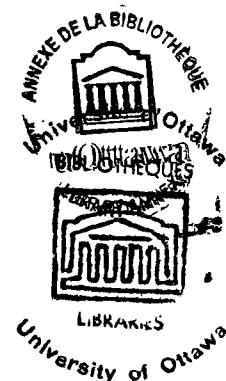


Analysis of Selected Characteristics of
Dropouts at the University of Ottawa

Brenda G. Stoneham

Thesis presented to the School of
Graduate Studies of the University of Ottawa
as partial fulfillment of the requirements
for the degree of Master of Arts.

Ottawa, Canada, 1976



UMI Number: EC55214

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.



UMI Microform EC55214

Copyright 2011 by ProQuest LLC

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Curriculum Studorium

Brenda G. Stoneham was born in Rivers, Manitoba, on December 31, 1948. She received the Bachelor of Arts degree in 1969 and the Honour's degree in Psychology in 1972, from Carleton University, Ottawa.

Acknowledgements

The author wishes to express sincere appreciation to Dr. Daniel C. Lee for his patience and efficient direction throughout all phases of the present research. Valuable assistance was also provided by Mrs. Ann Hurd, Computing Center, University of Ottawa.

In addition, I wish to express sincere gratitude to Dr. Sergio J. Piccinin, Director, University of Ottawa Counselling Service, for his interest, helpful suggestions, and the provision of the facilities and data of the Counselling Service. Appreciation is also due to Mr. Pierr Boulet, Assistant Vice-Rector (Academic Services), University of Ottawa, for permission to access and use information of the Registrar's Office.

Finally, I wish to convey special thanks to Carl for his support, encouragement and understanding during this endeavour.

Table of Contents

Introduction.....	1
REVIEW OF THE LITERATURE.....	4
Defining Dropouts.....	4
Scholastic Aptitude and Performance.....	6
Demographic Characteristics.....	10
Sex and Program.....	10
Age.....	11
Language.....	12
Socioeconomic Background.....	13
Personality and Motivational Factors.....	16
Theoretical Perspective.....	16
Investigations of Personality and Motivational Factors.....	24
Methodological Criticisms.....	37
GENERAL NULL HYPOTHESIS.....	38
SPECIFIC NULL HYPOTHESES.....	38
METHOD.....	42
Setting.....	42
Instruments.....	42
Participants.....	43
Selection Procedure.....	44
Statistical Analysis.....	45
RESULTS.....	49
Hypotheses 1 to 11.....	49
Hypothesis 12.....	57
DISCUSSION.....	68
BIBLIOGRAPHY.....	75
Appendix A: Items Selected from Biographical Questionnaire.....	82

Appendix B: Gordon Personal Profile, Description of Scales.....	84
Appendix C: Gordon Personal Inventory, Description of Scales.....	86
Appendix D: Tables 1 to 15.....	88

List of Tables

Table	Page
1. Frequency Distribution of the Dropout Variable	46
2. Means of the Quantitative Dependent Variables	50
3. Factor 1 (Dropout Status): Multivariate Analysis of Variance of Difference Between Nondropout and Dropout on all 11 Dependent Variables	51
Factor 2 (Faculty): Multivariate Analysis of Variance of Difference Between Arts and Science on 11 Dependent Variables	52
Factor 3 (Sex): Multivariate Analysis of Variance of Differences Between Males and Females on 11 Dependent Variables	53
Interactions of Factor 1 (Dropout Status) by Factor 2 (Faculty) by Factor 3 (Sex)	54
4. Frequency Distribution of Dropout Status and Main Reason for Attending University	59
5. Frequency Distribution of Dropout Status and Family Income for Science Students	62
6. Frequency Distribution of Dropout Status and Father's Education for Science Students	63
7. Frequency Distribution of Dropout Status and Father's Education for Male Students	63
8. Frequency Distribution of Dropout Status and Main Reason for Attending University for Male Subjects	66

Analysis of Selected Characteristics of Dropouts
at the University of Ottawa

Brenda G. Stoneham
University of Ottawa

The purpose of this study is to investigate selected characteristics of dropouts at the University of Ottawa in order to predict those students who may be prone to dropping out. If, in fact, factors are found which correctly classify a large percentage of cases, a discriminating profile may be established. The validity of such a profile would have to be assessed by continued investigation.

