. A mature student's score on the Verbal subtest would seem to be one of the best predictors of possible success at a university, particularly on the arts or humanities programs. On the Social Studies Information subtest there was no significant difference among any of the groups.

Group III with a senior matriculation average of 83.8 percent was consistently and significantly higher on GPA than the other three groups for fall, spring, and accumulative GPA, and in particular was the only group significantly different from the other groups during the spring semester as shown in Tables 3 and 4.

While Group IV had the poorest performance on the CQT, it had the second highest fall, spring, and accumulative GPA, being significantly better than Group I for the Fall and Accumulative GPA. While Group IV was not significantly better than Group II, it did have a higher GPA throughout the year than Group II. Group IV, therefore, performed consistently higher on GPA throughout the year than Group I (64.1 percent) and Group II (73.5 percent), though not significantly.

TABLE 4
 Analysis of Variance Summaries for the
 Fall, Spring and Accumulative GPA 1968-69

	<i>df</i>	Sums of Squares	Mean Squares	<i>F</i>	Groups with Significant Differences		
Fall	3	27.66	9.22	28.21**	III, I IV, I	III, II II, I	III, IV
Spring	3	18.33	6.11	18.45*	III, I	III, II	III, IV
Accumulative	3	25.35	8.45	28.16**	III, I IV, I	III, II II, I	III, IV

* $p < .05$

** $p < .01$

The first group mentioned in each pair of groups has the largest mean score; the largest mean difference is between the pairs of groups mentioned first, e.g. Fall, III, I.

The success of "mature" students in this study further supports the results of a previous study in which "mature" students were compared on the CQT and GPA with regularly admitted students who were grouped according to the numbers of senior matriculation subjects written and passed. Group III, the superior group in that study, consisted of students who had passed six senior matriculation subjects on the first attempt with 60 percent, but for whom no senior matriculation average had been calculated. In that study, the "mature" students had the highest GPA for the fall semester and the accumulative GPA with Group III having the highest GPA for the spring semester (Perkins, 1971, p. 110).

Douglas (1931) and Travers (1949) have both observed the lack of relationship between the pattern of high-school subjects and success in university. Cook (1961, p. 90) has also determined from studies done at the University of Indiana that success in university "does not apparently depend to any great extent on what courses the student took in high school."

This study supports the observations of previous researchers. University administrators, curriculum committees, and admission committees need to be aware of these conclusions. As Perkins (1971, p. 111) stated: "It seems that given a minimum native ability or intelligence, the crucial factor for success at university is motivation and not necessarily prior experience in a certain subject, particularly in the Arts and Humanities."

RESUME: Le but de cette étude était de comparer le rendement académique d'étudiants admis de façon régulière pour une première année universitaire avec celui d'étudiants plus âgés qui ne répondent pas aux exigences régulières d'admission. Le premier groupe a été subdivisé en trois sous-groupes selon le rendement moyen aux examens officiels. On a constaté

que même si les résultats des étudiants plus âgés étaient parmi les plus faibles au "College Qualification Test", ce group d'étudiants a néanmoins obtenu la seconde place, parmi les quatre groupe, aux examens semestriels et de fin d'année. Les données suggèrent aussi que si les étudiants plus âgés s'orientent vers les arts et les sciences humaines, ils pourront assez bien réussir.

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