THE PREDICTION OF ACADEMIC PERFORMANCE

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By

CAROLYN FORBES DUTKA, B.A. (HONS.)

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AUTHOR: Carolyn V. Forbes Dutka, B.A. Hons. (Queen's University)

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SCOPE AND CONTENTS: A comparative study of the socio-economic and motivational characteristics of scholarship and non-scholarship undergraduate students, and an analysis of the variables which contribute to the likelihood of high academic performance. An evaluation of the Scholarship Programme at McMaster University.

ABSTRACT

A study of the influence of socioeconomic and attitudinal variables on academic performance was carried out. Two groups of full-time undergraduate McMaster University students were studied. The high academic achievers were 283 students who had won an academic scholarship at McMaster University in 1970-71. The nonscholarship group, average or low achievers, was made up of 523 students who had not won a scholarship valued at $200 or more.

Questionnaires were completed and data was analyzed by cross-tabulation using Chi squared and Kolmogorov-Smirnov tests of significance and also by a combined stepwise and multiple regression analysis. A comparative analysis of the two groups showed that they differed significantly on 23 of 41 socioeconomic and attitudinal variables. Nineteen variables were found to be strongly related to scholarship winning.

The Scholarship Programme at McMaster University was studied. It was found that very few students knew about the programme, thus negating the incentive and motivational value of the scholarships for many students. Of those who were aware of the programme, scholarship winners were found to be more aware, more highly motivated by the financial aspect, and more likely to compete for a scholarship. Scholarship students' family income was found to be related to scholarship

winning, suggesting that scholarship students have a real or perceived need for financial assistance. They tended to reject student assistance plans as a source of funds, supporting themselves mainly through their scholarship and own earnings.

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CHAPTER I

INTRODUCTION

The cultural norms of Canadian society place high value upon successful academic performance. Occupations which command high positions of status in our society are those which have, among other characteristics, extensive and rigorous educational requirements.

Physicians, lawyers and those in other professional occupations must achieve the successful completion of arduous educational careers. Considerable emphasis is placed upon superior academic performance as well.

Admission to medical school, for example, must be attained through a complicated series of admission procedures. Where some 1500 candidates may apply to a single school of medicine, as few as 80 may gain admission. While other factors are taken into consideration a very high academic standing at the undergraduate level is almost always a major requisite for consideration.

Such occupations as law and medicine also require a period of internship following the completion of formal academic training, which calls for high levels of motivation.

The rewards for those who succeed are ususally high social status and ample income. Even for less prestigious occupations there is increasing organizational pressure for higher standards of educational performance, both quantitatively and qualitatively, for example, the attainment of an elementary school teaching certificate now requires the successful completion of a Bachelor of Arts programme.

Studies of academic performance, school retention rates, accessibility to higher education and others concerned with the influence of cultural, personality, social and economic variables upon educational achievement focus upon the students who are currently in the educational system[1]. There have been some attempts to study non-student groups but these have been very few in number.

The results of studies of students allow conclusions to be drawn about those factors which influence various aspects of participation in the educational system. Many researchers proceed to draw conclusions about the individuals who have opted out of the educational system or who have, for various reasons been excluded.

Therefore, studies of academic performance may be able to explain to some extent what factors increase the likelihood of high academic performance, and to possibly make recommendations to facilitate the removal of social, psychological and economic barriers to full participation in the educational system by all those who have the ability and desire to do so.

Some of the impetus for this study came from the decision of the McMaster University Senate and its administration to evaluate the university's scholarship programme. A great deal of money was being allocated each year for scholarships yet very little was known about the effectiveness of the scholarship programme or of the students who won the scholarships.

The Senate Committee on Undergraduate Awards established a working group to study the situation and to make recommendations for changes in the awards programme. As a member of that group I sought to provide data on both the scholarship winner and the scholarship programme.

The second factor motivating this study was my interest in the sociology of education in general, and the question of accessibility to post-secondary education in particular.

As an undergraduate I had studied with Dr. Robert M. Pike, author of Who Doesn't Get to University...and Why? a study on accessibility to post-secondary education commissioned by the Association of Universities and Colleges of Ontario[2]. I was a member of the Queen's University Subcommittee on Student Aid and Accessibility, and of the provincial Council of Ontario Universities Subcommittee on Student Aid and Accessibility to Post-Secondary Education in Ontario, and was a co-author of its published report[3].

The aim of this study was (a) to investigate the socio-economic and attitudinal variables which influence academic

performance, and (b) to evaluate the scholarship programme at McMaster University to assess students' awareness of the programme, the effectiveness of the programme in providing incentives for superior academic performance, and to investigate the relationship of students' financial resources to scholarship winning.

It was hypothesized that scholarship students would differ significantly from nonscholarship students. Scholarship students were expected to be drawn exclusively from high income families since considerable evidence in previous research has found a consistant positive relationship between academic performance and social class. It was found however that scholarship and nonscholarship students did not differ on such variables as socioeconomic status, parents' level of schooling, or family income, and there were only slightly more fathers in the professional occupations among the scholarship students. It was hypothesized that scholarship students would be conscientious students who placed high value on academic achievement, on attaining a university degree and on recognition for high grades, and that they would have high aspirations and expectations in terms of level of schooling and career choice.

A second area of concern was the situation faced by female students. It was hypothesized that female students of lower ability would settle for less in terms of area of study, level of schooling and career choice, and that finances would be a significant problem for these students.

In Chapter II, the literature pertaining to studies of the relationship of social and personality variables to academic performance is reviewed. No studies of scholarship winning were found, nor were studies of academic performance in the university setting. While American studies focus on the prediction of academic performance, Canadian research has focussed on evaluating the accessibility to post-secondary institutions, and the equality of educational opportunity for all those who desire higher education.

Chapter III describes the selection of the samples, collection of data and methods of analysis. The results and discussion of the data analysis in Chapter IV attempts a comparison of scholarship and nonscholarship students, and the identification of variables most strongly related to scholarship winning. Chapter V describes the scholarship programme at McMaster University and the results and discussion of data pertaining to the programme. Chapter V is somewhat independent in that it is a sub-study within the overall work presented. The findings are intrinsically related to the overall study in that they shed some light on the motivation and attitudes of students who actively compete for the scholarships.

In Chapter VI, the conclusions drawn from this study are presented. There are some objections voiced in the fields of sociology, education and economics to the principle of scholarship programmes on the basis that they are elitist and meritocratic. However, some data from this study suggest that

scholarship programmes can validly form an integral part of an educational system which espouses equality of educational opportunity and universal accessibility.

FOOTNOTES FOR CHAPTER I

1. Full reference will be made to these and other studies in the following chapter.
2. R.M. Pike, Who Doesn't Get to University..and Why?: A Study on Accessibility to Higher Education, Runge Press, Ottawa,1971.
3. Peter Morand et al, Accessibility and Student Aid: Report of the Subcommittee on Student Aid of the Council of Ontario Universities,Toronto,1971.

CHAPTER II

THE PREDICTION OF ACADEMIC PERFORMANCE

Concern with the prediction of academic performance has increased during recent years. Lavin cites three reasons for this concern; firstly, that there are increasing numbers of qualified candidates for the available university spaces, with the resultant responsibility of university admissions officers to select the students who will make better use of the educational resources than those they exclude[1]. Secondly, Lavin suggests that programmes designed to reward and support outstanding students e.g. university awards and scholarship programmes, are concerned with the identification of students who will make the highest contributions. Admissions officers in many Canadian universities expend considerable time and effort in their yearly search for outstanding and promising Grade 13 students, who are then offered entrance scholarships and other forms of financial inducements to attend their institution.

The validity of these concerns may be debated. Are only those students with superior grades to be admitted? Grades of Grade 13 students may not indicate the ability and performance of the student as much as they reflect the grading system of a particular high school.

A further complication in using grades as the criteria for university entrance and scholarships is the inherent assumption that students who gain high grades will 'make better use of the educational resources' and 'make the highest contribution'. How are 'better use' and 'higher contributions' measured? Are we certain that the achievements of outstanding Canadians in all fields have been preceded by high grades in school or are these independent phenomena? In reviewing the literature there seems to be more to the interest in academic performance than allocation of university entrance spaces and scholarship.

Human beings as thinking animals are curious and when some aspect of social behaviour sets a group of people apart from the masses, curious human beings in the behavioural sciences try to explain the phenomena, to understand it and bring it into the realm of knowledge. Why do some people become outstanding amongst their peers in any field of endeavor? How do we explain the superb politician, the brilliant physicist, the Olympic gold-medallist? And in the field of education, how do we understand the phenomenon of consistent superior academic performance which distinguishes a small percentage of scholars from all other students? It is this concern and interest which may account for the numerous studies of academic performance.

The choice of criteria to measure academic performance has been a continuing problem, for which a resolution embodying a more holistic appraisal of a student's potential and performance is sorely needed.

Early studies of the prediction of academic performance focussed on intellectual and ability factors as predictors. There has been a shift away from ability tests as they were found to be unreliable as predictors. Other studies focussed on non-intellectual or personality factors and there has been the occasional use of such factors as university completion, or intellectual curiousity.

However, the traditional criterion of academic performance has been grades, and Lavin questions[2],

> *If career success, critical-mindedness, and curiousity are valuable for a variety of personal and societal goals, what is the meaning of grades, (especially the implicit value position that high grades are inherently good) in the context of these other values?*

Are grades in fact related to outstanding occupational achievement? MacKinnon, for example, points out that studies of creative research scientists and architects indicate that they often did not have outstanding university grades, in fact, many of them had very mediocre academic records[3].

Lavin admits that we need to find additional criteria of good student performance, in addition to grades, and suggests that other aspects of educational behaviour need to be considered[4]. Although grades are an index of competence in school work, the practice of relying on grades alone as a criterion of student academic performance is not the ideal situation.

Academic performance has been traditionally measured by a grade as a means of expressing a student's scholastic standing. The variance from faculty to faculty is recognized

by McMaster University's scholarship programme wherein each faculty has a different cut-off point for grades to determine eligibility for scholarship[5]. The belief that teachers for a variety of reasons, award different marks for equal work further complicates the issue.

Given the problems related to using grades alone as measurements of academic performance, the current reality had to be recognized in this study. Superior academic performance was determined by the winning of a scholarship, and the scholarships at McMaster are awarded using only grades as the measurement of academic performance. Within these constraints, the current study points out that grades are not the ideal indicator of academic performance, but are the practical indicators for the purposes of this study.

No attempt to obtain intelligence quotient scores was made in order to identify high academic performance. Firstly, because of the difficulty in obtaining these scores, and secondly, because I.Q. test scores explain only about 40% of the variation in the academic performance of students[6].

At the present time, grades are the criteria by which our educational system judges scholastic performance. Examination results are direct indicators of a student's capacity to cope with university work. It is not assumed that the ability to obtain good results rests only on high intellectual ability, but rests upon a wide range of social variables as well.

Previous Studies

Lavin in his book The Prediction of Academic Performance surveyed 300 studies on the prediction of academic performance, and found studies tended to cluster in two areas; those which were concerned with personality characteristics, and those which were concerned with social structure[7].

Studies concerned with personality characteristics examined the influence of such variables as study habits, need for achievement, independence, anxiety, self-image, introversion, aggression and defensiveness in single-variable studies, and through multi-variate studies, the variables mentioned above, as well as conformity, activity level, stability, impulsivity, curiousity, and others.

Those variables which proved to be most useful in explaining academic achievement were study habits, attitude towards school, independence, impulse control, and self-image, although the question of a feedback relationship between self-image and achievement was raised. Lavin suggests that good performance may enhance self-image, and positive self-image in turn enhances achievement. Inconsistent results were found when achievement motivation was studied, and anxiety was found to be not useful as a predictor. The study of introversion and academic performance yielded some interesting results but Lavin suggested more research was needed to give it some theoretical significance[8].

The kind of personality then that would more likely

be found in a student who excels academically would be characterized by social maturity, emotional stability, achievement, motivation, flexibility in problem solving, and a positive self-image[9].

Studies of social determinants of academic performance have found that socioeconomic status (SES) has been consistently related to academic performance[10]. Lavin believes that

> *socioeconomic status symbolizes a variety of values, attitudes and motivations related to academic performance* [11]

Rosen hypothesized the existence of the achievement syndrome, comprised of three components[12]. The first is a psychological factor, achievement motivation, providing the

> *internal impetus to excel in situations involving standards of excellence.* [13]

The second and third components are

> *cultural factors, one consisting of certain value orientations which implement achievement motivated behaviour, the other of culturally influenced educational vocational aspiration levels.* [14]

He describes the part each component plays in causing the individual to excel:

> *one moves the individual to excel, the others organizing and directing his (or her) behaviour towards high status goals.* [15]

This, Rosen holds, is a motive-value-aspiration complex called the achievement syndrome.

Lavin states that individuals possessing the characteristics of the achievement syndrome are not randomly distributed in the population, but tend to be systematically

associated with high status in the social structure, and hence with academic performance. Lavin postulates that there are certain similarities in personality to be found within the various positions of the social structure, thus explaining the positive relationships found between SES and achievement[16].

Other studies of social determinants of academic performance investigated sex, religion, age, the urban/rural dimension, sibling structure and family size[17]. Females were found to be more likely to achieve high academic standing. Lavin found no generalizations could be made about high school size, age or the rural/urban dimension. The effects of religion, for example, being of the Jewish faith is frequently found among high achievers, may be due in fact to socioeconomic status Lavin suggests[18]. He also points out that the Jewish culture emphasizes many of the values found to contribute to high academic performance. These are, recognizing the value of education, giving high prestige to scholarliness, and a value system which inculcates achievement oriented values.

Bernstein found an inverse relationship between family size and academic performance: the larger the family, the lower the academic performance, and the smaller the family, the higher the academic performance[19]. Nisbet found that family size was also inversely related to SES and intelligence[20]. Sewell and Shaw found both SES and intelligence to be positively, monotonically and significantly related to planning to attend university, university attendance and university graduation

for both sexes in their study of a randomly selected cohort of high school seniors in Wisconsin over a seven year period[21].

Lavin found only nineteen studies devoted to social determinants of academic performance. Socioeconomic status, sex, religion, and family size were found to be consistent indicators of academic achievement.

Bernard Rosen, et al edited a collection of essays and research reports covering a five year period following Lavin's report. Entitled Achievement in American Society, its main thrust was directed towards an explanation of achievement, its origins, distribution and manifestations[22]. Particular attention is paid here to those studies concerned with personality, family characteristics, race, ethnicity, and social class.

The Family

The family plays an important role in the socialization of the individual and parent-child relationships can be characterized by patterns of authority, patterns of mutual support between child and parent, by the degree of parental involvement with the child, and by the kinds of expectations the parent and child have of one another. Parent child relationships are enmeshed in a family structure which affect the development of certain personality traits related to achievement.

Various studies have investigated the family using demographic factors, e.g. family size, birth order, sex and number of years separating children, parental education level,

parental ages.

Turner hypothesized that level of ambition was involved in academic achievement, and that level of ambition is influenced by socioeconomic background[23]. He investigated the relationship between level of ambition and a number of family variables and concluded that high parental education and small family size were predictors of high levels of ambition.

Turner suggests that these predictor variables are influenced by the orientation of both parents to a life style consciously or unconsciously believed by them to be better than their present life style. This orientation is believed to be the principal source of mobility aspiration in children. He directs his attention to the child of a lower class family who demonstrates high mobility aspiration and accounts for this by examining the attitudes held by the parents. He refers to several studies which have found that working class parents with middle class attitudes often have children with very high mobility aspirations.

Other studies have shown that family size influences achievement motivation; the small family has been described by one author as a "planned unit driven by ambition"[24]. Studies of the relationship of birth-order to achievement have shown first-borns to be more competitive than latter-borns[25]. This may in part explain Schacter's findings that first-born and only children are over-represented among people of eminence[26].

A later study by Belmont and Marolla in 1973 studied the relationship between such variables as birth-order, social class and family size and performance levels on tests of intellectual ability. They found that regardless of social class and family size first-born children consistently scored higher in intelligence testing. Second-born children were found to perform better than third-born, and there was a notable difference in ability as family size increased. The third child in a family of three did better than a third child in a family of four.

The birth order pattern held over social class, but in some instances of large, rural families it was found that first-borns in families of eight children outperformed first-borns in families of two to seven children. This study was somewhat weakened in that there was no controlling for level of education in the sample subjects[27].

Parental Influence

Parental influence through personality and interaction patterns has also been found to be related to high achievement motivation[28]. Intellectually striving boys have been found to have mothers who considered intellectual competence very important and their relationship has been described as one of active involvement. These mothers praised, were nurturant and affectionate, yet paradoxically were overtly rejecting and punitive at times. Conversely girls had fathers who used praise, nurturance and affection but who also used criticism.

Mothers of these girls were also found to be punitive and rejecting at times. This rejecting, punitive aspect may have some relation to Schacters findings that high achievers had high anxiety levels[29]. It would appear then that very active parent involvement, characterized as described above, to be the key ingredient in achievement motivation.

Family Rearing Practices

Other empirical studies have shown that child-rearing practices generate achievement motivation through such socialization practices as early emphasis on achievement training, that is, the child is trained to do things "well", and on independence training, that is, the child is encouraged to do things "by herself or himself"[30]. The latter is further increased in strength where parents grant the child relative autonomy in decision-making situations, where he or she is given both the freedom to act and the responsibility for success or failure. Rosen suggests that of the two, achievement training is the more important.

Race and Ethnicity

Rosen has found differences in motivation values and aspiration levels between six racial and ethnic groups which may explain their dissimilar social mobility rates[31]. Through analysis of ethnographic, attitudinal and personality data he suggests that the groups place different emphases upon independence and achievement training in their rearing of children. As a result, achievement motivation was found to be more

characteristic of Greeks, Jews and white Protestants than of Italians, French-Canadians and black people. Greeks, Jews, blacks, and white Protestants are also more likely to possess higher achievement values and higher educational aspirations than Italians and French Canadians. Blacks scored the lowest on vocational aspirations, although it is highly likely that this has changed in the intervening years since this study. Greeks, Jews and white Protestants again scored highest on vocational aspirations. Social class and ethnicity were found to interact in influencing motivation, values and aspirations, but neither was found to be predictive of an individual's score[32].

Rosen also found social class to be significantly related to achievement values and accounts for more of the variance than ethnicity. The mean score for each ethnic group was reduced with each decline in level of social status but social class did not wash out the differences between ethnic groups[33].

Aspiration Levels

Achievement motivation and values exert influence on social mobility by affecting the individual's need to do well and his or her willingness to plan and to work hard. But they do not determine the areas in which the excellence and effort will take place, and may be expressed through various kinds of behaviour that do not necessarily promote social mobility in our society, for example, religious or deviant behaviours.

The individual who aims for high educational and career goals is more likely to gain upward social mobility through more highly paid, high status occupations.

Social Factors and Accessibility

John Porter, in The Vertical Mosaic[34], examined the social barriers to equal educational opportunity. Whether a student will continue through the educational system is relevant in the study of academic performance, although not in the sense of the previous studies wherein superior academic performance versus lower academic performance was studied. Porter cited the four main social barriers to educational opportunity in Canada: low family income or wealth, large family size, lack of access geographically to higher quality educational facilities and the role played by religion in the formulation of educational policies.

Other studies where academic performance was defined as attending university, found that social variables influence university attendance, although in an indirect way. For example, Dale Wolfle, in America's Resources of Specialized Talent, states that there are two categories or levels of factors which determine who goes to university[35]. In one category are those which are related to school progress. These he called essential factors, and identified them as possession of a high school certificate, possession of adequate ability to meet the demands of university work, sufficient money to meet university expense, and the student's

own desire for a university education.

These essential factors, Wolfle believes, are determined by the non-essential factors: cultural background, ethnic and religious background, and geographic location.

Jencks and Reisman in their studies of high school students' chances of attending university support Wolfle's statement[36]. They found that both academic aptitude (essential factors) and social background (non-essential) influence the student's chances. They found that, at each level of ability, the chance of university entrance rises as the socioeconomic status of the student rises. Their findings show that the chance of college entrance rises to such an extent that a graduate of high social class but low academic ability is as likely (or more likely in the case of female students) to enter university as a student of low social class and of upper middle academic ability.

The most comprehensive consideration of the problem of access to post-secondary education in Canada has been that of Robert Pike[37]. In his book Who Doesn't Get to University... and Why?, Pike considers all aspects of the problem, financial, social and ideological. The factors he highlights as important in the question of access are social class, geographical position in relation to the university, ethnicity, intelligence, scholastic aptitude and performance. Pike found that

> *students with good scholastic records as measured by examination results are more likely to become high school matriculants and high school matriculants with good scholastic records are more*

> *likely to enter university and be more successful in university studies than are their class mates with poorer records.* [38]

The question arose however, of how do we account for the failure of some high school graduates scoring high on both intellectual capacity and scholastic performance to enter university, and the success of other less intelligent and less-qualified students who gained admission to university.

Referring to Wolfle and Jencks and Reisman, Pike points out that[39]

> *other factors besides ability played a part in selection for higher education...more recent studies than Wolfle's have actually tended to play down the role of intellectual factors in selection for higher education in favour of the influence of those factors which are summed up in the concepts of 'socioeconomic status' and 'social class' - that is, those factors related to the social background of the student as determined by the father's occupation or level of family income*

Table 2.1 shows the influence of both academic aptitude and social background on an American high school graduate's chances of entering college.