The implications from the perspective of the University of Ottawa Counselling Service are many and varied. Counselling for those students who could be identified as potential dropouts might provide assistance in pointing out the possible difficulties they may face and in planning alternate courses of action, academic or otherwise. From the viewpoint of the institutional planner, a further understanding of the nature and extent of the dropout phenomenon perhaps could ease the loss in investment of personal, institutional and governmental resources.

The rationale for the model used in the present study is threefold. In the first place, despite the large volume of recent research on dropouts, there have been only a few multivariate analyses which permit isolation of independent effects of various factors on attrition. As Marsh (1966) concluded in his critical review of the literature, "The hope for one or two neatly packaged single predictors is quite unlikely and the need for greater precision and more research on the multi-dimensional level has become obvious."

Secondly, it becomes apparent that the research findings vary according to the nature of the institution studied. There is, therefore, a need for individual studies of each particular institution in order to determine what is necessary for an individual to succeed.

Thirdly, the necessity of dividing the general category of dropouts into those who were failing at the time of withdrawal and those who voluntarily withdrew is evidenced by the complex and contradictory findings according to how the subjects are classified. Past researchers have often lumped together forms of leaving behaviour which were very different in character. The present study attempts to clarify the characteristics of the sample under investigation by using the above-described classification.

The first chapter will summarize and review the existing literature relating to characteristics of the university dropout. The second, third and fourth chapters will present

the Method, the Results and the Discussion respectively.

Review of the Literature

A plethora of investigations have considered the phenomenon of university dropouts. Aptitude, background, financial, motivational and personality variables of those who drop out of university, as well as characteristics of the institution concerned, have been analysed individually and in relation to each other. Several critical reviews of the literature have been completed. The focus of this chapter, however, will be those areas under investigation in the present study; that is, characteristics of the student themselves. It should be noted that the review will include only those studies which are restricted to students at the post-secondary level of education.

In particular, then, this chapter presents a discussion of the problem of definition of dropouts, followed by a review of studies which consider aptitude, demographic and personality characteristics of students who drop out of university.

Defining Dropouts

The term dropout has been used to refer to someone who leaves a particular institution to attend another, someone who fails all of his or her courses and decides to leave, as well as someone who is succeeding scholastically but is

dissatisfied with university life and leaves to travel. Each of these individuals presents a unique situation; however, the factor which links them is their nonpersistence with their academic plan (although there also exist students who enter university with no intention of obtaining a degree. Such students as those mentioned above would be included in the following definition of the term "dropout": "Any student who leaves college for any period of time, regardless of reason, and thus does not obtain his degree at the same time as the class with which he originally enrolled." (Pervin, Reik, and Dalrymple, 1966) This broad and over-inclusive definition does not distinguish those students who complete their degree programs over a longer period of time either at their original institution or by transferring to other institutions; nor does it differentiate between students who withdraw for academic reasons and those who withdraw for other reasons. These factors make comparison of findings and evaluation of the extent of the dropout problem extremely difficult.

It would seem that the best definition of a dropout would be one which considered the reasons for which the student withdrew. This information, however, is difficult to obtain for two reasons. First, those studies which have sent out follow-up questionnaires have yielded a poor return rate. McIntosh, Wilson, and Lipinski (1974) for instance, in their survey of dropouts from Simon Fraser University,

obtained only 29% returns. Secondly the reasons for withdrawal are usually complex and overlapping and may not even be recognized by the student.

In view of these difficulties, a sample of dropouts as defined by Pervin et al. (1966) would contain a vast mixture of dissimilar individuals. The present study attempts to cope with this limitation by identifying three classes of students: those who withdrew from the university with no evidence of failure (Dropouts), those who withdrew with indications of failure on their academic record (Failing Dropouts), and those whose academic records indicate persistence (Nondropouts). It is felt that such a distinction will provide a somewhat clearer focus on a particularly complex picture. There is, however, no differentiation made to isolate those individuals who withdrew and subsequently graduated from another institution. Identification of students falling into this category is beyond the scope of the present research.