We must always exercise a certain measure of caution in applying the findings of studies undertaken in countries other than Canada to the Canadian scene. However, it is apparent, as Dr. Pike points out, that

> *in this country the socioeconomic background of a student plays an important part in determining his chances of university attendance.* [40]

In investigating the Canadian educational scene, Pike found that

TABLE 2.1

Proportions of U.S. high school graduates going to college the following year, by academic aptitude, socio-economic background, and sex, 1960

Academic Aptitude	Socio-Economic Status					
	Low	Lower-Middle	Middle	Upper-Middle	High	All
MALES						
Low	10	13	15	25	40	14
Lower-Middle	14	23	30	35-	57	27
Middle	30	35	46	54	67	46
Upper-Middle	44	51	59	69	83	63
Upper	69	73	81	86	91	85
All	24	40	53	65	81	49
FEMALES						
Low	9	9	10	16	41	11
Lower-Middle	9	10	16	24	54	18
Middle	12	18	25	40	63	30
Upper-Middle	24	35	41	58	78	49
Upper	52	61	66	80	90	76
All	15	24	32	51	75	35

Source: Christopher Jencks and David Riesman, The Academic Revolution, New York, Doubleday 1968, Table V, p. 103.

> *university students were found to come in disproportionately large numbers from the higher occupational classes, the higher income groups, and from homes where the level of education of the parents was relatively high.*[41]

Pike refers to a study undertaken in 1965-66 by the Canadian Union of Students, a sample survey of Canadian undergraduate students which found that Canadian students are

> *...by and large not representative of the Canadian class structure but rather bear the characteristics of the middle and upper classes of Canadian society.*[42]

Pike's study was based on the available literature and previous research up to the late 1960's. Porter, Porter and Blishen followed Pike with their study of socioeconomic variables and accessibility to higher education, Does Money Matter: Prospects for Higher Education[43]. They conducted an Ontario-wide survey of Grade 8, 10 and 12 students, beginning in July, 1970, with a research grant from the Canada Council. The actual gathering of data took place during May and June of 1971, only nine months before the data for this study was gathered. Their range of inquiry closely parallels that of this study in that they investigated the influence of socio-economic status on school retention, academic achievement, educational expectations and aspirations, attitudes towards education, and other important aspects of education.

They preface their study with the following remarks:[44]

> *...in this volume we have demonstrated that educational and occupational horizons of*

> *Ontario high school students are bounded by the class structure of the society in which they live; that, associated with that class structure, there is a wastage of bright, young people from the educational process; and that girls, particularly lower class girls, see themselves destined for the labour force and excluded from the learning force in greater proportions than boys of the same class level and boys and girls of the classes above them.*

Porter, Porter and Blishen concede that those familiar with the sociology of education "*these findings will not be striking*".[45] They continue,

> *...there is no study which lays out for Ontario in such a complete manner the relationship between social class and educational prospects. We have often been told by government officials that things are different in Ontario, that the problems of educational opportunity have been solved, or the solutions are at hand. These findings say otherwise, and for that reason this report is in the tradition of exposé research.*

In addition to examining the problem of educational prospects in a "*society of inequality*"[46], they also tested some of the assumptions upon which student assistance plans are based. They investigated the relationship between social class and aspirations, expectations, self-image, birthorder, family size and geographic location, and concluded that family finances must be a factor in the limited educational opportunities for children of the lower classes.

They turned their attention to the problem of "*students (in particularly female students) of greater ability and higher achievement who are lost to the educational system when they are examined in terms of their social class origins*".[47]

Porter, Porter and Blishen questionned both parents and students on issues related to financing higher education and found widespread ignorance and lack of planning for post-secondary education on the part of families[48]. They found, too, *"the surprising finding that under certain circumstances lower class (students) are prepared to borrow considerable sums of money to see themselves through university"*.[49]

As a result of their findings, they made suggestions about how the post-secondary educational system *"might develop to better serve the principle of equality"*[50] and pointed out *"some of the difficulties with a policy of accessibility in a society which is not prepared to do something about income inequalities"*.[51]

A summary of their findings and conclusions follows:

(a) a student's social class position is closely related to her/his educational aspirations,[52]

(b) greater proportions of parents than students had high expectations at almost all social class levels,[53]

(c) there is a relationship between educational expectations and family size (controlling for social class) and that economic factors appear to be most powerful in explaining this relationship,[54]

(d) educational expectations and opportunities are less in large families in every social class. They found an inverse relationship between birth order and expectations,[55]

(e) the relationship between educational expectations and

birth order and family size is additional indirect evidence that money is important (in determining who gets to university),[56]

(f) there is a positive relationship between urbanization and educational aspirations,[57]

(g) regardless of social class, parents of Ontario high school students have positive values about education,[58]

(h) social class is more important than mental ability in determining how far students will go in school,[59]

(i) the most deprived group in Ontario in terms of educational opportunity are lower class female students, particularly those with high mental ability,[60]

(j) female students perform at higher academic levels than male students,[61]

(k) female students in the lowest social class may have a harder time financing a university education than male students,[62]

(l) lower income families are less willing to spend money on their daughters than on their sons,[63]

(m) it is more difficult for female students to find summer employment, and when they do, their earnings are lower than those of male students,[64]

(n) parents were seen as the primary source of funds, and that parental support varied directly by social class,[65]

(o) usage of government loans and grants is related directly to social class of students,[66]

(p) lower class students were more likely to borrow money to finance their university education, and that willingness to borrow was related to knowledge of O.S.A.P.,[67]

(q) a student's self-concept is positively related to educational aspirations,[68]

(r) the principle of financial awards for high grades can be considered regressive and meritocratic and that scarce resources (financial) should be used for those with the greatest financial need,[69]

(s) high achievers are most often children of the middle classes.[70]

Summary

Canadian studies, while concerned with accessibility to educational facilities, have been found relevant insofar as they examine the influence of social variables on school career and university attendance. The same social variables identified by researchers in the field of the prediction of academic performance have been found to influence accessibility to university.

Social variables have been found to influence educational performance through such intervening variables as socialization practices, achievement values and aspirations.

Being a female child, either first-born or an only child, in a small family with high socioeconomic status, and of Jewish, Greek, or white Protestant race, religion and ethnicity, increases the likelihood of educational success and upward social mobility.

Patterns of socialization where there is a high degree of parental involvement further increase this likelihood through the development of high intelligence, social maturity, emotional stability, independence, conformity, problem-solving skills and positive self-image.

Arising from this process the individual is more likely to have high achievement values, and high educational and occupational aspirations. These in turn increase the likelihood of high academic performance and upward social mobility.

FOOTNOTES FOR CHAPTER II

1. Lavin, D., The Prediction of Academic Performance, Russell Sage Foundation, Connecticut Printers, Inc., Hartford, Connecticut, 1965, pp. 11, 12.
2. Ibid., p. 15.
3. McKinnon, D.W., "What Do We Mean by Talent and How Do We Test for it?" in The Search For Talent, College Entrance Examination Board, New York, 1960, pp. 20-29, from Lavin, op. cit., p. 16.
4. Lavin, op. cit., p. 16.

   Grades, scholastic tests and intelligence tests provide a fairly valid basis for predicting probable success in university, except perhaps for the culturally and economically deprived whose innate ability is not reflected by such tests.

   But performance on such tests is influenced by many factors. Educational behaviour, which includes educational performance, is influenced by environmental factors, and depends on the student's desire to take advantage of educational opportunities. These educational desires, aspirations and ambitions are also shaped by environmental factors. Even with adequate motivation and educational performance there are many economic and institutional barriers which may present obstacles to

student at almost any stage of his or her career. The problem of the ideal indicator of academic performance has yet to be solved.

A discussion of the problem can be found in Wiseman, S., Education and Environment, Manchester University Press, 1964, pp. 71-72 and 154.

5. See Table 5.1, Chapter V, for example.
6. Lavin, op. cit. p. 59.
7. Ibid.
8. Ibid., p. 68.
9. Ibid., p. 110.
10. For example, Friedhoff, W.H., "Relationships Among Various Measures of Socioeconomic Status, Social Class Identification, Intelligence, and School Achievement," Dissertation Abstracts, Vol. 15, 1955, p. 2098; Knief, L.M. and Stroud, J.B., "Intercorrelations Among Various Intelligence, Achievement, and Social Class Scores," Journal of Educational Psychology, Vol. 50, 1959, pp. 117-120.
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12. Rosen, Bernard C., "The Achievement Syndrome: A Psychocultural Dimension of Social Stratification," American Sociological Review, Vol. 21, 1956, pp. 203-211.
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15. Ibid.

16. Lavin, op. cit., pp. 123-4.

17. Ibid., pp. 122-156.

18. Ibid., pp. 131-2.

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26. Schacter, S., "Birth Order, Eminence and High Education," American Sociological Review, 26, August, 1961, pp. 374-385.

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28. Crandall, U.C., "Achievement Behaviour in Young Children," Young Children, Vol. 20, No. 2, November, 1964, pp. 77-90, in Rosen et al, op. cit., pp. 95-111.

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38. Ibid., p. 47.

39 Ibid., p. 50.

40. Ibid., p. 51.

41. Ibid., p. 57.

42. Rabinovitch, R., An Analysis of the Canadian Post-Secondary Student Population, Part 1: A Report on Canadian Undergraduate Students, Ottawa: Canadian Union of Students, February, 1966, p. 41.
Dr. Pike points out that, for example, the C.U.S. study (p. 45) concluded that only 35% of Canadian undergraduate students were from 'blue-collar' or working class families compared with 64.1% of employed Canadians who held jobs that were so classified.

43. Porter, Marion R., J. Porter, and B.R. Blishen, Does Money Matter: Prospects for Higher Education, Institute for Behavioural Science, York University, Toronto: 1973. I would like to point out at this time that I was not aware of this publication until my research was complete and the thesis written. When directed to this text by Dr. Jane Synge, Committee Member, on September 24, 1975, it was decided to incorporate a summary of the study into Chapter II, and to compare the results of my research with those of Porter, Porter and Blishen in Chapter IV.

44. Ibid, p. X.

45. Ibid, p. X.

46. Ibid, p. X.

47. Ibid., p. X.

48. Ibid., p. XI.

49. Ibid., p. XI.

50. Ibid., p. XI.

51. Ibid., p. XI.

52. Ibid., p. XI.

53. Ibid., p. 47.

54. Ibid., p. 54.

55. Ibid., p. 61.

56. Ibid., p. 65.

57. Ibid., p. 65.

58. Ibid., p. 70.

59. Ibid., p. 77.

60. Ibid., p. 110.

61. Ibid., p. 124.

62. Ibid., p. 125.

63. Ibid., p. 134.

64. Ibid., p. 136.

65. Ibid., p. 136.

66. Ibid., p. 147.

67. Ibid., p. 149.

68. Ibid., p. 162.

69. Ibid., p. 103.

70. Ibid., p. 21.

CHAPTER III

METHODOLOGY

Sampling Technique

Scholarship Group

Students for the scholarship group were selected from the list of scholarship winners for 1970-71 the academic year preceding the study. The criterion to be met was that the student must have been awarded an academic scholarship valued at $200 or higher.

Addresses for the students were located through the university student directory and records in the Registrar's office. Those whose address could not be determined were struck from the list. A scholarship group of 261 students resulted.

Nonscholarship Group

Students were chosen using a systematic selection procedure. The undergraduate population in 1971-72 was nearly 8,000. It was decided that by choosing every twelfth student a manageable yet representative group of nonscholarship undergraduates would be formed. The Registrar's office, using a computer programme, selected every twelfth student from the alphabetical list of all undergraduates.

The resulting list was cross-checked with the scholarship group, and the names of any scholarship students were removed. Although the list came with addresses, many were incomplete. Using the student directory and the resources of the Registrar's office many were located. Those not located were struck from the list leaving a nonscholarship group of 560 students. The only criterion to be met was that the student must be a full-time undergraduate who had not won a scholarship valued at $200 or more.

The Questionnaire

A questionnaire was designed with 87 questions to gather information in the following areas:

- personal data about the student, e.g. age, sex, marital status,
- characteristics of the student's family, e.g. income, size, ethnicity, religion,
- the student's educational background, e.g. size of secondary school, Grade 13 average,
- attitudes held by both student and parent towards school performance and university education,
- student's activities while an undergraduate, e.g. involvement in extracurricular activities, work habits, employment, social activities,
- student's aspirations and expectations for level of education to be achieved and occupational choice,

- student's financial circumstances and attitudes towards debt,
- awareness of the scholarship programme and attitude's concerning it.

Some of the questions were relatively standard and were obtained from questionnaires used previously within the Sociology Department, some with modifications. The questions pertinent to the scholarship programme were designed in conjunction with members of the Senate Committee on Undergraduate Awards. The remainder were designed to suit the specific needs of this study.

The questions were structured to be as clear as possible and to gather the information in as objective a manner as possible. One particular objection to the wording of the questions on the part of a fair number of respondents was the lack of a choice, under ethnic background, for the student to indicate "Canadian". A sample of the questionnaire is in Appendix A.

Data Collection

All students were mailed a package containing the following:

- a copy of the questionnaire
- an optical scan sheet
- a self-addressed, postage-metered, 8"x11" envelope
- a postcard, also self-addressed and postage-metered.

The students were requested to return the completed scan sheet in the large envelope and, to ensure anonymity, to mail the postcard separately. The returned postcard gave the student's name and address and asked if he/she would like to receive a summary of the report. It also indicated that the questionnaire had been returned. As each postcard was received, the name of the sender was crossed off the list of subjects.

The students were asked to pencil in their responses on the optical scan sheet. This was felt by the researcher to be somewhat of an imposition since it requires more work and concentration than merely circling answers on a questionnaire. Most students are familiar with the scan sheet and how to indicate answers as they are used by the university in many courses for multiple choice examinations. The high response rate indicated the students were not deterred by the extra task.

After a predetermined period of ten days had elapsed, all students still on the list were mailed a second complete package with a letter personally signed by the researcher requesting their co-operation. As postcards and questionnaires arrived, names could be crossed off the list.

After a second predetermined period of seventeen days a third complete mailing with another letter was made to those students who had still not replied. This procedure found a few students who had returned their questionnaires very early getting a second and third package because they had failed to return the postcard, and a few telephone calls

and indignant letters followed.

This aggressive canvassing technique yielded a very high response rate of 81% summarized in Table 3.1.

TABLE 3.1
Rate of Returns of Questionnaires

Date of Mailing	Scholarship Group N 261		Nonscholarship Group N 560	
	Number	Percent (Cumulative)	Number	Percent (Cumulative)
March 15-16	141	54	254	45
March 26-27	205	79	381	68
April 13	221	85	433	77
Total Response	221	85	433	77
Total Non-response	40	15	127	23

At the time when the questionnaire package was being mailed there was considerable political activity occurring on the campus. Concern was being expressed over proposed increases in tuition and decreased student financial aid. A government-sponsored commission on post-secondary education was holding hearings on the campus[1]. The stimulating effect of this activity however was likely offset by the fact that the students were well into spring examinations, a factor that could possibly have depressed the response rate.

Non-Response Group

Those persons selected to be a part of an experimental group may decide to reply to the questionnaire or to ignore it.

To disregard the effect of non-response on the overall results of a study introduces bias into the results. The non-response group is different from the response group because its members chose not to reply. Some consideration must be made for this effect. Therefore, the sample was weighted for non-response as follows.

It was initially intended that a personal visit would be made to a random selection of the 167 students who did not respond for the purpose of an interview to determine why they did not respond, and to complete a questionnaire by interview. Pressures of time and distance necessitated a compromise wherein a letter and a new package was mailed to a random sample of the non-response group. Those that were returned were used to create a non-response group representation.

Five scholarship students in the non-response group returned (completed) questionnaires. Their responses were duplicated eight times each to create a scholarship non-response group of 40, a number equivalent to the number of scholarship students who did not respond by April 13. The 13 nonscholarship non-response students' questionnaires were used similarly: 12 were duplicated 10 times, and one 7 times, yielding a group of 127, again equal to the number of students in the nonscholarship group who did not respond.

Thus a non-response group of 167 was artificially created. These were added to the 654 returns previously compiled to yield an overall return of 821.

Fifteen returns were excluded because they did not meet selection criteria: one was from a graduate student, others were from people who had withdrawn from university, and a few had deliberately ruined the optical scan sheet to express their objections to what they felt was an invasion of their privacy.

Upon initial analysis of the data it was found that 35 of the students in the nonscholarship group had answered question #69, "Have you won a scholarship since becoming a McMaster student?" in the affirmative indicating that they had won a scholarship valued at equal to or more than $200. Assuming these were scholarship winners from years other than 1970-71 they were transferred to the scholarship group.

The two groups now stood at 283 scholarship students and 523 nonscholarship students, a total of 806.

Method of Analysis

The SPSS multiple-regression program was selected as the method of analysis because of its ability to combine standard multiple regression and stepwise regression in a manner which provides considerable control over the inclusion of independent variables in the regression equation[2]. Output of normalized regression co-efficients in addition to the standard regression co-efficients allows the program to be used for the calculation of the path co-efficients in path analysis.

Multiple regression allowed the study of the linear relationship between a set of independent variables (See Appendix B) and the dependent variable (academic performance) while taking into account the interrelationships among the independent variables. Then, choosing those independent variables which correlate the highest with the dependent variable, the linear combination can be used to predict values of the dependent variable. The regression equation is then written as follows[3]:

$$Y' = A + b_1X_1 + b_2X_2 + \ldots\ldots b_nX_n$$

where Y is the dependent variable, the X's are the independent variables, the b's are the regression co-efficients (normalized) and A is a constant. This regression equation provides an optimum prediction of the dependent variable.

The stepwise multiple regression programme was used in combination with the multiple regression programme. It is a variation of multiple regression which provides a means of choosing independent variables which will provide the best prediction possible with the fewest independent variables.

The number of variables in the current study was too large to include in one multiple regression analysis programme. By using the stepwise variation the independent variables could be analyzed a group at a time without losing the total interaction effect. The following explains the manner in which the stepwise regression is carried out,[4]

> *Stepwise regression provides the information necessary to select the next variable to be brought into the equation, using the normalized regression co-efficient b measured by the F statistic. If F is too small that independent variable would not be added to the prediction equation. The second piece of information used in the selection process is tolerance value, which ranges from 0 to 1, zero indicating a linear combination of independent variables already in the equation, and 1 indicating a new dimension is being added to the prediction equation. The amount of additional variance explained by the addition of the new variable is the product of the normalized regression co-efficient squared and the tolerance value. Even if the prospective b is large, a small tolerance value will negate the value of that variable being added to the equation. As a result, stepwise regression never brings a variable onto the equation if the tolerance is below a specified minimum, which helps to ensure the computational accuracy of the program.*

Stepwise regression was chosen as a convenient, quick and efficient method of analysis which recursively constructs a prediction equation one variable at a time.

Curvilinear Trends

The correlation co-efficient for the bivariate population of X and Y scores is an excellent indicator of the degree of predictive accuracy in linear situations but may be inappropriate if the data show a curvilinear (curved line) trend[5].

Figure 1 illustrates a positive bivariate relationship between X and Y. In Figure 2, a negative bivariate relationship exists between X and Y. Figure 3 by contrast shows no trend, and illustrates a zero correlation between X and Y.

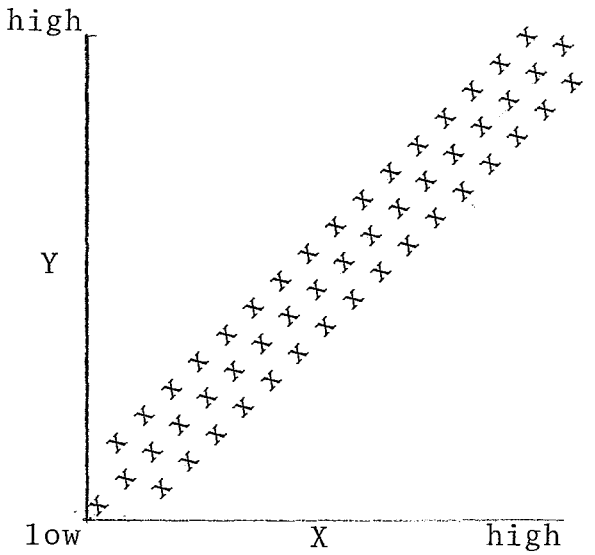

Fig. 1. A positive bivariate relationship.

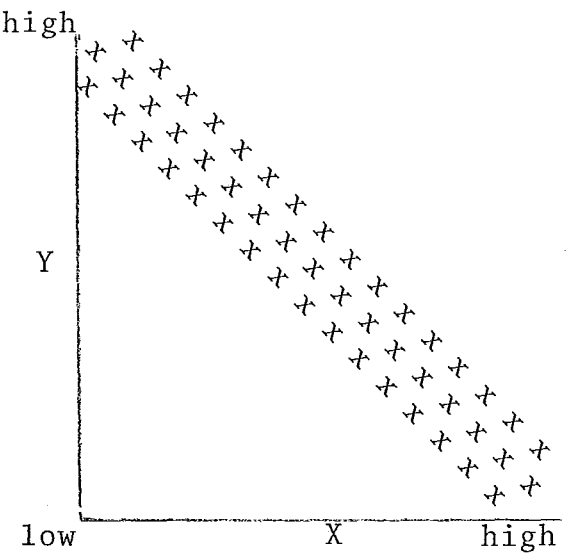

Fig. 2. A negative bivariate relationship.

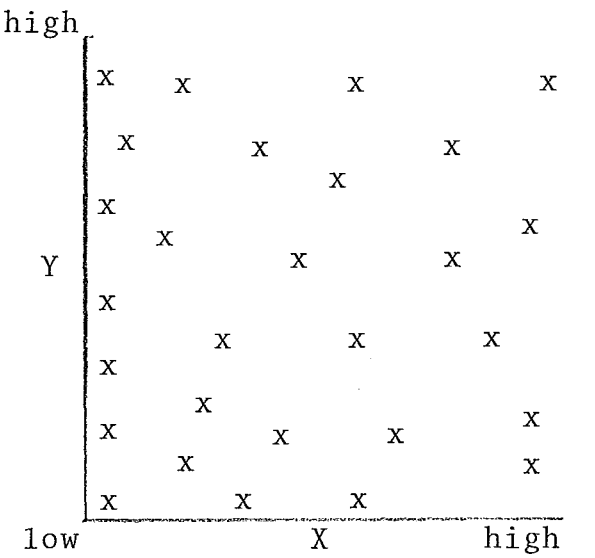

Fig. 3. Zero correlation.