In the following pages, investigations of specific characteristics of the university dropout will be examined in terms of the implications for the present study.

Scholastic Aptitude and Performance

Several studies (Astin, 1971, 1975; Blanchfield, 1971; Chambers, Barger, and Lieberman, 1965; Hanson & Taylor, 1970; Ikenberry, 1961) have found academic background and/or scholastic ability to be related to dropout-proneness.

These studies, however, are not necessarily comparable or mutually confirmatory. The discussion here will deal with two measures of aptitude, namely, high school average and intelligence test scores. Other measures which have been used include rank in high school graduating class, college admissions test scores, and student's academic rating of the high school.

The most recent comprehensive investigation of dropouts done by Astin (1975) using a representative national sample of 358 two- and four-year American colleges and universities indicated that students' chances of dropping out of college increase consistently as their high school grades decrease. Of the students who obtained an A average in high school, 87% were persisters and 13% were stopouts and dropouts; of those students who obtained a C average in high school, 44% were persisters and 56% were stopouts or dropouts.

Irvine (1966) studied a group of 659 men entering the University of Georgia and found high school grade point average to be the best single predictor of persistence, correlating .34 with graduation from the University of Georgia. It should be pointed out, however, that the focus of this study was upon the prediction of graduation (not of dropping out) from preadmission academic information. Therefore, Irvine's study can not be interpreted as supportive of Astin's finding that the chances of dropping out are increased as high school grades decrease. In addition,

Irvine acknowledges that depending on selection policies, characteristics of student body and type of institution, other institutions might find a different combination of variables to be most predictive. Neither of these studies isolated nonachieving dropouts. Separating this class of students from the other dropouts might yield more significant differences. Nevertheless, high school grade point average is the factor which has most consistently been found to be related to attrition (Astin, 1971; 1975; Summerskill, 1962). In addition, at the University of Ottawa, high school average is a common criterion used to admit students. Thus, the extent to which high school average is in fact related to persistence at this university would be a worthy subject of inquiry.

In examining the relationship between measured scholastic ability and dropping out, typically college admissions tests such as the SCAT, the ACT, and the SAT have been employed. These indicators are often used by admissions committees to decide on the acceptance of students. Most research of this variable (college admissions tests) has found scholastic aptitude to be directly related to success at university; that is, dropouts were found to have lower scores on the SCAT. For instance, Chambers et al. (1965) using the SCAT found that intellectual factors contributed most to discriminating between dropouts and nondropouts (accounted for approximately two-thirds of the total contributions to D^2). However, Rossman and Kirk (1970) found

evidence which contradicted this relationship. They classified their freshman students as follows: persisters, voluntary withdrawals, and failures, and found that those students who withdrew with no failures on their academic record scored higher than persisters on the Verbal scale of the SCAT. They concluded that it is methodologically unwise to group voluntary withdrawals and failures in the same dropout category, because they differ significantly in academic ability. It may be, therefore, that students who drop out of university may have higher scholastic ability than those who persist, depending on how dropout is defined.

Sewell and Shah (1967) found intelligence to be related to college graduation; their measure of intelligence was based on scores on the Henman-Nelson Test of Mental Maturity, administered to high school juniors. Thus, the intelligence scores for their large sample were obtained at a point much earlier in the academic career of the student than the measures which have typically been related to college achievement. It is difficult to predict from Sewell and Shah's findings what the relationship would be between persistence in university, and intelligence, if the latter were measured just prior to beginning university studies.

In summary, academic ability as reflected in high school grade point average and in intelligence quotient seems to be important information to explore in relationship to attrition the former because it has most consistently been found to

discriminate and the latter because intelligence quotient at admission has not been investigated. In addition, studies using similar measures have yielded discrepant results. The importance of distinguishing between those students who drop out with failing grades and those who are succeeding in their courses seems particularly evident when examining the contribution of scholastic aptitude and performance factors.

In the following pages, research regarding demographic characteristics of university dropouts will be reviewed.

Demographic Characteristics

Sex and Program. Panos and Astin (1968) reported that a woman is more likely to drop out of college than is a man who has a comparable high school grade average. Later, Astin (1971) also found the dropout rate was higher among women than among men and that for women, being older than the average student contributed to dropout-proneness. Bean and Covert (1973) found personality functioning of females to differentiate between persisters and withdrawers. In Astin's most recent study (1975) there was no evidence to support the sex variable as a predictor. In fact, other studies of biographical characteristics have not supported the finding of sex differences. For instance, DeVecchio (1971) did not find evidence of sex differences between dropouts and nondropouts; his study, however, was of community college freshmen, a somewhat restricted sample.

It has been suggested by Crookshanks and Herman (1975) that sex may play a role as a moderator variable within prediction research, and that further research might incorporate sex and program variables as moderator variables. It is understood that their study also used a community college sample; however, results of previous research reporting interaction of sex with high school average, age, and personality characteristics suggested that considering sex as a moderator variable would be a realistic approach to examining its significance.

With regard to program, the rationale for including faculties in the present study is based upon suggested differences between arts and science students in intelligence motivational and personality factors. Trent and Medsker (1968) found sex differences in persistence in major field of study; the rate of persistence for males was highest in the fields of engineering and medical science; for females the rate of persistence was highest in education.

Thus, the present study will consider sex and program as control variables.

Age. Astin (1975) reported that older students, particularly older women, were more likely to drop out than students of traditional entry age. Interestingly, there have been few studies which examined the relationship between age and attrition. Of those which considered age as one of a number of possible predictors (DeVecchio, 1972;

Crookshanks & Herman, 1975), neither has found evidence to support Astin's results, and both referred to a community college population. Although one might argue that the extensive and thorough nature of Astin's research should not necessitate validation, the need to establish the predictive power of a collection of variables within the context of one particular institution, i.e. the University of Ottawa, must be reiterated.

Language. The unique bilingual character of the University of Ottawa raises the question of the extent to which language might be related to attrition-proneness. Indeed, it has been reported (Lee, 1972) that the bilingual nature of the university was considered more important in the decisions of Francophone students to enroll at the University of Ottawa than for Anglophone students. It would seem reasonable, therefore, to expect that there might be some difference between linguistic groups with regard to dropping out of this university. One other study which is of relevance to the language factor is a descriptive study by Bordeleau and Gelineau (1974) of dropouts in Quebec universities. These authors reported that parents of Anglophone dropouts were more wealthy and more educated than those of Francophone dropouts. However, as there was no control group of nondropouts in the Bordeleau and Gelineau study, it is difficult to ascertain the extent to which these linguistic differences were peculiar only to

the students who dropped out.

Socioeconomic Background. The relationship between various measures of socioeconomic status and attrition has been well documented (Astin, 1975; Panos & Astin, 1968; Spady, 1970). There exists, however, confusion as to the independent influences of such factors as ability, parental income and education, race, religion, and size of home town. Astin (1975), for instance, reported that the relationship between family income and college attrition seemed to be mediated by such factors as student ability, parental education, and student concern about finances. Thus, according to Astin, family income did not contribute independently to the estimate of dropout proneness, whereas parental education level did contribute independently. Spady (1970) reported that father's education had an increasing influence on the completion rates of college entrants over time; however, his conclusions were based merely on percentages and census figures, with no attempt to test for actual statistical significance. Dutt (1972), Florey (1972), and Hoffman (1971) also found evidence that dropouts tended to have fathers with less formal educational achievements. The extent to which scholastic attainment of father can be equated with socioeconomic status remains questionable. Sewell and Shah (1967) based their definition of "Socioeconomic Status" on a weighted combination of father's occupation, father's formal educational level, mother's formal educational level,

estimate of funds the family could provide to attend college, degree of sacrifice this would entail and approximate wealth and income status of student's family. These authors found that when intelligence was statistically controlled, socioeconomic status as defined above was positively and significantly related to planning on college, college attendance, and college graduation. It is important to note though that when only those who attended college were included in the analysis, intelligence was found to be much more important than socioeconomic status in determining who would eventually graduate. Thus, according to the authors, socioeconomic status selection had already exerted much of its influence on who attended college.