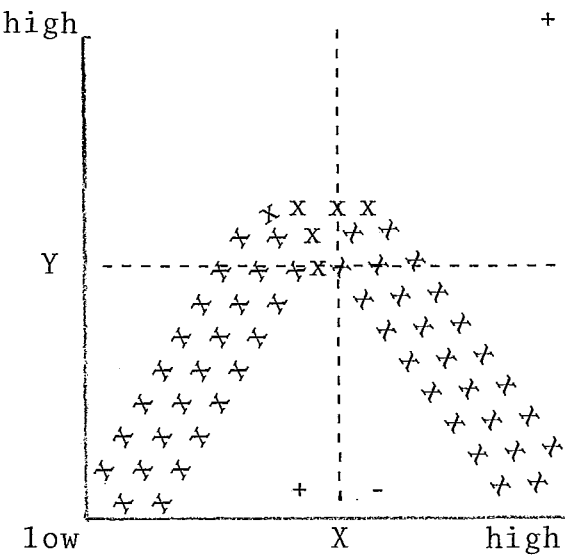

Fig. 4. Curvilinear relationship.

The correlation co-efficient for the bivariate population of X and Y scores is an appropriate indicator for use in these three cases.

In Figure 4 the correlation co-efficient would not indicate correctly the relationship between X and Y. It should be clear that the sum of the cross products in the lower left quadrant will be approximately equal in magnitude but opposite in sign to the cross products in the lower right quadrant. Therefore, these two will sum to about zero. The same relationship holds for the two upper quadrants. The total sum of the z-score cross products would then be approximately zero, and therefore, the correlation co-efficient for the bivariate population of the X and Y scores would approximate zero.

There is a considerable difference between this and Figure 3 where the correlation co-efficient for the bivariate population of X and Y scores shows a zero relationship. The lack of evidence of a trend in Figure 3 is in marked contrast to Figure 4 where there is a clear curvilinear relationship between X and Y values.

To avoid having curvilinear relationships interpreted as zero correlations, a technique was used to take into account curved line trends. Data were examined and where any possibility of a curved line trend occurred, a new variable was created by squaring the original variable.

If the beta value of the variable or the variable

squared was equal to or more than .10, both the variable and the variable squared were combined to form a new composite variable which was used in place of the two previous ones.

Ordering of Variables

Table 3.2 illustrates the manner in which the independent variables were ordered, taking into account as much as possible the causal order. As many of the independent variables as could be accommodated in the program were selected for the initial run, beginning with Group 1.

The resulting output was examined and those variables with a standardized regression coefficient of .10 or more were selected. These, and as many of the remaining independent variables as possible were combined and another run completed. This procedure was repeated until all variables in the list were exhausted. The resulting and final list of variables were those which showed the strongest relation to the dependent variable, academic performance.

Recoding

There were many variables which were not suitable in their composition for use in the multiple regression programme. The questionnaire in Appendix A indicates the changes made. For example in Question 1 (Variable 105) categories were not compatible, so mid-points were determined for each choice.

Dummy variables were created in many cases. This was done by making a new and separate variable for each of the

GROUP 1

110	Parents' place of birth
109	Ethnicity
107	Native language
108	Student's place of birth
105	Age of Student
106	Sex of Student
126	Religion raised in
116-7	Parental education
114-5	Parental occupations
111	Size of home town
119	Family size
120	Birth order
118	Family income
SES	Socioeconomic status index
NOKAH	Number of children at home
130	Social classestimate
135	Estimated I.Q.
ECON	Economic index of family resources
132	Kind of secondary school
152	Parental attitude toward attainment of degree
153	Student's attitude toward attainment of degree
149	Career characteristics
131	Size of secondary school
134	Orientation of secondary school
136	Parental attitudes towards high school work
137	Parental encouragement to attain higher grades
127	Religious beliefs in Grade 13
133	Grade 13 average
172	Grade 13 scholarship
150	Purposes of undergraduate education
161	Occupation expected

GROUP 2

121-4	Participation in post-secondary education by sibs
139	Last year's average
173	Won McMaster scholarship
113	Marital status
143	Political orientation
138	Year in at university
154	Course in
156	Course desired
158	Degree desired
161	Occupation expected
163	Occupation desired
OCCUPDIF	Difference between 161, 163
141-2	Extracurricular activities
144-6	Work habits and class attendance
151	Employment
166	Attitude re borrowing money for education
167	Effect of possible tuition increase

GROUP 3

369	Student's source of finances
168	Amount non-repayable expenses
165	OSAP participation
214	Awareness of OSAP regulation
215	Discouraged by regulation
216	Should students be rewarded for h high grades
217	How rewarded (money/honorary)
206	Money or honorary as higher honour honour
176	Estimate number of scholarships
205	Estimate average needed
178	Estimate value of scholarship
174	Know other winners
177	Know of senate scholarship
175	Know of in-course scholarship
207	Attempt to win
208	Motivation of money/honorary
209	Influence of money on attempt

choices in the question. For example, in Question 5 (Variable 109) A. to I. became nine variables. If any of these had a beta value of .10 or higher, the variables were recoded and combined into a single variable once again. This slowed down the process of carrying out the stepwise multiple regression analysis because of the limited capacity of the programme, and the many variables resulting from the creation of dummy variables. Table 3.2 does not reflect the overall total of variables, which in actuality totalled 196 variables.

Other variables were recoded using the percentage of responses per category, and z scores were calculated. The z scores were then used.[6]

Some variables were not used in the regression programme. There were two reasons: first, that some variables were too much of a cause, i.e. self-obvious, as in Variable 139, "What was your last year's average?", and second, because the number of variables was becoming unwieldy, a few were discarded as being of little relevance, e.g. question 67, (Variable 171).

Cross-Tabulations

Cross-tabulations of the dependent variable with each of the independent variables allowed further analysis of the data. Chi square tests of significance were applied to the appropriate tabled data, which were those that were categorized, rather than numerical. Chi square tests of significance allow the testing of hypotheses about proportions of the population

which fall in the various categories being used, and is legitimate only if the categories are exhaustive and mutually exclusive and observations are independent.

The Kolmogorov-Smirnov test of significance for non-parametric statistics was applied to those not appropriate for chi square testing. Where the direction was predicted, a one-tailed test yielding a maximum difference of 10% was significant at the .05 level. Where direction was not predicted, a two-tailed test showing a maximum difference of 11% was significant at the .05 level of probability.

FOOTNOTES FOR CHAPTER III

1. The Wright Commission was holding public hearings on campus. Its report is The Commission on Post-Secondary Education in Ontario: A Draft Report, Queen's Printer, Toronto, 1971.

2. The statistical methods described are based upon material from the Statistical Package for the Social Sciences, Nie, N.F., Bent, D. and Hull, C.H., McGraw-Hill Book Co., N.Y., 1970, Ch. 15, pp. 174-195.

3. This equation was taken from Statistical Package for the Social Sciences, Nie, N.F., McGraw-Hill Book Co., N.Y., 197 , p. 328.

4. Nie, op. cit., p. 181.

5. Games, P.A. and Klare, G.R., Elementary Statistics: Data Analysis for the Behavioural Sciences, McGraw-Hill, Inc., Toronto, 1967, pp. 357-8.

6. To standardize the data Z scores or standard scores were computed. A Z score is the deviation of a score from the mean divided by the standard deviation,

$$Z = \frac{X-\mu x}{\sigma x} = \frac{X \text{ (deviation score)}}{\sigma x \text{ (standard deviation)}}$$

and relates the score of a part to the score of the whole in terms of the number of standard deviations it is above or below the mean, and is expressed in standard diviation units (From Games and Klare, op. cit., pp. 151-156).

CHAPTER IV

RESULTS AND DISCUSSION

PART I: COMPARISON OF SCHOLARSHIP AND NONSCHOLARSHIP STUDENTS

Undoubtedly the scholarship students differ from the non-scholarship students if only on the basis that they have been awarded a scholarship for superior academic performance. In comparing the two groups on all variables it was found that they are significantly different on a large number of variables. Appendix B lists all the variables grouped according to area. Those variables on which the groups differed ($P \leq .05$) are indicated.

General Comparison

Sex

In 1971-72 the McMaster undergraduate body was comprised of 40% female and 60% male students. As shown by previous studies, sex of student is related to academic achievement, with female students outperforming males[1]. There was no significant difference between the groups on the basis of sex. In this study sex of student did not prove to be related to scholarship winning (Table 4.1). This suggests that females are under-represented, not only in the general undergraduate population, but among scholarship winners as well.

TABLE 4.1

Percentage Distribution of Students by Sex

	Sex	
	Male	Female
Nonscholarship	53	47
Scholarship	59	41

x^2 not significant

Age

The students did not differ on the variable age, but in the multiple regression analysis of the data it was found that age is related to academic performance (Table 4.2), and gives some evidence that winners are younger.

TABLE 4.2

Age of Student: Percentage Distribution

	Age in Years							
	18 and Under	19	20	21	22	23-30	31-40	Over 40
Nonscholarship	7	16	26	20	12	19	0	0
Scholarship	13	19	23	19	13	11	1	0

no significant difference

Year of Studies at University

A greater proportion of scholarship winners were third and fourth year students, suggesting that more were in an Honours programme (Table 4.3).

TABLE 4.3

Students by Year of Studies: Percentage Distribution

	Year of Studies			
	1st	2nd	3rd	4th
Nonscholarship	37	30	21	13
Scholarship	29	27	23	21

P $<.05$

Place of Residence and Size of Home Town

The students did not differ on size of home town or place of residence while at university. Both groups were drawn from urban areas (S-80%, NS-75%) and over 70% of both groups were living off campus. Only 39% of the nonscholarship group and 32% of the scholarship group lived in university residences or in their parents home.

Marital Status

There was no significant difference in the marital status of the students. About 7% of both groups were married. A very small percentage of both groups (S-2%, NS-3%) reported that they were living informally together, or common-law. About 40% of both groups were dating one person, or were engaged, and 8-11% reported that they were dating a variety of people frequently.

It was quite a surprise to discover that so many students in both groups had very little social life in terms of dating. Thirty-nine percent of the nonscholarship students

and 40% of the scholarship group reported that they were dating infrequently or not dating at all (Table 4.4).

Social Activities

The students in this study's sample did not bear out the stereotype of the university student as a heavy drinker, at least not by their own estimates of amount of time spent drinking. More than half the total sample reported that they did not drink at all or spent less than one hour a week drinking (Table 4.5).

TABLE 4.5

Student Hours Spent Drinking: Percentage Distribution

	Estimated Hours Drinking				
	0	1 or Less	1-5	5-12	More Than 12
Nonscholarship	20	34	29	14	4
Scholarship	25	35	27	12	1

No significant difference

Students were asked to estimate how many hours per week they spent in activities called, for lack of a better term, light entertainment. The suggested activities were watching television, playing cards, going to movies, reading, and so on. About 75 to 80% of both groups reported spending 5 to 12 hours per week involved in such activities. There was no significant difference between groups.

TABLE 4.4

Students by Marital Status: Percentage Distribution

	Married	Informally Married	Engaged or Mainly one	Dating Person	Dating Frequently	Dating Infrequently	Not Dating
Nonscholarship	7	3	43	8	25	14	
Scholarship	7	2	40	11	20	20	

No significant difference

Political Orientation

In questioning students about their political orientation it was found that one-fifth of the nonscholarship students and almost one-third of the scholarship students reported that they either did not know what their political orientation was or that they were not interested in the subject. Some students made a point of noting on their questionnaire that they did not like the terms "liberal" or "conservative" as indicators of their political orientation as the terms were also the names of Canadian political parties. However, they are the terms used by political scientists, and perhaps a certain lack of understanding of how one might be placed on the scale from right to left in political orientation may have contributed to the large percentage who said they did not know or did not care.

The data in Table 4.6 suggest that the scholarship students tend to be more middle-of-the-road, in that fewer reported themselves as radical, and more said they did not know or care.

Extracurricular Activities

The students reported similar levels of involvement in extracurricular activities. About half of both groups said they were involved in one or more university clubs and/or organizations. About one-fifth of both groups were involved in volunteer work or athletic activities (Table 4.7).

TABLE 4.6

Students' Political Orientation: Percentage Distribution

	Political Orientation					
	Very Conservative	Conservative	Liberal	Very Liberal	Radical	Do Not Know Do Not Care
Nonscholarship	3	14	18	30	13	22
Scholarship	2	16	13	33	7	29

x^2 significant at .008 level

TABLE 4.7

Students by Extracurricular Activities: Percentage Distribution

	Clubs/Organizations		Volunteer Work		Athletics	
	None	One or More	None	Some	None	Some
Nonscholarship	52	48	82	18	82	18
Scholarship	50	50	84	15	85	15

No significant difference

Summary of General Comparison

On the variables sex, age, year of study, marital status, social activities, political orientation, and involvement in extracurricular activities, the students were found to differ on only two variables, year of study and political orientation. Scholarship students were drawn more from the third and fourth years of study, and were more middle-of-the-road politically, or did not know or care too much about their political orientation.

Comparison of Social and Family Characteristics

Previous research has found that students who are superior in academic performance come from families that have significantly different characteristics than students who are less outstanding in their academic performance[1]. The following comparison will indicate whether the findings of this study are consistent with previous research findings, and if there are any new family influences on academic performance of students in this study's sample.

Religiousity

Students were asked to indicate which religion influenced them as a child, that is, the religion in which they were raised. To see if the students reported any changes in religious beliefs once they had become young adults, they were asked to indicate which religious beliefs influenced them as a Grade 13 student. Scholarship students

TABLE 4.8

Comparison of Religion Raised In, and Religious Beliefs in Grade 13: Percentage Distribution

	Religious Beliefs							
	Anglican	Baptist	Lutheran	Presbyterian	Catholic	Jewish	Other	None
SCHOLARSHIP STUDENTS								
Religion Raised In	17	8	5	14	18	1	28	9
Religious Beliefs In Grade 13	15	7	4	9	18	1	24	23
NONSCHOLARSHIP STUDENTS								
Religion Raised In	17	6	5	11	28	1	26	6
Religious Beliefs In Grade 13	10	5	3	8	25	1	25	23

$P < .05$

of all religious beliefs, except those of the Catholic or Jewish faith, reported a decline in adherence to their religious beliefs, and the category "none" increased by 14%. All categories of religious beliefs, except Jewish, saw a decline for the nonscholarship students, with the category "none" increasing by 16% (Table 4.8).

The scholarship and nonscholarship students showed no significant differences when compared on the variables "frequency of attending religious services" and "comparison of frequency of attending religious services now and in the last few years of high school". About one-third of each group reported attending weekly religious services, about one-quarter said they attended no services. About three-quarters of all students said that they attended services less or not at all in comparison to their attendance patterns in high school.

Students religious beliefs changed from high school to university. Except for Jewish students in both groups, and for Catholic scholarship students, there was a shift from belief in one religion, to reporting no religious beliefs (S. No religious beliefs, 9% to 23%, N.S., 6% to 23%).

Social Class

The social class or socioeconomic status of a family is traditionally determined for research purposes by combining several variables, e.g. parental educational level, father's

occupation, and family income. An index of socioeconomic status (SES) was created for this study following that tradition[2]. Table 4.9 shows the groups did not significantly differ on the variable SES.

TABLE 4.9

Students by SES: Percentage Distribution

	SES Level						
	2	3	4	5	6	7	8
Nonscholarship	2	14	14	21	16	18	16
Scholarship	5	12	15	19	17	16	16

No significant difference

To get a different kind of measure of social class the students were asked "What social class would you say your parents are in?" The subjective evaluation of their parents' social class showed no significant difference between the two groups: 70% of both groups saw their families as being of middle, upper-middle or upper class (Table 4.10). There is some evidence of more middle class students in the scholarship group.

TABLE 4.10

Students by Estimate of Parental Social Class: Percentage Distribution

	Social Class Estimate					
	Upper	Upper-Middle	Middle	Working	Lower	Do Not Know
Nonscholarship	3	29	38	27	1	4
Scholarship	0	25	47	18	4	6

No significant difference

Place of Birth, Ethnicity and Native Language

The scholarship students in this study are more likely to have been born outside of Canada, to have parents who are foreign-born, and to have a native language other than English (Tables 4.11, 4.12, 4.13).

TABLE 4.11
Students' Place of Birth: Percentage Distribution

	Canada	Not Canada
Nonscholarship	83	17
Scholarship	73	27

$x^2 < .03$

TABLE 4.12
Students' Parents' Place of Birth: Percentage Distribution

	Canada		Not Canada
	Both	One	
Nonscholarship	54	18	28
Scholarship	52	13	36

$x^2 < .03$

TABLE 4.13
Students by Native Language: Percentage Distribution

	Native Language	
	English	Not English
Nonscholarship	87	13
Scholarship	75	25

$x^2 < .0001$

When the variable ethnic background was examined, it was found that the groups were significantly different. Ethnic background was also found to contribute to the likelihood of scholarship winning. Table 4.14 illustrates the ethnic background of the two groups.

TABLE 4.14

Students by Ethnic Background: Percentage Distribution

	British	French	German	Italian	Netherlands	Polish	Other European	Asian	Other
Nonscholarship	52	5	4	6	3	2	12	6	11
Scholarship	56	3	6	4	3	1	9	15	5

$x^2 < .0001$

All non-dichotomous variables were restructured for use in the multiple regression analysis. In the case of the variable 'ethnic background' each choice became a new dichotomous or dummy variable, e.g. 'British, not British'. The eight dummy variables were used in the regression analysis and a b-value or standardized regression coefficient was of each ethnic background category to scholarship winning (Table 4.15). If one or more of the dummy variables had a b-value of .10 or greater, the original variable was re-structured by recoding each ethnic category using the b-value, and was included in subsequent regression programmes.

TABLE 4.15

Relation of Ethnic Background Variables to Scholarship Winning

Ethnic Background	Standardized Regression Co-efficient
Asian	.385
German	.201
British	.161
Dutch	.093
Other European	.085
Polish	.057
Italian	.024
French-Canadian	.016

The ethnic background 'Asian' was found to have the strongest relation to scholarship winning. The difference between the two groups on the variables ethnic background, native language, and students' and their parents' place of birth may be explained by the relatively large percentage of Asian students in the scholarship group (15%) as compared to the nonscholarship group (6%) and that 90% of the Asian scholarship students reported that neither they nor their parents were born in Canada, and that English was not their native language (Table 4.16).

TABLE 4.16

Asian Students by Native Language, Students' and Parents' Place of Birth: Percentage Distribution

Native Language		Students' Place of Birth		Parents' Place of Birth	
English	Not English	Canada	Not Canada	Canada	Not Canada
10	90	6	94	7	93

Nonscholarship: N=32
Scholarship : N=42

Family Income

Robert Pike, in Who Doesn't Get to University...and Why?", a study on accessibility to higher education in Canada, states[3]

> *During the 1950's, children whose fathers were employed in relatively highly paid professional and white-collar occupations were very greatly overrepresented amongst Canadian university students relative to their total numbers in the Canadian population. On the other hand, children whose fathers were engaged in poorly-paid, semi-skilled or unskilled manual occupations were very greatly under-represented, and had a very poor chance of reaching university.*

These conclusions were based upon John Porter's analysis of the social class origins of some 8,000 university students drawn from all provinces in Canada, who were attending university in 1956-57. Pike concludes from his study of social class and university attendance in the 1950's that [4]

> *....university students were found to come in disproportionately large numbers from the higher occupational classes, the higher income groups, and from homes where the level of education of the parents was relatively high.*

In the 1960's the picture remained essentially the same. In 1965-66, the Canadian Union of Students undertook a sample survey of Canadian undergraduate students which supported the conclusions of earlier studies. It found that Canadian university students are[5]

> *....by and large not representative of the Canadian class structure but rather bear the characteristics of the middle and upper classes of Canadian society.*

Pike concludes that the changes that took place in the social composition of the university population from the 1950's to the 1960's still leave us far removed from[6]

> *an idealistic, and probably unobtainable state of 'perfect educational mobility'; a state in which young people all find their 'natural' educational levels in accordance with their 'natural' inherent abilities, uninfluenced by family background, school or neighbourhood.*

Pike concludes that[7]

> *young people from middle-class homes and from families in higher income categories are still over-represented amongst university students in terms of their total numbers in the Canadian population.*

Since the nonscholarship students were selected only on the basis of their status as an undergraduate, and as not having won a scholarship, it may be assumed that they are fairly representative of the McMaster undergraduate population. It is also possible that they are representative of the Canadian undergraduate population as previous studies have found undergraduates across Canada to be very alike in

terms of social variables.

Data in Table 4.17 would seem to bear this out. While only 18% of Ontario families reported a family income of over $15,000 per year, 25% of the nonscholarship students reported income in this category. It is difficult to make comparisons of students' family incomes with family incomes of the general population. A more meaningful comparison would be to compare students' family income with family income of heads of households in the age range where children are more likely to be university students (18-24 years).

A more important reason why this basis of comparison is too crude is that it does not allow us to draw conclusions about proportional representation. If lower-income families for instance are on the average twice as large as upper-income families, then for equal representation to exist, 12% of Ontario families in the lowest income category should have 24% of undergraduate students in 1971. Since information about family size is not available in the income data for Ontario there is no adequate basis for deciding what would constitute equal representation.

However, even a cursory examination of Table 4.17 suggests that in this sample students are drawn disproportionately from the highest income category (over $15,000).

The scholarship students did not differ significantly from the nonscholarship students on the variable family income. Using the Kolmogorov-Smirnov test of significance, a maximum

TABLE 4.17

Comparison of Nonscholarship and Scholarship Students' Family Income with Ontario Family Income: Percentage Distribution

Family Income	Nonscholarship Students		Scholarship Students		Ontario Family Income[1]
Less Than $5,000[2]		9		11	16
$ 5,000 to 7,000	5		10		12
7,000 to 9,000	14		11		11
9,000 to 11,000[3]	24		28		
11,000 to 13,000	11	47	13	48	43
13,000 to 15,000	12		7		
Cumulative Total		66		69	66
Over $15,000		25		21	18

No significant difference

[1]Ontario income figures from Statistics Canada Summary of Family Income Statistics, 1971.

[2]The poverty level established by Statistics Canada for a family of four is $4,697, for a family of five, $5,368, for 1971.

[3]Average annual family income for 1971 was $10,661.

cumulative difference of 10% was found, while a difference of 11% was required to indicate a statistical difference at the .05 level of probability. The tendency was for scholarship students to come from the lower range of the income scale. Although not significant, this tendency may account for the scholarship students finding financial awards highly motivating, as seen in Chapter V.

Parental Education and Occupation

The scholarship and nonscholarship groups did not differ significantly on the variables, father's level of schooling, mother's level of schooling, or mother's occupation. The difference between groups on the variable father's occupation just reached the .05 level of significance (Tables 4.18, 4.19). For all students, however, their parents' occupation is a very strong factor in university attendance. A number of national studies and international comparisons have shown that children of professionals or semi-professional parents have 5½ times as great a chance of graduating from university as children of manual workers. For children of managerial parents the rate is 2½ times that of children of manual workers.[8] Fifty-one percent of nonscholarship students and 61% of scholarship students had fathers in professional and managerial occupations. For the nonscholarship group children of professional and managerial fathers are represented 5 times more than are children of unskilled fathers. For the scholarship group

TABLE 4.18

Parents' Level of Schooling: Percentage Distribution

	Grade 8 or Less	Part High School	High School	Technical/ Business	Part University/ Other University	University Graduate
			Father's Level of Schooling			
Nonscholarship	23	26	18	7	9	18
Scholarship	26	19	20	4	8	23
			Mother's Level of Schooling			
Nonscholarship	22	21	27	7	16	7
Scholarship	25	21	23	7	16	8

No significant difference

TABLE 4.19

Parents' Occupation: Percentage Distribution

	Professional	Managerial Proprietary	Sales Clerical	Skilled Semi-skilled	Service	Unskilled	Homemaker
			Father's Occupation*				
Nonscholarship	24	27	9	29	6	5	
Scholarship	34	27	8	26	3	3	
			Mother's Occupation**				
Nonscholarship	15	2	24	7	4	4	45
Scholarship	14	8	17	4	1	3	53

*P $<$.05
**No significant difference

there is a more pronounced difference, children of professional fathers are represented 11 times more than children of unskilled fathers, and children of managerial fathers are represented 9 times more.

Family Size

In Chapter II it was pointed out that previous studies have found that small family size increases level of ambition and achievement motivation. However, no significant difference between the scholarship and nonscholarship students at McMaster University was found on the variable family size (Table 4.20).

TABLE 4.20

Students by Family Size: Percentage Distribution

	Number of Children			
	One	Two	Three	Four or More
Nonscholarship	4	26	25	45
Scholarship	6	19	29	45

No significant difference

Birth Order

Seventy-five percent of the scholarship group and 72% of the nonscholarship group were either first or second born children. However, the groups did not differ on birth order. It is possible that family size and birth order influenced the student's chances of getting to university, and while at

university other influences affect scholastic performance (Table 4.21).

TABLE 4.21

Students by Birth Order: Percentage Distribution

	Birth Order					
	1st	2nd	3rd	4th	5th	6th or More
Nonscholarship	44	31	14	7	2	2
Scholarship	48	24	12	7	2	7

No significant difference

Parental Attitudes

Ronald King, in Education states that[9]

> *Many surveys have shown that middle-class parents have higher educational ambitions for their children than working class parents. They show greater interests in their children's school. High parental interest in a child's education is related to good educational achievement at all levels of measured intelligence and through all social classes and is particularly beneficial in the case of working class people.*

The influence of the parent's own experience in the educational system combines with their ambitions for their child,[10]

> *Most middle class parents not only wish for a long educational life for their children but also understand and accept the processes of education, often having received an extended education themselves. Although working class parents may wish for a long educational life for their child they are less likely to understand and accept the necessary educational process.*

The culture of the middle class home, King believes, is similar in attitude, values and beliefs to those transmitted by the schools. There is cultural continuity, a good fit, between them. King suggests that[11]

> *in many working class homes...there may even be a cultural discontinuity with the educational system,(perhaps even)...where a conflict exists between the values of the home and of the school*

The parents of scholarship students differed significantly from those of nonscholarship students on several variables concerned with parental attitudes.

It is noted that the attitudes of the parents are reported here as perceived by the students. Students were asked about their parents' attitude towards their schoolwork in high school (Table 4.22). Scholarship students reported less parental supervision of their work. It is difficult to account for this in that it may be that the scholarship students gave their parents less to be concerned about or on the other hand it might mean that the scholarship students were allowed more freedom to carry out their own schoolwork, and more opportunities to direct themselves. This would be consistent with conclusions drawn by previous studies that high achieving children had parents who stressed early independence training, and encouraged independent behaviour and autonomy.

TABLE 4.22

Parental Supervision of Students' High School Work: Percentage Distribution

	Level of Supervision				
	Very Strict	Somewhat Strict	Do Not Know	Interested No Supervision	Little Attention, No Supervision
Nonscholarship	5	18	2	67	8
Scholarship	2	13	2	72	11

x^2 significant at the .03 level

The same principle may be at work when parents' attitudes towards grades are examined. Students were asked if their parents encouraged them to achieve higher grades. The scholarship students' parents showed much more acceptance of their child's grades (Table 4.23).

TABLE 4.23

Parental Encouragement to Attain Higher Grades in Secondary School: Percentage Distribution

	Level of Encouragement			
	Strongly Encouraged	Somewhat Encouraged	Accepted Grades	Showed Little Interest
Nonscholarship	19	44	35	2
Scholarship	11	21	63	5

$P < .05$

Students were asked how they perceived their parents' attitude towards the attainment of a university degree. About three quarters of all students reported that their parents placed importance on attaining a degree, while about one

quarter replied that they did not know how their parents felt, or that their parents did not feel a degree was important (Table 4.24).

TABLE 4.24

Parental Attitude Towards Attainment of a University Degree
Percentage Distribution

Q. "Do your parents place importance on attaining a degree?"					
	Definitely Yes	Probably Yes	Do Not Know	Probably No	Definitely No
Nonscholarship	38	38	7	11	7
Scholarship	40	30	11	10	9

No significant difference

Then students were asked, "Do you yourself place a great deal of importance on the attainment of a university degree?" Table 4.25 shows that the scholarship students placed more importance on a degree than did the nonscholarship students. On comparing students and their parents it was found that nonscholarship students placed less importance on a degree than did their parents ($P < .05$) while the trend was in the opposite direction for scholarship winners, that is, students placed more importance on a degree than did their parents but the difference was not significant.

TABLE 4.25

Students' Attitude Towards Attaining a University Degree: Percentage Distribution

Q. "Do you place a great deal of importance upon attaining a degree?"

	Definitely Yes	Probably Yes	Do Not Know	Probably No	Definitely No
Nonscholarship	28	39	11	13	10
Scholarship	34	43	11	8	4

$P < .05$

Summary of Social and Family Characteristics

Students were compared on seventeen social and family characteristics and were found to differ significantly on nine. On three variables, native language, students' place of birth and parents' place of birth, the difference may be due to the fact that 90% of the Asian scholarship students reported that their native language was not English and that they were foreign born and had foreign born parents. The difference on father's occupation was not highly significant. There was a highly significant difference on five variables: religion, ethnic background, parents' attitude towards high school work, parental encouragement of higher grades, student's attitude toward attaining a degree.

Financing University Education

Students may finance their university education through a combination of sources (Table 4.26). Students

TABLE 4.26

Students' Sources of Finances for University Education Controlling for Sex of Student: Percentage Distribution

	Source of Finances											
	OSAP Grant		Loans		Other		Parents		Scholarship		Own Earnings	
	M	F	M	F	M	F	M	F	M	F	M	F
Nonscholarship	8	13	10	18	11	4	21	36	2*	-	49	29
Scholarship	2	4	4	6	2	2	14	17	34	53	45	19

x^2 significant at .0001 level

*All students in the nonscholarship group answered Q. 69 (Var. 173) "Have you won a scholarship since becoming a student at McMaster?" in the negative.

and their families are expected to pay as much of their own costs as possible. This is indicated by the policy of the Ontario Student Awards Programme (O.S.A.P.) that requires a means test be carried out on each student applying for student financial assistance through the awards programme. The resources of the student and of his or her family are evaluated according to a variety of criteria which allows for differing family size, differing financial resources, etc. Students who apply for assistance are also required to raise a certain amount of money towards the costs of their education through summer employment.

Employment

Students generally contribute to their education costs through their employment, both during the summer vacation period and/or through part or full time employment during the school year. Thirty-four percent of the nonscholarship group held some kind of job during the school year, while only 22% of the scholarship students held jobs. Table 4.27 indicates that 85% of employed students worked 5 to 20 hours per week.

TABLE 4.27

Students' Employment: Percentage Distribution

	Not Employed	Hours Employed Per Week		
		5 to 20	20 to 39	40
Nonscholarship	66	29	4	1
Scholarship	79	20	0	1

$P < .05$

It appears that summer employment provides the greater amount of resources for the student as opposed to school term employment. Male students were able to rely far more on their own earnings to finance their university expenses. Forty-nine percent of the nonscholarship males, and 45% of the scholarship males reported their own earnings as their main source of funds. It is generally agreed that female students have fewer choices of well-paying summer jobs of which to take advantage.[12] Only 29% of the nonscholarship females and 19% of the scholarship females reported their own earnings as their main source of finances (Table 4.26).

Scholarship Monies

Thirty-four percent of the male scholarship winners indicated that they relied on their scholarship as their major source of funds. The scholarship appears to be particularly helpful to female scholarship students, in that 53% reported the scholarship as their main source of finances. For the bright student, winning a scholarship supplies a means of being as independent as possible financially during their education and remaining as debt-free as possible on graduation.

Loans and Grants

The Ontario Student Awards Programme (O.S.A.P.) evaluates the student's need for financial assistance through a means test. If the student qualifies, the amount of loan/grant is determined by the individual student's financial circumstances.

Once the need is assessed, any award is apportioned as follows: the first $150 is loan, the next $750 or portion thereof is 60% loan, 40% grant, and the balance, if any, beyond $900 is non-repayable grant. For example, a student assessed as needing $1200, will receive a $600 loan and a $600 non-repayable grant. A second student with an assessed need of $800 will receive a loan of $540 and a grant of $260. The loan is interest free as long as the student is attending university full-time. Upon graduation, the student has six months to commence repayment, the time allowed will vary by the amount of the loan and the financial situation of the student.

Returning to student one of above, if he is awarded the same amount yearly for a four year programme, he will acquire a debt of $2400; student two will acquire a debt of $2160.

A student who does not qualify for O.S.A.P. may take a loan under the federally-operated Canada Student Loans Plan (C.S.L.P.), again there is a test of eligibility, and a maximum amount available. The student must meet certain criteria, as with O.S.A.P., e.g. citizenship, and is under the same repayment requirements.

Female, nonscholarship students were found to be the highest users of O.S.A.P. loans and grants. Male, nonscholarship students were the second highest users, but at almost half the rate as their female counterparts. Scholarship

students relied very little on O.S.A.P. loans or grants, only 2% of males and 4% of females reported O.S.A.P. loans and grants as their main source of finances (Table 4.28).

Parental Support

The O.S.A.P. is quite insistent that parents make as great a contribution to their child's education as possible. If the assessment indicates a certain amount is to be contributed by the parents, and the parents refuse to contribute, or the student does not want to use his or her parents' money, the assessment can not be altered. Only if a student is assessed as independent are the parents no longer a required source of finances.

Independence is determined by the following criteria: if the student is married prior to the first day of the month of registration for the academic year for which he or she is requesting assistance, if the student has completed four successful academic years at a post-secondary institution and provides a declaration of financial independence from parent or guardian, if the applicant has been employed in a full-time job for a period of twelve consecutive months prior to first enrolling in the academic programme for which he or she is requesting assistance and provides a declaration of financial independence from parent or guardian, or the student is 25 years of age or over prior to the first day of the month of registration for the academic year for which he or she is requesting assistance.

TABLE 4.28

Participation on O.S.A.P., Canada Student Loans Plan by Scholarship Controlling for Sex: Percentage Distribution

	O.S.A.P.		C.S.L.P.		No Participation	
	Male	Female	Male	Female	Male	Female
Nonscholarship	29	45	18	11	54	44
Scholarship	30	31	8	7	61	62

x^2 significant at .05 level

Therefore, students who are refused assistance by their parents, or who for a variety of reasons do not want to use their parents' money are required, if they have no other sources of funds, to get married, to work for 12 months, or to wait until he or she is 25 years old before O.S.A.P. assistance will be granted.

Returning to Table 4.26, it is observed that female, nonscholarship students rely the most on parental support. Over one-third of this group reported their parents as their main source funds, as compared to one-fifth of male, nonscholarship students. The scholarship students reported their parents as their main source of funds to a much smaller extent; only 14% of males and 17% of females did so.

Students' Attitude Towards Borrowing

Of the sources of funds available to students, loans are probably the least acceptable. The student aid plan (O.S.A.P.) offers loan money, as does the Canada Student Loan Plan (C.S.L.P.). Even though these plans are designed to be the most feasible for students, there is an unwillingness to use this source of funds.

When asked to name their main source of funds for their university educations, it could be seen that loans do certainly play an important part in enabling students to educate themselves (Table 4.29).

TABLE 4.29

Loans as Students' Main Source of Funds by SES: Percentage Distribution

Main Source of Funds	SES LEVEL 2		3		4		5		6		7		8	
	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S
Loans	45	7	16	6	15	13	38	8	31	4	17	22	34	4
Other	55	93	84	94	85	87	62	92	69	96	83	88	66	96

P <.05

In 1970-71, the average loan through O.S.A.P. was just over $500.

When asked how they felt about borrowing money for their education, about 1/5 of both groups said that they did not have to borrow any money, and about one-third said they did not want to borrow (Table 4.30). There were 54% of the nonscholarship students, and 41% of the scholarship students who indicated that they would borrow money. Once $1000 was reached, willingness to borrow by these students dropped rapidly.

TABLE 4.30

Students' Attitude Towards Borrowing: Percentage Distribution

	Do Not Have to Borrow	Do Not Want to Borrow	Would Borrow in $ per Year To 500	500 to 1000	1000 to 1500	Over 1500
Nonscholarship	19	27	15	22	8	9
Scholarship	23	32	11	20	7	3

No significant difference

Students' Main Source of Funds

Students were asked "How is your university education being financed this year? Please indicate the one source that provides the largest proportion of your financial resources". To examine the relationship between students' main source of funds and socioeconomic status (SES) an index of socioeconomic status (created as described in Footnote 2, Chapter 2) was used. Basically, SES was based on parents' level of schooling, fathers' occupation and family income. Seven SES levels from 2 to 8 were established, with levels 2 and 3 likely representing income to $7,000, levels 4, 5 and 6 to $15,000 and levels 7 and 8 over $15,000.

The data in Table 4.31 was used for Figure 5, which allows a striking comparison of scholarship and nonscholarship groups by SES and main source of funds.

Seventy-two percent of the nonscholarship students in the lowest SES category (2) relied on O.S.A.P. grants and loans, with their own earnings and parents making up the short fall. Scholarship students in level 2 relied mainly on their scholarship (87%), with loans and their own earnings to a lesser degree. Table 4.28 indicates that 56% of the nonscholarship female students relied on O.S.A.P. and C.S.L.P. for their funds, and indicates that of all students they are the most dependent on such student assistance plans. The evidence from Table 4.28 and Figure 5 suggests that the most financially disadvantaged student is the female, nonscholarship

TABLE 4.31

Students' Main Source of Funds for Education by SES by Scholarship: Percentage Distribution

Main Source of Funds		Low SES LEVEL 2		3		4		5		6		7		High SES LEVEL 8	
		NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S
O.S.A.P. Grant		27	0	13	3	14	3	12	6	4	2	14	2	2	0
O.S.A.P. Loans and Other Sources		45	7	16	6	15	13	37	8	31	4	17	22	34	4
Parents		9	0	24	6	14	13	12	19	29	9	40	15	54	30
Scholarship		0	87	0	31	1*	35	0	37	5*	50	3*	44	0	33
Own Earnings		19	7	49	53	56	38	43	32	37	35	26	35	13	33
Column Total	%	2	5	14	12	14	14	21	19	16	17	18	17	15	17
	N	(11)	(15)	(72)	(32)	(73)	(40)	(109)	(54)	(84)	(46)	(93)	(46)	(80)	(46)

$P < .05$

*All students in Nonscholarship answered "no" when asked if they had won a McMaster Scholarship valued at $200 or more.

Nonscholarship N = 523
Scholarship N - 279

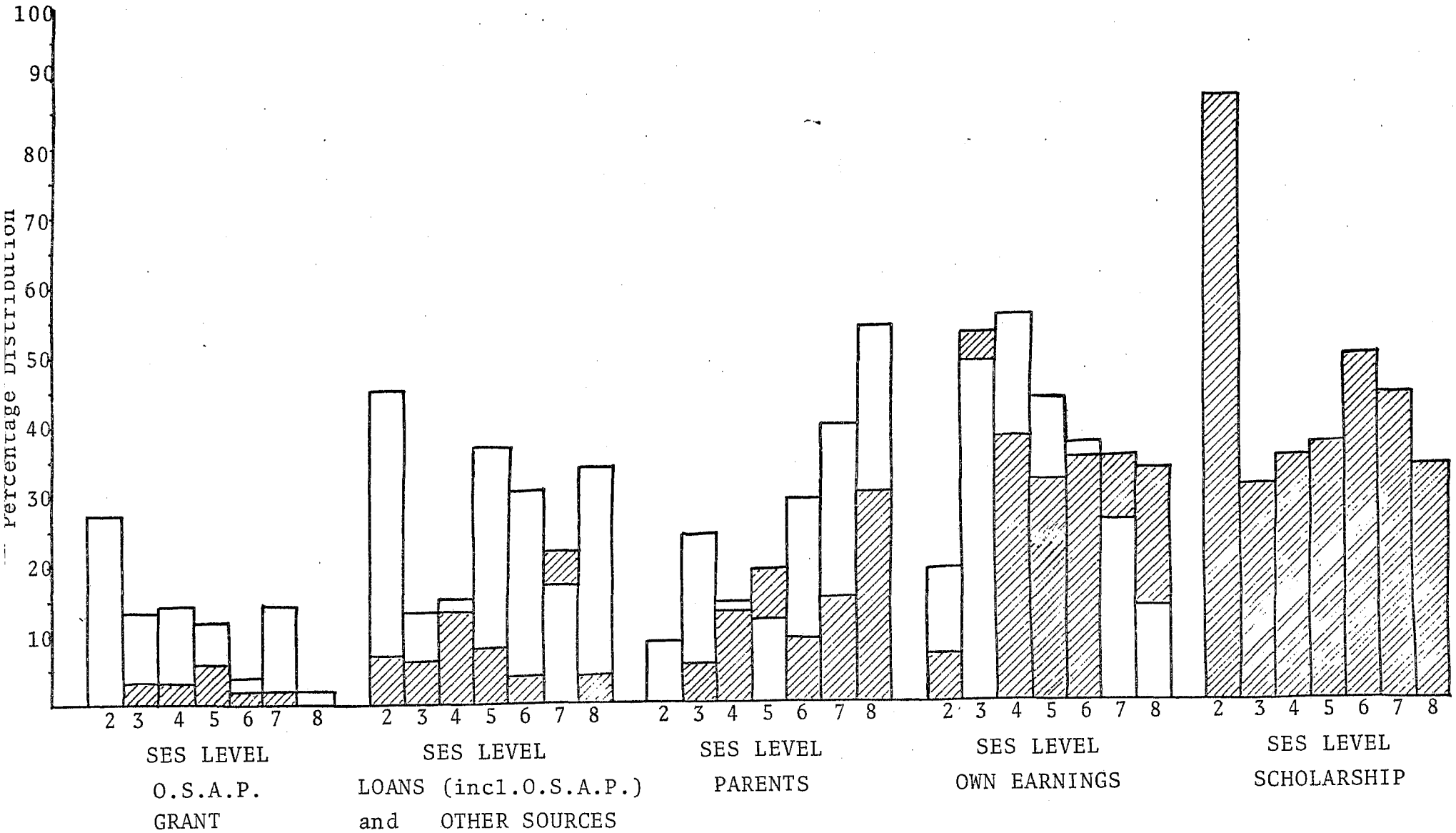

FIGURE 5. STUDENTS' MAIN SOURCE OF FUNDS BY SES.

student. An interesting anomaly is found in Figure 5 where SES level 7 nonscholarship students are tied with SES level 4 nonscholarship students as the second highest users of non-repayable O.S.A.P. grants.

In SES level 3, 73% of the nonscholarship students rely on their own earnings and their parents, while 84% of the scholarship students rely on their own earnings and their scholarship. In SES level 4, the greatest percentage of students relying on their own earnings is found: 56% of the nonscholarship group reported that their own earnings funded their education. The remaining 44% were divided evenly among O.S.A.P. grant, loans and parents. One-third of the scholarship students relied mainly on their scholarship, 38% on their own earnings and the remainder on parents and loans.