The results of Sewell and Shah were contradictory to the findings of Barger and Hall (1965) at the University of Florida; Barger and Hall reported that when ability was controlled, dropping out of college was not related significantly to any of the socioeconomic variables studied, with the exception of parents' marital status. The other socioeconomic variables which their study examined included parents' income, father's education, father's occupation, student's religious preference, ordinal position, and family size. These authors concluded that studies which have shown relationships between socioeconomic variables and dropping out of college without taking ability into account may have been simply reporting findings which resulted from

the relationships of ability to the several socioeconomic variables studied. In spite of the fact that Sewell and Shah did control for ability, there is clearly a discrepancy between their findings and those of Barger and Hall, perhaps attributable to differences in definition of socioeconomic variables or in the nature of the institution studied, i.e. University of Wisconsin in the case of the former and University of Florida in the case of the latter authors. In conclusion, then, investigations of socioeconomic variables have been contradictory and inconclusive.

If one examines family income and scholastic attainment of father separately, will either be found to exert an independent influence on dropout-proneness? One might argue that university students from low income families would have to take time from their studies to work to supplement their finances, and would suffer from a relatively deprived cultural and academic background; that is, less money available for books, outings, and travel. Thus, they might find persistence in a university environment quite difficult. On the other hand, the mere presence of these students in university, despite such limitations might reflect a level of motivation which is related to increased persistence in university. Motivational factors will be discussed later in this chapter.

It would seem reasonable to assume that parents with high academic achievement would have values and expectations

oriented towards successful completion of university studies and would thereby influence the motivation of their offspring in this direction. Another viewpoint might suggest that parents with low scholastic attainment would project their aspirations onto their children and consequently strive to motivate their youngsters to high levels of aspiration and achievement, perhaps at times attributing an almost omnipotent power to the value of a university degree. Then again, many students may prefer to act in direct opposition to their parents' desires and expectations.

In view of the contradictory findings of the research relating family background variables to dropping out, as well as the various interpretations one might hypothesize, it becomes evident that further study of the independent influences of such factors as family income and scholastic attainment of father is required.

In this section, age, sex, program, language, and socioeconomic factors have been reviewed. In the following pages, motivational and personality factors will be discussed, from a theoretical perspective and from examination of the relevant research.

Personality and Motivational Factors

Theoretical Perspective. Before presenting the details of actual research into the personality and motivational factors related to attrition, it is useful to consider a variety of psychological and interpersonal explanations

which may contribute to the understanding of the phenomenon. The discussion will attempt to incorporate proposed motivational and personality characteristics of the individual with the effects of interaction with his family and his academic environment.

Bricklin and Bricklin (1967) have offered a thorough overview of the psychological causes of underachievement. Their comprehensive theoretical discussion of the possible causes seems particularly applicable to the issue of dropouts in view of the amount of research which has attempted to relate personality factors to attrition. This section will discuss Bricklin and Bricklin's proposed psychological causes in order to provide a theoretical framework from which to evaluate the existing literature in the area of personality and motivational factors. Presumably, the similarities drawn between dropouts and underachievers are primarily relevant to those students who drop out despite the fact that they display good academic ability.

The first suggested psychological cause of underachievement is passive aggressiveness. The individual who fears the feeling or direct expression of anger may express anger in devious ways through his actions, even though he does not consciously realize that his displeasing behaviours are intended to express resentment and anger. He may feel angry and resentful because of his parents' inability to tolerate the expression of genuine feelings, therefore he

senses a loss of inner freedom and subsequent dissatisfaction. The anger then escapes through the development and maintenance of an educational problem, such as underachieving or dropping out of school or university completely.

A second cause is the tendency to equate self worth with ability to achieve. The individual may lack confidence to put his talents to any test, because he wishes to avoid failure. Failure represents a complete loss of confidence and security; his desperate fear of failure, therefore, is closely related to his shaky self-confidence. Thus the individual is restrictive and passive, does not commit himself to his studies, and deceives himself into believing that he does not really care or try so he can not be considered a failure.

Thirdly, a fear of being ordinary may sustain underachievement. The student desires and comes to enjoy the status of a non-conformist.

A fourth cause of underachievement suggested by Bricklin and Bricklin is a fear of success. They explain that the individual may equate success with outdoing a loved but feared parent; the individual fears that he may alienate an overvalued source of support.