Students in SES level 5 are likely to be from homes where the family income is close to the average annual income of $11,000 for Ontario in 1972. The main sources of funds for the nonscholarship students were their own earnings (43%) and loans (31%), while for the scholarship students it was their own earnings (32%) and their scholarship (37%) and their parents (19%).

In SES level 6, about one-third of the nonscholarship students relied on their own earnings (37%), one-third on loans (31%) and one-third on their parents (29%). The scholarship students, in this group were the second most independent, 85% relied on their own earnings and scholarship, exceeded

only by their counterparts in level 2.

In SES levels 7 and 8 the parents became very important as main sources of funds, for nonscholarship students; 40% of those in level 7, and 54% of those in level 8 relied on parents. They were among those earning the least of their required funds, 26% of level 7, and 13% of level 8 students named their own earnings as their main source of funds. In spite of their high family incomes and SES levels, 14% of the nonscholarship students in level 7 named O.S.A.P. grants, and 17% of level 7, and 34% of level 8 nonscholarship students named loans from O.S.A.P. and other sources as their main source of funds.

The scholarship students in levels 7 and 8 also relied on parents to quite a degree; 15% of those in level 7, and 30% of those in level 8 named their parents as main source of funds. In level 7, 79% relied on their earnings and scholarship, and in level 8, 66% named these sources. Again, in level 7, an anomaly is observed: 22% of scholarship students named loans as their main source of funds.

The parents of level 3 nonscholarship students appear to be providing a great deal of financial support in relation to their SES level when compared to all other groups. In the lower SES levels all students provided a substantial amount of their own resources, except for the lowest category, where the student aid plan and scholarship monies appear to be most crucial in enabling the student to continue.

Summary

Scholarship students differed significantly from non-scholarship students on three of the four variables related to financing their education. They tended to avoid outside employment during the school year, perhaps because of its possible interference with their academic studies. They were not averse to employment in general as they earned a substantial portion of the money needed for their education through summer employment.

Scholarship students tended to reject O.S.A.P. as a means of financing their education, In naming their main source of funds to finance their education, they preferred financial independence; across all SES levels, for the most part they used their own earnings and scholarship money to pay for their education.

Both groups of students were similar in their attitudes towards borrowing. About half of both groups rejected borrowing, the remainder would borrow up to $1,000. A few students were willing to go beyond this level.

Comparison of Educational Characteristics

Secondary School

Scholarship and nonscholarship students came from similar kinds of secondary schools: about three-quarters of both groups attended medium-sized schools of 500 to 1,500 students, and over 80% attended public schools (Tables 4.32,

4.33). When asked how they perceived the orientation of their high school on a five-point scale from very traditional to very progressive, scholarship students perceived their schools as significantly more progressive (Table 4.34). Since bright students have been found to be creative, independent and highly motivated, as found in Chapter 2, the more progressive high schools may stimulate their academic performance.

TABLE 4.32

Students by Size of Secondary School: Percentage Distribution

	Number of Students			
	Less Than 500	500 to 1000	1000 to 1500	Over 1500
Nonscholarship	7	36	36	21
Scholarship	7	29	45	20

No significant difference

TABLE 4.33

Students by Kind of Secondary School: Percentage Distribution

	Public	Private	Separate
Nonscholarship	83	10	6
Scholarship	80	10	10

No significant difference

TABLE 4.34

Students' Perception of Orientation of Secondary School: Percentage Distribution

	Very Traditional	Tradi-tional	Neutral	Somewhat Progressive	Pro-gressive
Nonscholarship	7	18	28	26	22
Scholarship	4	15	26	22	33

P $<.05$

Grades

It is not surprising that scholarship students achieved exceptionally high grades, both in Grade 13, and in the year previous to this study. Eighty percent of the scholarship group left Grade 13 with an average of 76% or higher, and in the year prior to the study, 91% achieved grades of 75% or better (Tables 4.35, 4.36). The 9% of the scholarship group whose last year's grades were below 75% were obviously students who had won a scholarship perhaps two or three years prior to this study and whose grades have since dropped.

TABLE 4.35

Students' Grade 13 Average: Percentage Distribution

	Grade 13 Average Grade Range				
	60 and Lower	61-70	71-75	76-80	81 and Higher
Nonscholarship	4	51	17	16	11
Scholarship	1	10	9	10	70

P $<.05$

TABLE 4.36

Students' Average Last Year: Percentage Distribution

	Grade Range					
	Less Than 60	60-64	65-69	70-74	75-79	80 and Over
Nonscholarship	18	28	30	17	6	1
Scholarship	2	2	2	3	47	44

$P < .05$

In the nonscholarship group 27% of the students achieved a grade of 76% or more in Grade 13, and in the year prior to this study, 7% attained grades over 75%. Two questions arise: why have 20% of the nonscholarship group dropped in performance once in university? Secondly, who are the 7% who indicated grades over 75%? It is assumed that they are students in faculties where the cut-off grade point for a scholarship exceeded the grade they achieved.

The variables Grade 13 average, and last year's grade were not used in the regression analysis as they were seen as too much of a cause of scholarship winning, rather than a means to explain it.

Lavin states, however, that it has been traditional to use high school grades as an ability measure for predicting academic performance at the post-secondary level,[13]

> *...on those educational levels for which data are most reliable (high school and college) measures of ability on the average account for 35 to 45 percent of the variation in academic performance. While no other single*

> *type of factor accounts for this much variation more than half still remains unexplained Thus, attention turns to other factors of a nonintellective nature which may be pertinent.*

Thus, grades were not used and attention was directed at non-intellectual factors to explain academic performance.

Students' Estimate of Own Intelligence Quotient

The students were asked to estimate their own intelligence quotient (I.Q.). Students are often familiar with scores achieved on I.Q. tests throughout their school career, and although the estimates cannot be treated as actual I.Q. scores, the question was asked more to gauge the student's self-image, rather than to discover an I.Q. score. The meaning of I.Q. test scores and their relevance has been questioned for some years, and there is considerable doubt concerning their usefulness.

Various I.Q. levels have been used to establish certain levels of predicted ability. That is, below 90 is viewed as dull-normal, 90 to 110 as normal, or average, 120 to 140 as superior, and the level usually needed to graduate from secondary school. Over 140 has been used as a measure of extreme intelligence. These categories are viewed with considerable scepticism, but they are commonly accepted in our society as meaning something in terms of ability, especially in the academic field. Students' estimates of their own I.Q. was felt to give some indication of their self-image and it was found for example, that 2% of scholarship winners placed themselves in the dull-

normal category.

It is not beyond suspicion that some students placed themselves at that level "for the fun of it" while completing the questionnaire. It is also not beyond belief that some students may actually believe that their intelligence level is not high. Sixty-one of the scholarship students and 47% of the nonscholarship students estimated their I.Q. to be over 120, which may indicate one dimension of a positive self-image (Table 4.37). Scholarship winners definitely perceived themselves as being very bright.

TABLE 4.37

Students' Estimate of Own Intelligence Quotient: Percentage Distribution

	Less Than 89	90-99	100-109	110-119	120-139	Over 139
Nonscholarship	1	6	16	30	42	5
Scholarship	2	0	11	26	51	10

$P < .05$

Brookover et al carried out research to investigate the effect of student's self-concept of ability on academic achievement[14]. They found that self-concept was highly correlated with achievement level, parental interest, and aspirations for education and occupational choice. The question of self-concept and academic performance offers a field for exploration, especially in the area of sex differences. It is regrettable that the questionnaire for this study did not

obtain data on a greater variety of attitudinal variables.

Class Attendance and Work Habits

The scholarship students attended their classes, tutorials, and labs all or nearly all of the time, and spent more hours per week on preparation of class work, reading and other activities related to their coursework (Tables 4.38, 4.39).

TABLE 4.38

Students by Proportion of Classes Attended
Percentage Distribution

	Proportion of Class Attended				
	All or Nearly All	Three-Quarters	About Half	Less Than Half	Very Few
Nonscholarship	53	31	10	2	4
Scholarship	66	29	3	1	1

$P < .05$

TABLE 4.39

Student Hours Spent on Class Preparation and Schoolwork:
Percentage Distribution

	Hours Per Week				
	Less Than 5	6-12	13-20	21-30	More Than 30
Nonscholarship	16	34	37	14	9
Scholarship	6	12	31	33	18

$P < .05$

Students were asked if they worked harder now, as a university student, than they did in high school. Over 70%

of both groups reported that they worked harder (Table 4.40).

TABLE 4.40

Comparison of Work Effort in University and High School: Percentage Distribution

Q.: "Do you feel that you work harder now than you did in high school?"					
	Definitely Yes	Probably Yes	About The Same	Probably No	Definitely No
Nonscholarship	52	18	15	8	8
Scholarship	54	17	19	2	3

No significant difference

Summary

Scholarship students perceived their secondary schools to be more progressive in their orientation; they achieved higher grades both in high school and university, and perceived themselves as being very bright. They were diligent students, attending most of their classes, and putting a lot of time on studying and class preparation. They are very different in educational characteristics from the nonscholarship, or lower achieving students.

Aspirations for Course, Degree and Occupation

All students have desires and hopes about the course of study they would like, the degree and career they really want. Because of various factors these aspirations are given up, compromises are made, and more likely outcomes expected. Various reasons may be found to account for the differences

between aspirations and expectations: the desire to get a job, to earn money, lack of money to continue, poor grades, to stop being a student. Students were asked what degree they aspired to; "If you had your choice, how far would you continue your education?", and what degree they expected. Table 4.41 shows students in both groups made some compromises, but scholarship students aimed higher, and expected a higher education.

TABLE 4.41

Difference Between Students' Aspirations and Expectations for Degree: Percentage Distribution

	Would Stop Now	3 Year Degree	4 Year Degree	Master's Degree	Professional Degree	Ph.D.
			Scholarship Students			
Aspirations	7	2	15	24	31	21
Expectations	1	4	34	21	27	13
Difference	-6	+2	+19	-3	-4	-8
			Nonscholarship Students			
Aspirations	7	12	27	20	21	14
Expectations	6	20	40	12	15	7
Difference	-1	+8	+13	-8	-6	-7

$P < .05$

Students were also asked what course they would prefer to be in, and what occupation they would choose if there were no limitations on his or her choice, e.g. sex, finances, course of study. Scholarship students showed greater congruity between their aspirations and expectations (Table 4.42). Seventy-three

percent of scholarship students were in the course of study to which they aspired, 64% were confident of attaining the degree to which they aspired, and 67% were confident of reaching the career to which they aspired. In comparison, only 66% of nonscholarship students were in their preferred course of study, and only half expected the degree or occupation of their desires.

TABLE 4.42

Comparison of Aspirations and Expectations of Course of Study, Degree and Career: Percentage Distribution

	No Difference	Difference
	Degree Desired and Expected	
Nonscholarship	54	46
Scholarship	64	36
	Course of Study	
Nonscholarship	66	34
Scholarship	73	27
	Career	
Nonscholarship	50	50
Scholarship	67	33

x^2 significant at .05 level

A composite variable was created (DIFF) which measured the difference between the groups on all three levels of aspirations and expectations (course, degree, career). Some students had no difference on all measures (zero score) while others

differed on one, two or all three. The results are shown in Table 4.43 controlling for sex of student. Scholarship students showed greater congruity between their aspirations and expectations, female scholarship students showing the greatest congruity. Nonscholarship female students reported the greatest differences: one-quarter of this group were not in their preferred course, were not going to attain the degree they really wanted, and were not expecting to follow the career they really preferred.

TABLE 4.43

Difference in Aspirations and Expectations for Course of Study, Degree and Career by Scholarship and Sex: Percentage Distribution

	Difference Between Aspirations & Expectations							
	None		On One Variable		On Two Variables		On Three Variables	
	M	F	M	F	M	F	M	F
Nonscholarship	21	28	44	29	28	30	13	24
Scholarship	35	41	42	30	13	22	10	6

$P < .05$

It was shown that female nonscholarship students are the most financially disadvantaged, and this may account for some of the difference between their aspirations and expectations.

Summary

Scholarship students were found to be significantly

different from nonscholarship winners on 23 variables. Previous research found that certain variables were strongly related to academic achievement, but some of these did not differentiate the two groups of students, while other new variables were found upon which the groups differed (Table 4.44).

This suggests that university students share many characteristics, but that certain variables not only influence university attendance but also superior academic achievement and account for the differences between the two groups.

Thus, father's occupation, religion, ethnicity, independence, aspirations, achievement motivation, self-image, and study habits not only influence university attendance but are found to differentiate scholarship students from nonscholarship students. Factors not cited in previous research as being related to academic achievement were found to differentiate the groups: scholarship students tended to be in third and fourth years suggesting more in honour's courses, scholarship students reported their high schools were more progressive, and politically were themselves more middle-of-the road or indifferent. They were less involved in outside employment during the school year, perhaps using the time for their studies. Scholarship students tended to be foreign-born, to have foreign born parents and to have a language other than English as their native language.

TABLE 4.44

Comparison of Previous Research Findings and Results of This Study

Variables Found to be Related to Academic Performance in Previous Research	Variables Upon Which Scholarship Students Differed From Nonscholarship Students	Variables Found to be Related to Academic Performance in Previous Research	Variables Upon Which Scholarship Students Differed From Nonscholarship Students
Socioeconomic Status -family income -parents' education -father's occupation	-father's occupation	Aspirations and Achievement Motivation	Aspirations and expectations for course, degree and career.
		Self-image	I.Q. Estimate
Religion	Religion		
		Study Habits (Conformity)	(a) Study habits (b) Class attendance
Ethnicity	Ethnicity		
Sex of Student	-	Intelligence	(a) Grade 13 (b) Last year's grade
Family Size	-		
		- -	Year of study
Birth Order	-		
		- -	Orientation of high school
Social Class	-		
Independence	(a) Evidence of desire for financial independence (main source of funds participation in O.S.A.P.)	- -	Political orientation
		- -	Employment during school year
		- -	Native language
	(b) Parental acceptance of grades	- -	Parents' place of birth
	(c) Parental supervision of high school work.		Students' place of birth

Some variables did not appear to be related to scholarship winning, and may exert their influence only insofar as attaining university entrance. They were: family income, parents' education, sex of student, social class, family size and birth order.

PART II: VARIABLES RELATED TO SCHOLARSHIP WINNING

Nineteen variables were found to be strongly related to scholarship winning. Family size and birth order have been found by other researchers to be related to academic performance but they were not found to be related to scholarship winning. However, when these two variables were combined into one variable a positive relation to scholarship winning was found. It appears that the effects of birth order and family size interact so that an early born child in a small family is more likely to be a scholarship winner.

Ethnicity and religion were also related to scholarship winning. Scholarship winners were more likely to be of Asian, German or British background, and to belong to the Jewish or Baptist faith. Emphasis on scholarliness, diligence, self-sufficiency and success are cultural components of these religious and ethnic groups which appear to influence scholarship winning. Age was negatively related to scholarship winning. Brighter students tend to be accelerated through the elementary and secondary levels of schooling so that in university they would as a group be younger than nonscholarship students.

Social class and family income were related to scholarship winning: as the students' estimate of their own social class increased, the likelihood of scholarship winning increased.

Family income was negatively related to scholarship winning suggesting that scholarship winners are more likely to come from homes with lower income (Table 4.45).

TABLE 4.45

Relation of Socioeconomic Variables and Scholarship Winning

Variable	Standardized Regression Coefficient
Family Size/Birth Order	-.28
Ethnicity	.20
Participation in O.S.A.P.	-.19
Perception of Financial Need	.16
Social Class Estimate	.12
Age of Student	-.12
Religion	.11
Family Income	-.11

Scholarship students were more likely to perceive financial need for their university education and to reject O.S.A.P. as a means of assistance. The data suggest that for the scholarship winners in the lower income groups scholarships are a viable means of being financially independent and avoiding debt.

Self-concept was found to be related to scholarship winning. Students who perceived themselves to have high intelligence quotients were more likely to be scholarship winners. If we accept I.Q. results as a measure of intelligence the

relation of I.Q. estimate to scholarship winning may really indicate a relationship of intelligence to scholarship winning.

Students' and parents' attitudes were found to be related to scholarship winning. Students who placed a great deal of importance on attaining a degree, and whose parents also placed high value on a university education were more likely to win a scholarship. Scholarship students were more likely to be in an Honours programme, to desire an advanced university degree and to expect to attain the career to which they aspired. Fixing one's eye on a definite, and high goal, and to pursue it with single-mindedness appears to be characteristic of scholarship students (Table 4.46).

TABLE 4.46

Relation of Aspiration Variables and Scholarship Winning

Variable	Standardized Regression Coefficient
Year of Study	.15
Student's Attitude Towards Attaining a Degree	.15
Parents' Attitude Towards Attaining a Degree	.13
Differences Between Career Expectations and Aspirations	-.13
Degree Desired	.10

To be motivated to compete for a scholarship a student must know about the programme, agree with the principle of rewarding

grades, feel that money as an award brings honour, and/or be motivated by financial and honorary incentives. All four variables were found to be significantly related to scholarship winning: scholarship winners were more aware of the programme, had more accurate information, agreed with rewarding grades, agreed that money bestowed honour, and attempted to win the scholarship (Table 4.47).

TABLE 4.47

Relation of Scholarship Programme Variables and Scholarship Winning

Variable	Standardized Regression Coefficient
Attempt to Win Scholarship	.30
Attitude Towards Rewarding Grades	.22
Awareness of Scholarship Programme	.21
Motivation of money	.19
Attitude Towards Money Bestowing Honour	.16

Although socioeconomic status (SES) has been found in previous studies to be related to academic performance, only one dimension of SES, family income, was related to scholarship winning (-.11), strongly suggesting that financial need promotes the attainment of high grades in order to win a scholarship. Religion, ethnicity, social class, independence, family size/ birth order, parents' and students' aspirations and expectations, self-image, intelligence have been found to be related to aca-

demic performance in previous studies, and in this study not only have been found to differentiate scholarship from non-scholarship students, but to influence scholarship winning as well. Sex of student and study habits, although found to be related to academic achievement in previous studies, were not found to be related to scholarship winning.

Age of student, year of study and financial need were found to be related to scholarship winning, but did not prove to be related to academic performance in previous research. This suggests that younger students in Honours programmes who perceives themselves in financial need are more likely to be scholarship winners.

The variables unique to this study are those related to the scholarship programme, and, as previously discussed, appear to be intervening links in the causal chain. Table 4.48 tabulates a comparison of previous studies and the current study.

TABLE 4.48

Comparison of Variables Found to be Related to Academic Performance (in Previous Research) and Variables Found to be Significantly Related to Scholarship Winning

Variables Found to be Related to Academic Performance in Previous Research	Variables Found to be Significantly Related to Scholarship Winning	Variables Found to be Related to Academic Performance in Previous Research	Variables Found to be Significantly Related to Scholarship Winning
Socioeconomic Status Family Income Parents' Education Parents' Occupation	Family Income (-.11)	Aspirations and Achievement Motivation	(a) Students' Attitude Toward Attaining Degree (.15) (b) Parents' Attitude Toward Attaining Degree (.13) (c) Difference Between Career Aspiration and Expectations (-.13) (d) Degree Desired (.10)
Religion	Religion (.11)		
Ethnicity	Ethnicity (.20)		
Sex of Student	-		
Family Size Birth Order	Combined Family Size/Birth order(.12)	Study Study Habits	-
Social Class	Social Class (.12)	Conformity-	-
Independence	Evidence of desire for Financial Independence Participation in O.S.A.P. (-.19)	Intelligence Self-image	I.Q. Estimate
		-	Attempt to Win Scholarship (.30)
-	Age of Student (-.12)	-	Attitude Towards Rewarding Grades (.22)
-	Perception of Financial Need (.16)	-	Awareness of Scholarship Programme (.21)
-	Year of Study (.15)	-	Motivation of Money (.19)
		-	Attitude Towards Money Bestowing Honour (.16)

FOOTNOTES FOR CHAPTER IV

1. David Lavin, The Prediction of Academic Performance, Russell Sage Foundation, Connecticut Printers, Inc., Hartford, Connecticut, 1965, p.

2. To create the variable SES for socioeconomic status the following steps were taken:

   1) allowance was made for missing data,

   2) Variables to be used were recorded as:

Variable 114 - Father's Occupation

Choice Number	New Value
7, 8, 9	1. Semi-skilled service unskilled
4, 5, 6	2. Sales, clerical, skilled
3	3. Managerial/proprietary
1, 2	4. Professional fee/salary

Variable 117 - Mother's Education

Choice Number	New Value
1	1. Grade 8 or less
2	2. Part High School
3	3. High School Graduation
4-8	4. All Other

Variable 116 - Father's Education

as 117

Variable 118 - Family Income

Choice Number	New Value
1, 2	1. to $7,000
3, 4	2. $7,000 - 11,000
5, 6	3. $11,000 - 15,000
7-9	4. $15,000 and over

3) Then SES was computed by adding the values of Variables 114, 116, 117 and 118, dividing by 4 and rounding the resulting figure to the nearest whole number.

4) The resulting figure was multiplied by 2, for a total of seven SES levels from 2-8. Ten students were in SES level 10, making an 8th category.

3. Robert Pike, Who Doesn't Get to University...and Why?, Runge Press, Ottawa, 1971, p. 55.
4. Ibid., p. 57.
5. Robert Rabinovitch, An Analysis of the Canadian Post-Secondary Student Population, Part 1: A Report on Canadian Undergraduate Students, Ottawa, Canadian Union of Students, Feb. 1966, p. 41.
6. Pike, op. cit., p. 58.
7. Ibid.
8. Banks, O. Sociology of Education, B.T. Batsford, Ltd., London, 1968, p. 85.
9. King, R., Education, Longmans, Green and Co. Ltd., London, England, 1969, p. 26.
10. Ibid., p. 27.
11. Ibid., p. 29.
12. Porter, Porter and Blishen, op. cit., p. 136.
13. Lavin, op. cit., p. 59.
14. W.B. Brookover, A. Paterson and S. Thomas, "Self concept of ability and school achievement," Cooperative Research Project No. 845, East Lansing, Michigan: Office of Research and Publications, Michigan State University, 1962.

CHAPTER V

RESULTS AND DISCUSSION

PART III: THE SCHOLARSHIP PROGRAMME

In 1966 a system was instituted wherein all students with a Grade 13 weighted average of 75% or better entering McMaster University received grants covering full fees. As long as the student maintained that average, each succeeding year's fees were covered. That year 276 students were awarded such scholarships[1].

When the Ontario Student Awards Programme (O.S.A.P.) came into effect circa 1966 the provincial government did not feel it could fund both direct and indirect aid to students, and ruled that scholarships could not be funded by provincial monies. Because of this ruling the amount of money available for scholarships was dramatically decreased forcing the university to revise its scholarship programme.

Governor's Scholarships

The Governor's Scholarships, which are now in effect, were first awarded in 1967-68. There are two types: one is a four-year entrance scholarship that covers academic fees and can be maintained by the student throughout his or her undergraduate education providing their weighted average is maintained at 75% or better. If the student fails to achieve 75% one year, the scholarship can be reinstated the following year

if the grade is again 75% or better. Six such scholarships are awarded annually. In 1971-72 there were 76 students receiving $400 each.

The second type of Governor's Scholarship is also an entrance award but is awarded for the first year only. Cut-off averages are determined by the amount of money available in any year for these awards. In 1970-71 the cut-off average was 83% for Grade 13, and 108 were awarded. Since 1971 the allotment has been set according to the amount of funds available and a quota system based upon relative enrollment in each faculty. The criterion is weighted average by faculty, with each faculty having a different cut-off average.

This is a source of confusion for students in that one student may win an entrance scholarship with a weighted Grade 13 average of 80% while another with a weighted Grade 13 average of 82% may not win, only because they are entering different faculties. Close to $9,000 was allocated for these scholarships in 1971-72, with 16 students each receiving about $540. The university also subsidized private, four-year scholarships. The total outlay in 1971-72 for the Governor's Scholarship Programme was over $55,000.

The rationale behind the Governor's Scholarship Programme is that extra incentives are required to attract the very best students in terms of academic performance to McMaster University. It is a little publicized fact that there is intense competition among Ontario universities to

provide incentives to attract that small handful of Ontario scholars who leave Grade 13 with averages close to 100%. This elite group of scholars brings a great deal of prestige to the university by their academic performance. Corporations keep their eye on the very bright students hoping to attract them into future employment. Following graduation some of these scholars continue to bring prestige to their university through professional excellence.

Senate Scholarships

Senate Scholarships are awarded to undergraduates as they proceed from their first year through to graduation. They were once called proficiency awards, and are also known as in-course scholarships. Scholarships totalling $55,000 are disbursed to encourage and stimulate superior academic performance.

A problem a student might face in examining the scholarship brochure to decide what his or her chances were, might be to underestimate his or her probability of winning. The in-course scholarships are identified by titles, e.g. the Yates scholarships, and only 13 titles are listed in the 1970-71 brochure. This can lead the student to underestimate the chances of winning because there is no indication that the number of in-course scholarship winners can be over 200. In 1970-71 for example, 233 in-course scholarships were awarded.

A further problem confronting the student is the use of the word eligible. While a student must achieve a weighted average of 75% to be eligible, that does not mean that he or

she will actually win a scholarship. The awarding of the scholarships is based on a faculty quota basis set up to allow for the different grading practices in each faculty. The result is different cut-off points for each faculty.

Table 5.1 illustrates the minimum averages by faculty.

TABLE 5.1

Minimum Average for Senate Scholarship Awards by Faculty in 1971-72

Faculty	Grade % Cut-Off
Business	75.25%
Humanities	76.85%
Social Sciences	75.00%
Engineering	82.99%
Science	80.75%

Ontario Student Awards Program

The scholarship student who is in financial need finds him or herself in a quandary when it comes to applying for assistance under the Ontario Student Awards Programme (O.S.A.P.). Students who are eligible for a scholarship and who need additional financial assistance are caught in a double bind; if the student wins a scholarship, an O.S.A.P. regulation requires that this be reported to the O.S.A.P. officer. The regulation further states that any amount over $150 must be applied to the loan/grant the student has been awarded, thus

reducing the O.S.A.P. assistance.[2]

For example, a student who receives an O.S.A.P. award of $600 repayable loan and $50 non-repayable grant, and then wins a scholarship valued at $250 will have $100 of the scholarship applied to the grant/loan. The grant portion of $50 is eliminated, and the remaining $50 of the scholarship money reduces the loan portion to $550. The student gains only $150 of the scholarship while O.S.A.P. gains a $100 reduction in the loan/grant for which the student was eligible.

There has been concern that students on O.S.A.P. may not even try to win a scholarship because of this regulation. Concern has also been expressed that O.S.A.P. recipients may be passed over in selection for various scholarships to avoid having scholarship funds subsidize O.S.A.P.

Students were asked if they were aware of the O.S.A.P. regulation requiring that all scholarship money over $150 had to be applied to their O.S.A.P. loan/grant assistance. Only those who were already receiving assistance, or who may need it in the future would be concerned about the regulation. Sixty-eight percent of the scholarship students who were receiving O.S.A.P. assistance reported that they were aware of the regulation. Forty percent of these said that the regulation was a discouraging factor in attempting to win a scholarship.

Only 53% of the nonscholarship students knew about the regulation and of those, 22% reported that they were discouraged by the regulation (Table 5.2).

TABLE 5.2

Discouraging Factor of O.S.A.P. Regulation upon O.S.A.P. Recipients' Attempts to Win a Scholarship: Percentage Distribution*

O.S.A.P. Recipients	Knew of Regulation		Knew about Regulation and Discouraged by Regulation	
	Yes	No	Yes	No
Nonscholarship	53	47	22	78
Scholarship	68	32	40	60

*Only students receiving O.S.A.P. assistance are included in this table.

A brief outline of O.S.A.P. participation rates indicate how infrequently scholarship winners take advantage of O.S.A.P. In 1970-71 there were 7,910 undergraduate and graduate students who were free to apply for assistance under O.S.A.P. Of the 3,438 who applied, 3,053 received assistance. The average loan was $509 and the average grant was $479: the average loan/grant was $1079. A student may not receive any grant at all if the assessed need does not exceed the loan limit.

In 1970-71, 5.2% of the McMaster undergraduate population (N-402) were scholarship winners. While 38.5% (N-3053) of all students received some support from O.S.A.P., only 24% (N-96) of the scholarship students received support from O.S.A.P. Thus, of the entire undergraduate population, only 1.3% were both scholarship winners and O.S.A.P. recipients. This reflects a very low participation rate.

In Chapter 4 it was noted that 53% of the scholarship students said that they did not want to or did not have to borrow money. This unwillingness to borrow may motivate the brighter students to compete for scholarships. This study found that scholarship winners reported that they tried harder to win, that they agreed with the idea of rewarding high grades with money, and that money was a real incentive for them. They also reported that they needed the money for necessary and related expenses. Since scholarship winners tend to come from the lower income categories found in this study, their resistance to acquiring debt may be the key factor in their efforts to win a scholarship.

The variable SES was computed, using father and mother's education, father's occupation and family income and cross-tabulated with Variable 209: Influence of financial aspect of scholarship in trying to win. It was found that of the scholarship winners in the lowest SES group 73% said they needed the scholarship money for necessary expenses and 20% needed it for related expenses (Table 5.3).

This trend continued across SES levels, even at the highest levels close to half of the scholarship students reported needing the money for necessary or related expenses. Very few reported that the money was no influence at all. In the two highest SES levels scholarship students were still influenced by the money if not by need, by seeing it as a bonus.

Except for the lowest SES level, the nonscholarship

TABLE 5.3

Socioeconomic Status (SES) by Influence of Financial Aspect of Award Controlling for Scholarship: Percentage Distribution

Q. "If you have ever tried for a scholarship how were you influenced by the financial aspect?"

Influence of Financial Aspect (Var. 209)	SES LEVEL													
	Low 2		3		4		5		6		7		8 High	
	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S
Needed money for necessary expenses	-	73	24	66	50	59	40	55	29	45	26	24	28	38
Needed money for related expenses	-	20	72	17	31	29	20	14	17	26	44	18	12	7
Saw money as a bonus	50	7	4	10	19	9	40	23	51	29	22	46	52	55
Money no influence	50	-	-	7	-	3	-	9	3	-	9	12	8	-
Total %	100	100	100	100	100	100	100	100	100	100	100	100	100	100

students reported that money was an influence in their attempts to try for a scholarship, with the greatest influence seen in the lower half of the SES range.

The data from this study suggests that scholarship winners are averse to borrowing money and that the O.S.A.P. regulation has a discouraging effect on some students. It appears that scholarship winners would rather scrape by on their own funds and scholarship winnings rather than become involved with O.S.A.P., be penalized by the regulation, and end up in debt. Money is seen to be a strong motivating force, especially by those in the lower socioeconomic groups.

Awareness of the Scholarship Program

The most telling statistic regarding the scholarship programme was that 35% of the scholarship group did not know that they had won a scholarship. This was apparently due to the University's practice of crediting the student's account and not clearly informing the student of this credit.[3] In some cases some of the winners did not realize what the credit signified (Table 5.4).

TABLE 5.4

Students' Awareness of Being Awarded a Scholarship: Percentage Distribution

Q: "Have you won any scholarships since becoming a McMaster student?"

	Yes, Valued at More Than $200	No, Have not Won a Scholarship
Nonscholarship	0	100
Scholarship	65	35

How much do students actually know about the scholarship programme? The students were asked if they knew of the Senate Scholarships by that title, or by the term in-course scholarships. The scholarship students proved to be more informed than the nonscholarship students but even so only one-third of them knew of the scholarships by their correct title, and just over half knew them by the term in-course scholarships (Table 5.5).

Question 75 of the questionnaire asked, "To be eligible for a Senate Scholarship a student has to attain a certain weighted average in one year's work. What do you think that average is?" A student would have to be very knowledgeable about the scholarship programme to be able to answer correctly. To be eligible the student must attain a weighted average of 75%, but to actually win a scholarship the weighted average must equal or surpass the weighted average cut-off point for his or her faculty, which as we have seen may vary from 75% to 83%.

The interpretation of the data in Table 5.6 is difficult and is done with the knowledge that it is clouded. Half of the scholarship students (53%) correctly chose 75%. The estimates of the students in the nonscholarship group showed that they felt the eligibility point to be higher. Almost half of them chose 80%. This may reflect ignorance of the fact that the eligibility grade is 75%, or it may indicate the realization that higher grades are required to actually

TABLE 5.5

Students' Awareness of Scholarships: Percentage Distribution

	Student Knew About Scholarship by		Student Only Vaguely Aware of Scholarship by		Student Was Not Aware of Scholarship by	
	Title 'Senate'	Term 'In-course'	Title 'Senate'	Term 'In-course'	Title 'Senate'	Term 'In-course'
Nonscholarship	12	21	21	23	67	57
Scholarship	35	56	28	24	37	20

x^2 significant at .0001 level

win a scholarship. From the general trend of the overall data, it is assumed that they perceived the average required was much higher than it actually was. Three of five faculties required only 75 to 77% in 1971-72.

TABLE 5.6

Students' Estimation of Weighted Average Required to be Eligible for a Senate Scholarship: Percentage Distribution

	Weighted Average Estimated					
	60	66	70	75	80	85
Nonscholarship	0	3	5	32	47	14
Scholarship	0	0	2	53	35	10

Students were asked to estimate the number of Senate Scholarships awarded in one year. The number varies, but the average is 225 to 250 a year. Scholarship students tended to be more aware of the number awarded, while the nonscholarship students tended to underestimate (Table 5.7). The fact that 75% of the nonscholarship group and 60% of the scholarship group underestimated by a large margin reflects a lack of knowledge of the scholarship programme.

TABLE 5.7

Students' Estimate of Number of Senate Scholarships Awarded per Year: Percentage Distribution

	Estimated Number of Awards				
	Less Than 100	100-200	200-300	300-400	Over 400
Nonscholarship	57	27	14	3	4
Scholarship	29	31	20	11	9

The same trend was observed when students were asked to estimate the value of the Senate Scholarships, which is $250. Sixty-seven percent of the nonscholarship students and 30% of the scholarship students underestimated. Fifty-three percent of the scholarship winners estimated correctly (Table 5.8).

TABLE 5.8

Students' Estimate of Value of Senate Scholarships: Percentage Distribution

	Estimated Value in Dollars				
	Less Than 100	100-200	200-300	300-400	Over 400
Nonscholarship	24	43	14	12	7
Scholarship	5	25	53	15	2

Motivation

The question of motivation was considered. The student does not have to exercise any initiative to indicate that he or she would like to be considered for a scholarship as no applications are required. Examination of the scholarship brochure can be confusing and misleading, not only to the kind of awards, but to the potential number of scholarships available. Both these factors are seen as depressing the motivational factor.

What kind of reward might be the most motivating, should a student decide to compete? Some rewards are financial, some are honorary with a token amount of money, and others are solely honorary, e.g. being named to the Dean's list. If

the student were motivated by the prospect of winning, what part does the financial aspect play?

Students were asked if high grades should in fact be rewarded, and if so, what form of reward they thought was the best, and what form of reward brought the highest honour?

The scholarship students strongly supported the principle of rewarding high grades (Table 5.9). This indication that they agreed with the overall philosophy of the scholarship programme, that is rewarding high grades to stimulate academic performance, is likely a motivating factor.

Scholarship students came out strongly in favour of financial awards, which is not surprising given their financial situation related to the O.S.A.P., their attitudes towards debt, and that their reported family income was somewhat less, but not significantly so, than the nonscholarship students (Table 5.10).

TABLE 5.9

Students' Attitudes Towards Rewarding High Grades: Percentage Distribution

Q. "Should students be rewarded for high grades?"			
	Yes	No	Do Not Know
Nonscholarship	59	24	16
Scholarship	86	8	7

x^2 significant at the .0001 level

TABLE 5.10

Students' Attitudes Toward Form of Reward: Percentage Distribution

	Form of Reward		
	Financial Rewards Best	Honorary Rewards Best	Do not Agree With Rewards for Grades
Nonscholarship	57	22	21
Scholarship	87	6	7

x^2 significant at the .0001 level

Students were asked what kind of reward brought the most honour to them as an outstanding student. Is the honour itself motivating? Or do the students compete because they want or need the money as well as the honour?

TABLE 5.11

Students' Attitude Toward Honorary Aspect of Rewards: Percentage Distribution

	Reward Bringing the Higher Honour		
	Financial	Honorary	Both Equal
Nonscholarship	38	31	31
Scholarship	41	16	43

x^2 significant at the .0001 level

The data in Table 5.11 suggest there is a strong influence attached to the financial aspect of the reward. One might assume that the student feels that honour is intrinsic to winning a scholarship, and that money enhances it.

The number of students who actually work to compete for a scholarship is limited to those who know enough about the scholarship programme and who agree with the philosophy of rewarding grades financially and through honorary prizes.

Students were asked how hard they tried to win a scholarship. The data in Table 5.12 represents only those students who knew about the scholarship program. Only 6% of the scholarship winners won without any attempt to win while 64% admitted trying 'fairly hard' or 'very hard'. It seems safe to assume that there is an element of competition among those who know about the programme.

What part does the financial aspect of the scholarship play in motivating a student to try to win a scholarship? The students were asked if money or honour influenced their attempt to win. Table 5.13 indicates that the scholarship students strongly favoured financial awards as an incentive, while the nonscholarship group for the most part either did not attempt to win or did not know about the scholarships; those who did try to win favoured money.

It is clear that money was a preferred incentive. It was hypothesized that the scholarship winners would prefer financial awards because they needed the financial assistance, and preferred not to take a loan from O.S.A.P. The students were asked, "If you have ever tried to win a scholarship, how were you influenced by the financial aspect of the scholarship?" Although the money is credited to the student's university

TABLE 5.12

Attempt to Win a Scholarship by Those Students Who Were Aware of the Scholarship Programme: Percentage Distribution

	Tried Very Hard		Tried Fairly Hard		Did Not Try Very Hard		Did Not Try At All	
	And Won	And Did Not Win	And Won	And Did Not Win	And Won	And Did Not Win	And Won	And Did Not Win
Nonscholarship	2*	6	2*	11	1*	26	0	52
Scholarship	17.5	2*	47	3*	6	2	2	6*

x^2 significant at the .0001 level

*These responses indicate some of the confusion the students are expressing about the scholarship programme. All students in the nonresponse group had replied that they had not won a scholarship over $200. These answers may reflect winning of lesser scholarships. The scholarship students who indicated that they have not won a scholarship had previously indicated that they had won a scholarship.

TABLE 5.13

Students' Preference for Honorary Awards or Financial Awards as Incentive to Compete: Percentage Distribution

	Financial Award Preferred	Honary Award Preferred	Both Equal	Have Never Tried to Win	Did Not Know About Scholarships
Nonscholarship	13	9	5	55	19
Scholarship	49	9	20	21	3

x^2 significant at .0001 level

account for fees, it is assumed that the students replied to this question partly on the assumption that money won by a scholarship and used for fees frees some of their own money for other uses. Table 5.14 indicates that almost half the scholarship students needed the money for necessary expenses (tuition, food, lodging), and 15% needed it for related expenses (books, clothing). About one-quarter indicated that the money was not needed for university expenses.

Summary

The most obvious conclusion arising from this examination of the scholarship programme is that information about the programme is not reaching a large proportion of the student body. When one-third of scholarship winners are not even aware that they have won a scholarship, one wonders how much the scholarship programme can be stimulating and encouraging academic excellence. A well publicized programme would do much to motivate more students to try to win a scholarship since so many students agreed with the philisophy of the programme and felt money to be a good motivator in trying to win.

Secondly, it appears that the scholarship students are not a homogeneous group. The data suggests that there are two groups of scholarship winners. In one are the students who may not have any critical need for funds, and who are able, through summer employment, scholarship winnings and parental assistance to finance their education. To these students the

scholarship money either has no great influence, or it is seen as a bonus. The second group of scholarship students appear to have important financial needs which the scholarship money satisfies. About 60% of the scholarship students reported family income below the average Ontario family income (Table 4.17). The scholarship money enables many of these students to finance their education without infringing on limited parental resources and/or without involvement with student assistance plans and the resulting debt. The students in the lower SES groups relied for the most part on their own earnings and scholarship money, which appears to meet not only financial needs, but the psychological need for independence characteristic of high achievers.

TABLE 5.14

Influence of Financial Aspect of Scholarship on Students' Attempt to Win: Percentage Distribution

	Money Needed for Necessary School Expenses	Money Needed for School-Related Expenses	Money Seen as a Bonus	No Influence	Did Not Try to Win	Did Not Know About Scholarship Programme
Nonscholarship	8	9	9	1	40	33
Scholarship	41	15	22	4	12	6

x^2 significant at .0001 level

Scholarship and Mobility

Ralph H. Turner described a model of social mobility wherein upward mobility could be gained through sponsored or contest mobility, two ideal types. Sponsored mobility is characterized by early identification of the recruits, segregation from those not recruited, specific training to join the elite group, and where the criteria are not highly visible. Contest mobility is a system in which elite status is the prize in an open contest and is taken by the aspirant's own efforts, and where the contestants have a wide latitude of strategies which they may employ [4]. Either sponsored or contest mobility may be an organizing folk norm of a society. Turner describes the relationship of his ideal types to mass education,[5]

> ...within a formally open class system that provides for mass educ-tion, the organizing folk norm which defines the accepted mode of upward mobility is a crucial factor in shaping the school system, and may be even more crucial than the extent of upward mobility.

Contest mobility as an organizing folk norm of upward mobility "affects the school system because one of the latter's functions is the facilitation of mobility" [6].Turner states [7]

> where many compete for a few recognized prizes (it is) fair only is all the players compete on an equal footing. Victory must be won solely by one's own efforts. The satisfactory outcome is not necessarily the victory of the most able, but the most deserving.

Scholarships may be viewed as one form of avenue for upward social mobility. If a student has a very low level of financial resources, a scholarship may be the key to independent financing of one's education. Viewed in the perspective of Turner's model of contest mobility it may be stated that the scholarship system allows for students to compete within a system of contest mobility for prizes which will enahnce their chances of upward social mobility. Turner states that in a contest mobility system that the criteria must be highly visible and "require no special skills for their assessment" [8]. Since grades are used for a criteria in the scholarship programme, they well serve the purpose of highly visible, easily understood criteria. Students begin on equal footing and all can compete for the prize.

What is the reward for the student? Not only is the financial award a prize, the opportunity to be independent financially is a prize as well. The scholarship students significantly supported themselves from their own earnings and scholarship winnings, av oiding student assistance plans and parents' help as much as possible. Turner points out that in Britain subsidies for high achieving students cover all their costs, while in North America they usually cover only tuition. He points out also that in Britian employment by students during their academic year is frowned upon, and is seen as not scholarly.

In North America students are often urged to seek part-time employment even where there is no financial need. There is a belief in North America that the student who is willing to work part -time is a better bet than the equally bright student who receives all of his or her financial support from others. The scholarship students in this study appear to desire financial independence and to earn substantial amounts of money during the summer, but avoid employment during the school year. This appears to bring rewards in the form of a scholarship, and scholarships are earned by the student as much as money through employment. They are self-sufficient students and would appear to fit the North American ideal of the 'go-getter'.