Fifthly, the individual may hold the belief that competitive attitudes are equal to aggressive attitudes; he thus associates positive happenings for himself with negative happenings for someone else. His competitive attitude thus

inhibited, he fails to strive.

Poor tolerance for frustration has been offered as the sixth psychological cause of underachievement. The pattern here is an individual with a rigid and unrealistic self image; he tends to start many tasks but to quit when the going gets tough. He wants immediate success or guarantee of success even before engaging himself in a task. One might hypothesize that this type of university student would tend to change courses often and be involved in a variety of relationships and activities; if he were required to do a specific assignment, then, he might simply switch courses.

A similar and related pattern is the immature personality who dislikes any stress or responsibility, and becomes irritable and blames others when challenged or questioned. At university, for instance, if this type of student were required to do an assignment he would probably criticize and devalue the professor, the assignment and perhaps even his fellow students.

Bricklin and Bricklin's ninth and tenth causes are more related to the interpersonal relationships within the family than to individual personality characteristics. In the first case, an overprotective and anxious mother tends to control her child; the child becomes a psychological slave and is completely unable to behave in an independent, harmonious manner. His performance at school or in other

areas is undermined by his lack of freedom and independence. In the second situation, a problem between the parents might manifest itself in their child; the student, thus, accepts the role of being a source of difficulties within the family so as to divert attention and permit evasion of the genuine source, the parents' relationship.

Other psychological causes of underachievement described by Bricklin and Bricklin are less relevant to older students. Their overview does, however, provide a number of interpretations which might assist in further understanding the phenomenon of university students who, despite their academic potential, do not succeed in completing the programs in which they enrolled. The extent to which psychological or personality variables are involved in attrition has received considerable attention. Later in this section studies of personality and motivational factors related to withdrawal will be reviewed.

Another dimension along which to consider the psychological causes of attrition is that of creativity and conformity. Pervin et al. (1966) in their overview of the college dropout discuss the differences between conformity and creativity, and give a description of four attributes of creative people. Some of these proposed attributes do not differ from the characteristics which Bricklin and Bricklin propose as related to underachievement; they do, however, have a less pathological connotation than Bricklin

and Bricklin suggest. According to Pervin et al. creative people display a lack of interest in small details and facts for their own sake. Secondly, they are free from conventional constraints and inhibitions. In the third place, creative people show less inclination to strive for achievement when conformity is expected of them; fourthly, they are usually quite independent in thought and action. These attributes could conflict with the expectations of some university professors; thus the creative student could be an aggravation in the classroom, held in disfavour by the professor and perhaps by his fellow students. In addition, in keeping with the above attributes, the creative student would probably not prepare for conventional examinations in the usual manner, subsequently his grades would suffer, he might become dissatisfied and leave the institution. There may perhaps be, therefore, a distinct linkage between creativity and dropping out of university.

Further to the psychological characteristics of the individual as related to underachievement or dropping out is his relationship to his environment - academic and familial. The individual's home environment has previously been discussed in Bricklin and Bricklin's description of psychological causes of underachievement. When considering the effects of the family on persistence in school, rather than the negative side of the coin, the importance of parental encouragement and expectations seems apparent.

The extent to which the child accepts his family's values of university attendance or of upward social mobility through such attendance would probably influence his decision to attend university, as well as his commitment and motivation to persist at university.

Another aspect of the individual's environment is the academic institution. Spady (1970) discusses the interaction between student attributes and those of the institutional environment. He provides an interdisciplinary-based, theoretical model in order to treat several clusters of relevant variables simultaneously. According to Spady's model, the individual student's dispositions, interests, attitudes and skills are exposed to influences, expectations and demands from a variety of sources which include courses, faculty members, administrators and peers. The interaction which results provides the student with the opportunity to either assimilate successfully into the academic and social systems of the institution, or to withdraw. Grades and intellectual development are considered to be the rewards in the academic system. The rewards in the social system are "normative congruence" and "friendship support." Spady explains the social conditions affecting dropouts as follows: "a lack of consistent, intimate interaction with others, holding values and orientations that are dissimilar from those of the general collectivity, and lacking a sense of compatibility with the immediate social system." Thus,

the social and academic rewards influence the degree of social integration from which flows satisfaction with the university experience and commitment to the social system, the university. Presumably, if the rewards available within either the academic or the social system appear insufficient, the student may decide to withdraw.