FOOTNOTE FOR CHAPTER V

1. The information about the scholarship programme is drawn from several sources: the brochure, University Awards, Office of the Registrar, McMaster University, 1971, material made available to me as a member of the working group of the McMaster University Senate Committee on Undergraduate Awards, and from the report of the Working Group based upon earlier data from this study, entitled, "Report to the Senate Committee on Undergraduate Awards from the Study Group to Determine Long Range Objectives for an Academic Awards Programme at McMaster University," January, 1973, by Dr. W. Wallace, Chairman.
2. In April, 1973 this regulation was changed, allowing the student to keep scholarship money. This change came about following its recommendation by the Morand Report, "Accessibility and Student Aid", op. cit.
3. The Registrar's Office sends to students who have won a scholarship a letter informing them that they have won. This letter is sent in July following the academic year in which the student won the scholarship. This study was not undertaken until March,1972 and was considering only those students who had won a scholarship up to the end of the academic year of 1971. The finding of 35% of scholarship students who said that they had not won is a puzzle.

4. Ralph H. Turner, "Sponsored and Contest Mobility and the School System", American Sociological Review, Vol.25, December,1960, pp. 855-867.
5. Ibid.
6. Ibid.
7. Ibid.
8. Ibid.

CHAPTER VI

CONCLUSIONS

The results of this study did not support the hypothesis that scholarship winners are disproportionately drawn from the higher income categories; scholarship students were very similar to nonscholarship students in terms of socioeconomic status, and the regression analysis showed that parental income was related inversely to scholarship winning suggesting that scholarship winners are more likely to come from families with a lower annual income that the nonscholarship winners. The data does support the hypothesis that the scholarship students would be significantly different from nonscholarship students on social and attitudinal variables. Scholarship students place a great deal of importance on the attainment of a university degree, they are more likely to enroll in Honours programmes, to set their goals for educational and occupational careers at a high level of aspirations, and expect to attain their goals with little compromise. They are dilligent and conscientious students who consistently obtain high grades. They place a high value on financial independence and to a great extent finance their own university education through summer earnings and the scholarship monies. Other sources of finances are drawn upon only to bring their amount of funds in line with the economic demand made upon them as a student.

Scholarship students of all social class levels earned a substantial portion of their funds, except for those in the lowest SES category who relied mainly on their scholarship. Those in the two highest SES levels relied somewhat more on their parents.

The effects of religion and ethnicity on scholarship winning appear to be through values intrinsic to the ethnic or religious group to which the scholarship students belong. High value is placed on hard work, independence, scholarliness, achievement, and results in students having high educational and occupational aspirations. The achievement motivation likely interacts with their desire for financial independence and need for additional funds to motivate the student to obtain high grades and to win a scholarship. An important set of intervening variables would appear to be the student's knowledge of the scholarship programme, his/her agreement with the principle of rewarding high grades with money, his/her feeling that money as a reward bestows honour, and that money is a good incentive.

Figure 6 illustrates the relationship of the social and attitudinal variables to scholarship winning in the form of a causal model.

The explanation of why some students are motivated by the scholarship programme may lie in their attitudes towards competition, and their value orientations which include high achievement values, and high value placed on self-sufficiency.

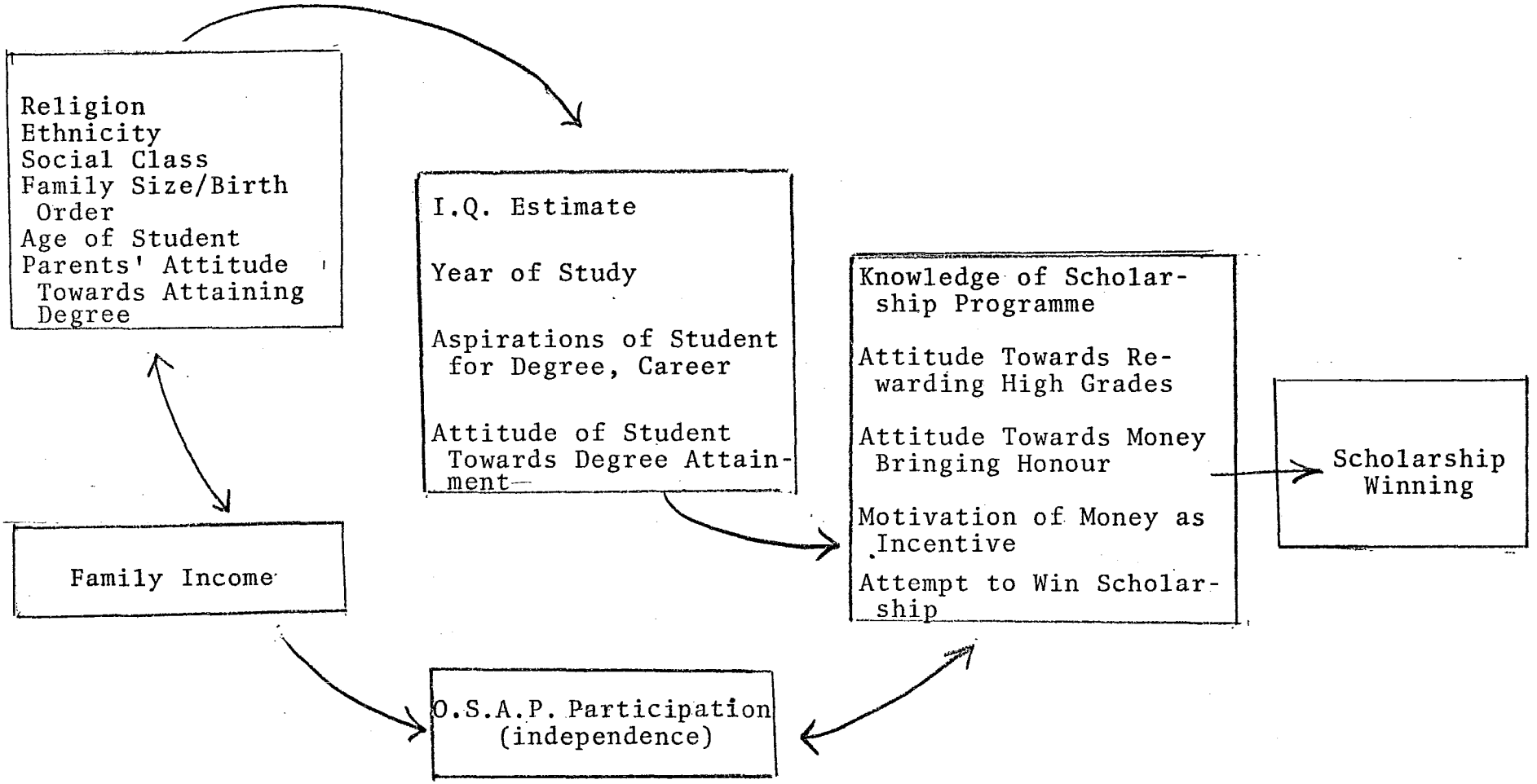

Figure 6. Causal Model - Scholarship Winning.

This would appear to tie in with the findings that high achievers are often children who have been taught (and allowed) to be independent and to master their environment. Being able to compete and win scholarships may satisfy important psychic needs in some students. This suggests that the scholarship programme should continue, and should be given wider publicity so that all students who enjoy academic competition would have the opportunity to compete.

There are objections to the principle of scholarship programmes however. Porter, Porter and Blishen, among others, object to the use of scholarship programmes because they feel that such programmes use funds which should be directed to the financially disadvantaged, and they object to the "principle of money for marks" claiming it is regressive and meritocratic[1]. They state that "*subsidizing high achievers means, most often, subsidizing children of the middle classes, since they are the ones most likely to be motivated to get high marks.*"[2] Further, they object to the removal of the O.S.A.P. regulation which, until 1973, forced the financially disadvantaged students to apply most of their scholarship winnings to their O.S.A.P. reward, thus reducing it.

This study demonstrates that the scholarship students at McMaster are not using O.S.A.P. to any great degree, and that of those who do, it is only to augment their own earnings and scholarship to bring their funds in line with demand of expenses. The scholarship students in this study's sample

appear to value financial independence very highly. It may be argued that the scholarships are not subsidizing the children of the well-to-do, but are in fact encouraging financial self-sufficiency and avoidance of debt, highly valued characteristics in our culture. There is sufficient evidence to believe that there are a sizeable number of scholarship students who come from lower-income families and to whom the scholarship is invaluable, not because they would otherwise not be able to attend university as they would likely be eligible for O.S.A.P., but because they are able to obtain their education without incurring debt. This should not be interpreted as the scholarship programme subsidizing O.S.A.P. but as encouraging self-reliance and good academic performance.

Porter, Porter and Blishen object to the scholarship programme on the grounds that it is meritocratic and promotes elitism. They claim that elitism, by searching out through academic competition only the most able students, removing all financial barriers by paying their fees and in some instances paying them allowances allows only the intellectually superior, high achiever admittance to the university. They claim that the only principle should be one of universal accessibility and equal educational opportunity where only minimal academic requirements are to be met, where a committment to mass education is made, and where fees expected from students will not present a financial barrier to their participation in higher education[3].

This is a very rigid view, and postulates an either-or situation. It is quite possible to avoid a meritocratic educational system by basing our educational system on the principles of accessibility and equal educational opportunity, and at the same time to make allowance for the small group of scholars who thrive on academic competition by including a scholarship programme within the overall system wherein the most academically able would be identified and regardless of their sex, socioeconomic resources or geographic background, encouraged with financial incentives and awards and public recognition.

Porter et al, decry the principle of academic competition citing the psychic damage it may do to less able students at all levels of the educational system. They are however ignoring those students who thrive on academic competition, and who value scholarliness and academic excellence. It may be argued that eliminating scholarship programmes and other forms of incentives and recognition for high grades would incur psychic damage among these students.

Female Students

In spite of the conclusive evidence in many previous studies that female students perform at higher levels than male students, females are still under-represented both in the McMaster University undergraduate body and among the scholarship winners. Female students have a harder time finding summer employment, and when they do they are paid less[4]. As a result they are forced to be more financially dependent upon student

assistance plans and on their parents if they desire higher education. The former involves incurring as much as $5,000 in debt for a four year degree, while the latter places great strain on the economic resources of all but the well-to-do families. Porter, Porter and Blishen found that lower income parents are less willing to finance their daughter's education, and if there was a choice between financing a son or a daughter, the son would get first consideration[5]. Female scholarship students were able to offset some of these hardships with their scholarship money, but female nonscholarship students were the most financially deprived of all students.

Female students suffer too from the gap between their aspirations and expectations. They are more likely to not be in the programme of study they really want, and are more likely to not expect to attain the degree or the career they really want. It is clear that implementation of the recommendations of the Report of Royal Commission on the Status of Women is necessary to right the disadvantaged status of female university students[6]. The recommendations call for increased counselling for young women regarding their education, career choice and financing of their education. They call for women to be admitted to the now all-male military colleges operated by the Department of National Defence so that they may take advantage of the free education with living expenses offered in return for the committment to serve for four years after graduation. They recommend the end to sex-typing of occupations,

and increased counselling to encourage young women to set for themselves occupational goals more appropriate to their abilities.

Universities might examine their admissions procedures and adjust them to encourage more admissions of female students. Again the concentration of males in the pure sciences makes it easier for male students to obtain high grades and scholarships. Females should be encouraged to consider these areas of studies through increased counselling in the university. It may be necessary to examine the grading procedures used in the Arts and Sciences, and to encourage the awarding of high grades to outstanding work, rather than adhere to the tradition of awarding grades above 80 only rarely.

FOOTNOTES FOR CHAPTER VI

1. Porter, Porter and Blishen, op. cit., p. 21.
2. Ibid., p. 21.
3. Ibid., p. 6.
4. The Report of the Royal Commission on the Status of Women, p.
5. Porter, Porter, and Blishen, op. cit., p. 63.

APPENDIX A

McMASTER UNIVERSITY

HAMILTON, ONTARIO, CANADA

DEPARTMENT OF SOCIOLOGY AND ANTHROPOLOGY

Dear Student:

This questionnaire is part of a study of the opinions and concerns of undergraduate students regarding post secondary education. The study is being conducted as the research necessary for my Master's degree. It is important that everyone who receives a questionnaire answer it, since any non response lessens the validity of the entire study.

A subcommittee of the university senate is interested in students' awareness of the scholarship programme, so I have included some questions about scholarships on the questionnaire. In return, the university has supplied stationery and secretarial assistance for this project.

Your replies to this questionnaire will be completely anonymous. Because of the necessity of following up non respondents, while retaining anonymity, we would ask that you clearly print your name on the enclosed postcard and mail it separately when you send in the completed optical scanning sheet. If you would like to receive a copy of our report, please indicate this on the postcard.

Before beginning to answer the questions, please read the following instructions carefully.

INSTRUCTIONS

1. An optical scanning sheet is provided for your responses. Please ignore the material around the border of this standard form. Please do not bend or fold it. When mailing the completed sheet, we would suggest that you also return the questionnaire or place a piece of light cardboard with the sheet in the envelope. (A copy of the questionnaire will be included with the reports when they are mailed out next Fall.)

2. Use only a medium soft pencil (HB) for marking the scanning sheet. Please do not use an electrographic pencil.

3. Read each question and its lettered answers. When you have decided which item is your response, mark the whole of the corresponding oval.

4. Make your pencil marks heavy and fill the entire response oval. If you want to change your answer, erase the original mark completely.

5. Enter only one mark for each question. If more than one mark is entered for a question, that question will be invalid. If you are unsure, please mark the response that seems to best represent your opinion about the item.

6. Please begin with side 1 of the sheet.

Since we are quite pressed for time, we would appreciate it if you could mail the completed sheet back to us by March 22nd using the addressed envelope provided. At the same time, but separately, mail the postcard telling us that you have returned your sheet. If you have any questions or would like any additional information, please contact me at 637-7209.

Thank you for your cooperation.

Carolyn Dutka

VAR. #

151

QUESTIONS TO BE ANSWERED ON SIDE 1 OF THE OPTICAL SCANNING SHEET

05 1 What is your age?

1 A. 18 years or under 17
2 B. 19 years 19
3 C. 20 years 20
4 D. 21 years 21
5 E. 22 years 22
6 F. 23 to 30 years 24
7 G. 31 to 40 years 35
8 H. Over 40 years 45

06 2 What sex are you?

1 A. Female
2 B. Male

107 3 Is your native language English?

1 A. Yes
2 B. No

108 4 Where were you born?

1 A. In Ontario
2 B. In Canada, but not in Ontario
3 C. Outside of Canada

109 5 What do you consider your ethnic background to be? (Dummy variable)

1 A. British, Scottish or Irish EB1091
2 B. French or French-Canadian EB1092
3 C. German
4 D. Italian
5 E. Dutch
6 F. Polish
7 G. Other European
8 H. Asian
9 I. Other EB1099

110 6 Were your parents born in Canada?

3 A. Yes, both of them
2 B. Yes, one of them
1 C. No, neither of them

111 7 What size is your home town, that is, the place where you grew up?

8 A. A very large city (1,000,000 or more) 5500000
6 B. A large city or its suburb (100,000 to 1,000,000) 550000
5 C. A small city or its suburb (10,000 to 100,000) 55000
4 D. A town or a village (1,000 to 10,000) which is not a suburb 5500
3 E. A very small community (less than 1,000) 500
1 F. On a farm 5

112 8 Where do you live while you are attending university? Dummy VAR.

1 A. In a university residence, a room by myself
2 B. In a university residence, a shared room
3 C. At home with my parental family
4 D. In a relative's home
5 E. In my own apartment or house, alone or with spouse
6 F. In an apartment or house shared with other persons
7 G. Other

113 9 What is your marital status? Z

1 A. Married −1.82
2 B. Informally married −1.39
3 C. Engaged, pinned, etc. − .97
4 D. Unattached, dating mainly one person − .32
5 F Unattached, dating frequently + .15
6 F Unattached, dating infrequently + .58
7 G. Unattached, not dating + 1.37
0 H. Divorced or separated } TOO FEW RESPONSES
I. Widowed }

IF NO CATEGORY OF RESPONSE FITS PRECISELY OR IF YOU DON'T KNOW THE EXACT ANSWER, PLEASE INDICATE THE NEAREST APPROXIMATION

114 10 Which of the following categories best describes the usual or former occupation of your father?

1 A. Professional - income from fees: e.g., doctor, architect, lawyer
2 B. Professional - income from salary: e.g., social worker, teacher, clergyman
3 C. Proprietor or manager: e.g., proprietors of businesses, farm owners, managers of financial and industrial enterprises, assistant executives
4 D. Sales (other than sales manager or administrator): e.g., auto salesman, real estate salesman
5 E. Clerical: e.g., bank clerk or cashier, bookkeeper, secretary
6 F. Skilled worker: e.g., electrician, plumber, carpenter, watchmaker, radio repairman
7 G. Semi-skilled worker: e.g., moulder, assistant to plumber, timberman, assembly-line worker
8 H. Service worker: e.g., policeman, barber, fireman, taxi-driver, bartender
9 I Unskilled worker: e.g., janitor, farm and other heavy labour

115 11 Which of the following categories best describes the usual or former occupation of your mother? (See examples above)

1 A. Professional
2 B. Proprietor or manager
3 C. Sales (other than sales manager or administrator)
4 D. Clerical
5 E. Skilled worker
6 F. Semi-skilled worker
7 G. Service worker
8 H. Unskilled worker
9 I. Homemaker

116 12 What was the last year of school that your father completed?

1 A. Eighth grade or less 5
2 B. Part high school 10
3 C. High school graduate 12.5
4 D. Technical or business school after high school 14
5 E. Other non-university after high school, e.g., teachers college 14.5
6 F. Part university 14.5
7 G. University graduate 16
8 H. Graduate or professional degree beyond the Bachelor's 18

117 13 What was the last year of school that your mother completed?

1 A. Eighth grade or less 5
2 B. Part high school 10
3 C. High school graduate 12.5
4 D. Technical or business school after high school 14
5 E. Other non-university after high school, e.g., teachers college, nursing 14.5
6 F. Part university 14.5
7 G. University graduate 16
8 H. Graduate or professional degree beyond the Bachelor's 18

118 14 Which of the following is the income category for your parental family? Please consider annual income from all sources before taxes.

1 A. Less than $5,000 3500
2 B. $ 5,000 to $ 6,999 6000
3 C. $ 7,000 to $ 8,999 8000
4 D. $ 9,000 to $10,999 10,000
5 E. $11,000 to $12,999 12,000
6 F. $13,000 to $14,999 14,000
7 G. $15,000 to $19,999 17,500
8 H. $20,000 to $24,999 27.500
9 I. $25,000 and over

119 15 How many children are in your family, including yourself?

1 A. One
2 B. Two
3 C. Three
4 D. Four
5 E. Five
6 F. Six
8 G. Seven or more

120 16 What position in the family do you occupy?

1 A. First born
2 B. Second born
3 C. Third born
4 D. Fourth born
5 E. Fifth born
6 F. Sixth born
8 G. Seventh born or higher

121 17 Do you have an older brother who has attended or is attending university?

2 A. Yes, one older brother
3 B. Yes, two or more older brothers
1 C. No

122 18 Do you have a younger brother who has attended or is attending university?

2 A. Yes, one younger brother
3 B. Yes, two or more younger brothers
1 C. No

123 19 Do you have an older sister who has attended or is attending university?

2 A. Yes, one older sister
3 B. Yes, two or more older sisters
1 C. No

124 20 Do you have a younger sister who has attended or is attending university?

2 A. Yes, one younger sister
3 B. Yes, two or more younger sisters
1 C. No

125 21 Have any children in your family attended, or are they attending, a post secondary institution other than a university?

1 { A. Yes, a community college
  { B. Yes, other (nursing, teacher's college, business school, etc.)
2 C. No

126 22 What religion were you brought up in?

Dummy UAR.
REL1261
REL1268

1 A. Anglican
2 B. Baptist
3 C. Catholic
4 D. Jewish
5 E. Lutheran
6 F. Presbyterian
7 G. Other religion
8 H. None

127 23 What were your religious beliefs during your last year or two of high school?

Dummy UAR.
REL1271
REL1288

1 A. Anglican
2 B. Baptist
3 C. Catholic
4 D. Jewish
5 E. Lutheran
6 F. Presbyterian
7 G. Other religion
8 H. I had no religious beliefs

128 24 How frequently did you attend religious services in the last year?

1 A. Once a week — 53
2 B. Once a month — 13
3 C. Two or three times a year — 3.5
4 D. Once a year — 2
5 E. Not at all — 1

129 25 Do you attend church services now more, or less, than you did while you were in high school?

1 A. Attend church more frequently now — 2.11
2 B. Attend church about the same — .99
3 C. Attend church less frequently now — .12
4 D. Do not attend church — .87

Z

130 26 What social class would you say your parents are in?

1 A. Upper class — 2.39
2 B. Upper-middle class — 1.02
3 C. Middle class + .45
4 D. Working class + 1.09
5 E. Lower class + 2.35
(F. Don't know)

154

131 27 What was the student population of the secondary school that you attended for most of your secondary education?

Mid points

1 A. Less than 250
2 B. 250 to 500
3 C. 500 to 750
4 D. 750 to 1,000
5 E. 1,000 to 1,250
6 F. 1,250 to 1,500
7 G. 1,500 to 2,000
8 H. Over 2,000

132 28 What kind of secondary school did you attend?

Dummy VAR.

3 A. Public
1 B. Private
2 C. Separate

133 29 What was your grade thirteen average?

mid. points

1 A. Below 60%
2 B. Between 61% and 65%
3 C. Between 66% and 70%
4 D. Between 71% and 75%
5 E. Between 76% and 80%
6 F. Between 81% and 85%
7 G. Over 85%

134 30 How would you describe the orientation of your secondary school?

$\bar{z}$ — 1.37

1 A. Very traditional
2 B. Somewhat traditional — .51
3 C. Neither traditional nor progressive + .86
4 D. Somewhat progressive + .89
5 E. Very progressive + 1.88

135 31 What do you think your IQ is?

mid. points

1 A. Between 80 and 89
2 B. Between 90 and 99
3 C. Between 100 and 109
4 D. Between 110 and 119
5 E. Between 120 and 129
6 F. Between 130 and 139
7 G. 140 or over

136 32 How did your parents feel about your schoolwork while you were in high school?

Dummy VAR.

1 A. They were very strict in making sure I did my schoolwork
2 B. They were somewhat strict in making sure I did my schoolwork
3 C. Undecided
4 D. They were interested but did not supervise my schoolwork
5 E. They paid little attention to my schoolwork

137 33 Did your parents encourage you to get higher grades than you attained?

Dummy VAR.

1 A. Yes, very strongly encouraged me
2 B. Yes, they encouraged me somewhat
3 C. No, they accepted my grades as they were
4 D. No, they showed little interest in my grades

138 34 What year of university are you in?

1 A. First
2 B. Second
3 C. Third
4 D. Fourth

139 35 What was your average last year?

A. Under 50%
B. 50 to 54%
C. 55 to 59%
D. 60 to 65%
E. 66 to 70%
F. 71 to 74%
G. 75 to 79%
H. 80% or over
I. Was not in university last year

omit from regression

140 36 In how many university clubs or organizations are you or have you been an active member (e.g., SRA, residence executive, Spanish club, etc.)?

1 A. None
2 B. One
3 C. Two
4 D. Three
5 E. Four
6 F. Five (or more)

141 37 Have you participated very much in volunteer work such as Big Brothers, community worker, hospital help, etc. during the school year?

z
1 A. Yes, have participated very much −.22
2 B. Yes, but not very much +1.19
3 C. Not at all +1.89

142 38 Have you been, or are you on, any university athletic team?

1 A. Yes, on several teams −.22 z
2 B. Yes, on one team +1.12
3 C. No +1.59

143 39 How do you think of yourself, politically speaking?

z
1 A. Very conservative −2.21
2 B. Conservative −1.29
3 C. Do not know −.44
4 D. Liberal +.35
5 E. Very liberal +1.03
6 F. Radical +1.66
G. Not interested in politics

combine 6,9

144 40 What proportion of your lectures, tutorials, labs or other classes have you attended this year?

z
1 A. All or nearly all −.56
2 B. About three-quarters +.59
3 C. About half +1.34
4 D. Less than half +1.74
5 E. Very few +2.18

145 41 About how many hours per week have you spent this year on reading, preparing essays and other course work?

mid-points

1 A. Less than two hours per week
2 B. 2 to 5 hours per week
3 C. 6 to 9 hours per week
4 D. 10 to 12 hours per week
5 E. 13 to 16 hours per week
6 F. 17 to 20 hours per week
7 G. 21 to 25 hours per week
8 H. 26 to 30 hours per week
9 I. More than 30 hours per week

146 42 Would you say that you work harder and spend more time on schoolwork now than you did in high school?

z
1 A. Definitely yes −.06
2 B. Probably yes +.29
3 C. About the same +.77
4 D. Probably no +1.31
5 E. Definitely no +1.92

147 43 About how many hours a week have you spent this year drinking with friends?

mid-points

1 A. Do not drink
2 B. Less than one hour per week
3 C. One - two hours per week
4 D. Two - five hours per week
5 E. Five - eight hours per week
6 F. Eight - 12 hours per week
7 G. More than 12 hours per week

156

148 44 About how many hours a week have you spent this year on such entertainment as watching T.V., playing cards, or reading light novels, mysteries or science fiction?

mid-points

A. Less than one hour per week
B. One - two hours per week
C. Two - five hours per week
D. Five - eight hours per week
E. Eight - 12 hours per week
F. 12 - 15 hours per week
G. Over 15 hours per week

149 45 Which one of the following characteristics do you feel is most important to you in choosing a career?

Dummy var.

A. An opportunity to exercise leadership
B. The opportunity of moderate but regular promotion rather than the opportunity of extreme success or failure
C. Living and working in the field of ideas
D. Opportunities to be helpful to others or to society
E. Freedom from supervision in your work
F. Opportunity to be creative and original
G. Opportunity to work with people rather than things

150 46 Which one of the following purposes of undergraduate education is most important to you?

Dummy var.

A. A basic general education and appreciation of ideas
B. Having a variety of experiences while getting a degree
C. Getting the information, training and qualifications needed for a career
D. Developing the ability to get along with different kinds of people
E. More rapid promotion in my chosen career
F. Developing my potential creative mental ability
G. Help develop moral capacities, ethical standards and values
H. Develop knowledge and interest in community and world problems
I. Other

151 47 Have you held a job during this current school year? If yes, please indicate the approximate number of hours per week involved.

1 A. No 0
2 B. Yes, 5 hours per week
3 C. Yes, 10 hours per week
4 D. Yes, 15 hours per week
5 E. Yes, 20 hours per week
6 F. Yes, 25 hours per week
7 G. Yes, 30 hours per week
8 H. Yes, 35 hours per week
9 I. Yes, 40 hours or more per week

152 48 Do your parents place a great deal of importance on the attainment of a university degree?

2

1 A. Definitely yes
2 B. Probably yes
3 C. Don't know
4 D. Probably no
5 E. Definitely no

153 49 Do you yourself place a great deal of importance on the attainment of a university degree?

2

1 A. Definitely yes
2 B. Probably yes
3 C. Don't know
4 D. Probably no
5 E. Definitely no

154 50-51 What course are you in, or do you plan to enter? (If you are undecided or are in a joint programme indicate area of greatest interest.) Please note that two rows of the scanning sheet are needed to indicate your course, e.g., if your course were English you would mark B in row 50 and D in row 51.

not used in regression

AA	Anthropology	BD	English	CG	Nursing
AB	Applied Mathematics	BE	Fine Arts	CH	Philosophy
AC	Biochemistry	BF	French	CI	Physical Education
AD	Biology	BG	Geography	CJ	Physics
AE	Chemical Engineering	BH	Geology	DA	Political Science
AF	Chemistry	BI	German	DB	Psychology
AG	Civil Engineering	BJ	History	DC	Religion
AH	Classics	CA	Latin	DD	Russian
AI	Commerce	CB	Mathematics	DE	Social Work
AJ	Computer Science	CC	Mechanical Engineering	DF	Sociology
BA	Economics	CD	Metallurgical Engineering	DG	Spanish
BB	Electrical Engineering	CE	Metallurgy	DH	Theology
BC	Engineering Physics	CF	Music		

156

52-53 If you could do it over again and there were no limitations on your choice (e.g., grades, finances, etc.) what course would you choose? Please indicate your choice from the categories listed below and follow the same directions for marking the sheet, using rows 52 and 53.

not used in Regression see "Coursdif"

1	AA	Anthropology		BJ	History
2	AB	Applied Mathematics		CA	Latin
3	AC	Biochemistry		CB	Mathematics
	AD	Biology		CC	Mechanical Engineering
	AE	Chemical Engineering		CD	Metallurgical Engineering
	AF	Chemistry		CE	Metallurgy
	AG	Civil Engineering		CF	Music
	AH	Classics		CG	Nursing
	AI	Commerce		CH	Philosophy
	AJ	Computer Science		CI	Physical Education
	BA	Economics		CJ	Physics
	BB	Electrical Engineering		DA	Political Science
	BC	Engineering Physics		DB	Psychology
	BD	English		DC	Religion
	BE	Fine Arts		DD	Russian
	BF	French		DE	Social Work
	BG	Geography		DF	Sociology
	BH	Geology		DG	Spanish
	BI	German	38	DH	Theology

→ COURSDIF = VAR156 - 154

158

54 If you had your choice, how far would you continue your education?

1 A. Would stop now VAR138 (Yrs in) +13
2 B. Three year degree 16
3 C. Four year degree 17
4 D. Professional degree (e.g., doctor, lawyer, architect, etc.) 19
5 E. M.A. 18.5
6 F. Ph.D. 21

159

55 How far do you think you actually will go?

AS 54

1 A. Less than a three year degree
2 B. Three year degree
3 C. Four year degree
4 D. Professional degree
5 E. M.A.
6 F. Ph.D.

1

NOT USED IN REGRESSION

160

56 If your answer to question 55 is different from question 54, what is the difference related to?

1 A. There was no difference
2 B. Not enough money
3 C. Parents' wishes or objections
4 D. Grades not good enough
5 E. Limited by present course
6 F. Wanting to get out and earn money
7 G. The availability of a job I want
8 H. The lack of a suitable job
9 I. Wouldn't like to be a student that long

NOT USED IN REGRESSION

57-58 Please indicate which one of the following occupations you expect to work in after you finish your education. Please note that two rows of the scanning sheet are needed to indicate your answer. For example, if you plan to be a community service worker, you would mark B in row 57 and G in row 58.

161

AA Accountant or auditor 688
AB Actor 439
AC Actuary 678
AD Advertising agent 554
AE Agricultural professional 670
AF Air pilot 660
AG Architect 745
AH Artist or art teacher 582
AI Artist, commercial 541
AJ Author, editor or journalist 642
BA Biological scientist 732
BB Broker, agent or appraiser 547
BC Business service officer 486
BD Chemist 709
BE Clergyman or priest 592
BF Commercial traveller 529
BG Community service worker 556
BH Computer programmer 675
BI Dentist 764
BJ Designer, clothing 444
CA Draughtsman 579
CB Electricity, gas or water official 468
CC Engineer, chemical 767
CD Engineer, civil 752
CE Engineer, electrical 743
CF Engineer, locomotive 460
CG Engineer, mechanical 728
CH Engineer, mining 754
CI Foreman 450
CJ Geologist 755
DA Government service official-Federal 596
DB Government service official-Provincial 545
DC Government service official-Local 533
DD Homemaker 701
DE Inspector 398
DF Insurance Agent 552
DG Judge or magistrate 722
DH Laboratory technician 517
DI Lawyer or notary 754
DJ Librarian 638
EA Manager 575
EB Metallurgist 753
EC Musician or music teacher 509
ED Nurse - graduate 426
EE Officer, armed forces 414
EF Osteopath or chiropractor 703
EG Petroleum refiner 630
EH Pharmacist 729
EI Photo-engraver 483
EJ Photographer 481
FA Physical and occupational therapist 511
FB Physician or surgeon 756
FC Physicist 738
FD Professor or college principal 760
FE Psychologist 610
FH Purchasing agent 552
FI Radio announcer 598
FJ Radio operator 515
GA Real estate agent or dealer 487
GB Recreation service officer 555
GC School teacher 701
GD Social welfare worker 557
GE Sociologist 612
GF Statistician 679
GG Stenographer 520
GH Stock and bond broker 600
GI Surveyor 533
GJ Urban or regional planner 540
HA Veterinarian 745
HB Vocational guidance counsellor 702
HC Other
HD Undecided

OCCUPDIF = UAR163 - UAR161

163 59-60 Please indicate which one of the above occupations you would choose if there were no limitations on your choice, such as sex, finances or present course of study; that is, what you would really like to do most. Please indicate your choice from the categories listed in the previous question and follow the same instructions for marking the sheet, using rows 59 and 60.

165 61 Have you received government financial aid from the Canada Student Loan Plan or from the Ontario Student Award Plan?

Dummy VAR.

1 A. Yes, Ontario Student Award Plan
2 B. Yes, Canada Student Loan Plan only
3 C. No

166 62 If the only source of government funds for students who required financial assistance were a student loan plan, what is the maximum you would be willing to borrow per year to finance your university education? (Assume you pay no interest or principal until you graduate)

A. Would not have to borrow anything
B. Would not want to borrow anything
C. Would borrow up to $500 per year
D. $500 to $1,000 per year
E. $1,000 to $1,500 per year
F. $1,500 to $2,000 per year
G. $2,000 to $2,500 per year
H. $2,500 to $3,000 per year
I. Over $3,000 per year

use instead

HAVE TO (1=1)(2 THRU 9=2)
WANT TO (2=1) (1,3 THRU 9=2)
BORRIW (1,2=2) (3 THRU 9=2)

159

167 63 If tuition costs were to be raised significantly, for example, double what they are now, would you be able to continue your education?

1 A. Definitely yes
2 B. Probably yes
3 C. Do not know
4 D. Probably not
5 E. Definitely not

not used in regression

168 64 What proportion of your expenses for this year (tuition, room, food, books, clothes, etc.) was provided for you without obligation to repay by your parents or other benefactors (other than spouse if married)?

5 A. Nearly all
4 B. About three-quarters
3 C. About half
2 D. About one-quarter
1 E. Little or none

~~169~~ 65 How is your university education being financed this year? Please indicate the one source that provides the largest proportion of your financial resources.

1 A. Ontario Student Awards of which the grant portion is the greater part
369 2 B. Ontario Student Awards of which the loan is the greater part
C. Canada Student Loan plan
D. Non-governmental loan sources
4 E. Parents or other relatives
6 F. My own earning from summer employment
G. My own earning from part time employment during the school year
5 H. Scholarship
3 I. Other

170 66 If you were offered a steady job paying about $150.00 to $175.00 a week would you take it instead of continuing your education past the present year?

A. Definitely yes 2
B. Probably yes
C. Don't know
D. Probably no
E. Definitely no

171 67 The Wright Commission suggests in its recommendations that the student bear a greater percentage of the direct operating costs of the university. What percentage do you think the student should bear?

1 A. 0%
2 B. 10%
3 C. 20%
4 D. 30%
5 E. 40%
6 F. 50%
7 G. 60%
8 H. 80%
9 I. 100%

not used in regression

172 68 Did you win any scholarships when you graduated from Grade 13?

1 A. Yes, over $200.00 value
2 B. Yes, less than $200.00 value
3 C. No, did not win any

173 69 Have you won any scholarships since you became a student here?

1 A. Yes, over $200.00 value
2 B. Yes, less than $200.00 value
3 C. No

174 70 Do you personally know anyone who has won a scholarship while a student at McMaster (not including yourself)?

4 A. Yes, several people
2 B. Yes, one person
1 C. No

175 71 "In-course" scholarships at McMaster University are awarded after Year One on the basis of grades and other criteria. The student need not apply for them. Did you know about these scholarships?

Dummy VAR.

A. Yes, I knew about them
B. I was vaguely aware that there were such scholarships
C. No, I did not know about them

72 How many such scholarships do you suppose McMaster awards each year?

1 A. Less than 50 (0-50)
2 B. 50 to 100
176 3 C. 100 to 150
4 D. 150 to 200 (mid-points)
5 E. 200 to 250
6 F. 250 to 300
7 G. 300 to 350
8 H. 350 to 400
11 I. More than 400

177 73 Senate Scholarships are one type of in-course scholarship. They are awarded on the basis of grades alone. All students above a specified grade level are awarded a Senate Scholarship. Did you know about these scholarships?

1 A. Yes, I knew about them (Dummy var.)
2 B. I was vaguely aware of them
3 C. No, I did not know about them

178 74 What value do you suppose the Senate Scholarships have? (They are all worth the same amount.)

1 A. Less than $25 (0-25)
2 B. $25 to $50 (mid-points)
3 C. $50 to $100
4 D. $100 to $150
5 E. $150 to $200
6 F. $200 to $300
7 G. $300 to $500
8 H. $500 to $1,000
9 I. Over $1,000

205 75 To be eligible for a Senate Scholarship a student has to attain a certain weighted average in one year's work. What do you think the average is?

1 A. 60%
2 B. 66%
3 C. 70%
4 D. 75%
5 E. 80%
6 F. 85%

206 76 Students who attain high standing can be recognized by the university in two ways. One is through scholarships with a sum of money attached, the other is through honorary awards such as being named to the Dean's List, or winning a ring or medal. Which would you consider to be the higher honour?

Dummy var.
1 A. Winning a scholarship of monetary value
3 B. Being named to the Dean's List, or winning a medal
2 C. Both are equal

207 77 How hard have you tried for higher grades in order to qualify for a scholarship?

1 A. I was not aware of such scholarships so I made no attempt to qualify for one
2 B. I tried very hard and I was successful
3 C. I tried very hard but was not successful
Dummy var.
4 D. I tried fairly hard and was successful
5 E. I tried fairly hard but was not successful
6 F. I did not try very hard but was successful
7 G. I did not try very hard and was not successful
0 H. I did not try at all but was successful
9 I. I did not try at all and was not successful

208 78 If you have tried to raise your grades in order to qualify for a scholarship, what motivated you more: the honour of winning or the financial aspect?

Dummy var.
1 A. The money was much more important
2 B. The money was somewhat more important
3 C. Both were equally important
4 D. The honour was somewhat more important
5 E. The honour was much more important
6 F. I did not know about the scholarships
7 G. I did not try to win scholarships

209 79 If you have ever tried to win a scholarship, how were you influenced by the financial aspect of the scholarship?

Dummy var.

1 A. I needed the money for tuition and necessary living expenses such as food and lodging
2 B. I needed the money for expenses related to university such as books and clothes
3 C. I felt the money would be a bonus and did not need it for immediate expenses
4 D. The money aspect did not influence me
5 E. I did not try to win a scholarship although I was aware of them
6 F. I was not aware of the scholarships

216 80 How many students do you think would be sufficiently motivated by a scholarship of $100 to work hard enough to actually raise their grades?

A. Very few students
B. Few students
C. Quite a number of students
D. Many students
E. Very many students
F. Nearly all students

210 - 213 not used in regression: SEE "MONEY"

211 81 How many students do you think would be sufficiently motivated by a scholarship of $500 to work hard enough to actually raise their grades?

A. Very few students
B. Few students
C. Quite a number of students
D. Many students
E. Very many students
F. Nearly all students

212 82 How many students do you think would be sufficiently motivated by a scholarship of $1,000 to work hard enough to actually raise their grades?

A. Very few students
B. Few students
C. Quite a number of students
D. Many students
E. Very many students
F. Nearly all students

213 83 How many students do you think would be sufficiently motivated by a scholarship of $2,000 to work hard enough to actually raise their grades?

A. Very few students
B. Few students
C. Quite a number of students
D. Many students
E. Very many students
F. Nearly all students

214 84 If you are an Ontario Student Awards recipient, were you aware that any amount won as a scholarship in excess of $150 must be deducted from the grant portion of your award as required by OSAP regulations?

Dummy var.

1 A. Yes, I knew about this regulation
2 B. No, I did not know about this regulation
3 C. I am not an OSAP recipient

215 85 If you are an OSAP recipient, did this regulation (that any amount over $150 is deductible) discourage you from trying for a scholarship?

Dummy var.

1 A. Yes, definitely discouraged me from trying
2 B. Yes, to some extent I was discouraged from trying
3 C. No, I was not discouraged at all
4 D. I am not an OSAP recipient
5 E. I did not know about the regulation
6 F. I did not know about the scholarship

216 86 Do you think students should be rewarded by the University for high grades?

7

1 A. Definitely yes
2 B. Probably yes
3 C. Don't know
4 D. Probably no
5 E. Definitely no

217 87 If you think that students should be rewarded in some way for high grades, how do you think they should be rewarded?

Dummy Var.

1 A. Do not think they should be rewarded
2 B. Financial awards
3 C. Honorary awards such as medals, keys, rings and books only

THANK YOU VERY MUCH

APPENDIX B

Areas	Variables
Family Characteristics	Ethnic background* Parents' place of birth* Family size Social class estimate Size of home town Parental educational level Parental occupations* Family income Participation by siblings in post-secondary education
Student	Age, sex, marital status Native language* Place of birth* Birth order Estimate of I.Q.* Place of residence now Political orientation* Religion raised in* Religious beliefs in high school Frequency of attending religious exercises now as compared to last year
Academic Background	Size and kind of secondary school Perceived orientation of secondary school* Grade 13 average* Grade 13 scholarship* McMaster scholarship*
Student's Attitudes	Towards attaining degree* Towards career characteristics Toward purposes of undergraduate education
University Education Characteristic	Year in now at university* Last year's average* Program or course in now* Program or course desired* Degree expected, desired* Occupation expected, desired* Class attendance* Work habits* Comparison of effort, now to high school
Extracurricular Activities	Athletics, clubs, volunteer work, entertainment, drinking
Financial Circumstances	Employment during school year* Participation in O.S.A.P.* Attitudes to borrowing Source of funds* Amount repayable Won university scholarship* Aware of O.S.A.P. regulation Discouraged by regulation Effect of tuition increase
Scholarship Programme	Aware of scholarships available* Aware of number and value* Aware of average needed* Know other winners* Attitude towards incentive of and influence of money as a reward for high grades* Attempts to win* Agree with principle of awards* Agree with suitability of money as reward* Motivational strength of varying* Values of scholarship

APPENDIX C

McMASTER UNIVERSITY

HAMILTON, ONTARIO, CANADA, L8S 4L8

June 25, 1971

Dear

On behalf of the Senate Committee on Undergraduate Awards, I am pleased to advise you that you have retained the Lloyd Memorial Scholarship in the amount of $537.50 and have won the Somerville Scholarship of $250.

Scholarship holders may have fees for 1971-72 deferred in an amount not in excess of the value of their awards. Application for deferment should be made to the Assistant Controller's office in Gilmour Hall. If the value of the awards is in excess of the fees, a cheque will be sent to you in the Fall.

Your letter of thanks in acknowledgement of the Somerville Scholarship should be sent to:

May I congratulate you on your achievement in 1970-71 and wish you continued success in your studies.

Yours sincerely,

W. N. Paterson

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