Comparable to Spady's sociological model is the theory of "congruence" proposed by Cope and Hannah (1975). Their belief is that the extent to which the student fits in with the dominating social and academic values of the campus influences whether the student will continue, drop out or seek other educational alternatives. Thus, Cope and Hannah focus on the qualitative aspects of the student's decision to withdraw, the student's attitudes and feelings toward his academic experience. Again the focus is on the interaction between the student and the institution he is attending. It follows that an important dimension to be considered in dropout research is the institution, its goals and objectives. Presumably, with the establishment of a closer correspondence between student needs, interests and expectations on the one hand and institutional goals and objectives on the other, the problem of attrition could be reduced.

What are the goals and objectives of the institution; what are the qualities and attributes it attempts to foster in its students? Are they intellectual openness, personal

autonomy, independence of thought, or promptness, loyalty and commitment? Are the attributes which are conducive to persistence at university also conducive to continued growth and development in later life, or does success at university relate more to temporary adjustment and transient participation?

Trent and Medsker (1968) describe the role of schools as one of developing human potential--the intellectuality, creativity, autonomy and adaptiveness needed to cope with a changing, increasingly technocratized society. They further propose that if a student enters university without sufficient readiness for personality development, it is not clear how colleges can create a disposition which is open to changes in values and attitudes which in turn lead to intellectual interests, autonomy and self-understanding. It is their suggestion that perhaps many students who withdraw are not ready to assume the levels of autonomy and intellectual development expected of them. Thus, they emphasize the significance of predisposition for change. Some of the findings from Trent and Medsker's comprehensive study of the different impacts of college and employment on values and attitudes of 10,000 high school graduates will be discussed in the following section.

Investigations of personality and motivational factors.
An immense body of research has sought to clarify the personality and motivational characteristics of the university

dropout. Although the findings and interpretations of this research have failed to provide a clear and consistent personality description of the typical dropout, some trends become apparent as one examines this literature. Following a discussion of the particular significance which has been ascribed to motivational factors, a summary of the personality dispositions found by some authors to exist will be presented.

Students' motivations for attending university, their readiness and their level of commitment to the goal of a university education have been described by Trent and Medsker (1968) as related to persistence at university. These authors through the administration of three scales from the Omnibus Personality Inventory assessed the academic motivation of persisters and withdrawers in a systematic way. The scales which were administered to the students before entering college were Thinking Introversion, measuring preference for reflective and abstract thinking; Complexity, measuring extent of intellectual curiosity and tolerance for ambiguity; and Nonauthoritarianism, measuring tendency toward independent, unbiased, open and flexible thinking. These authors found that the persisting men and women scored significantly higher on the Thinking Introversion and Non-authoritarianism scales; whereas the Complexity scale did not distinguish between persisters and withdrawers. Trent and Medsker also found that the persisters entered college with considerably more intent than the withdrawers to attend

and graduate; in addition, they were more selective in choosing their colleges and saw more reasons for attending. These authors also suggested that there are strong indications that the academic orientation necessary for successful completion of college is extensively derived from very early family environment and beginning school experiences. The significance of the home environment has been discussed earlier in this chapter.

Astin (1975) also reported students' degree aspirations to be related to college persistence and attrition. He illustrated the relative importance of degree plans by contrasting the regression weights of various degrees in terms of what they added to the student's estimated probability of dropping out. For men, Astin found that aspiring to a master's degree rather than a doctoral or professional degree added about five per cent to the chances of dropping out; aspiring to a bachelor's degree added another seven per cent and aspiring to "other" degrees added another twelve per cent. A somewhat different pattern was found for women, inasmuch as aspiring to a bachelor's rather than a doctoral or professional degree added only about four per cent to the dropout chances and aspiring to a master's degree was associated with a lower probability of dropping out than aspiring to a doctorate or professional degree. Astin's results, therefore, seem to indicate the significance of educational aspirations; however, they also point to the

value of differentiating between sexes.

Reed (1968) investigated eight student motivational variables in an exploratory study using freshmen from a women's college. This author did not include an item referring explicitly to the individual's degree aspirations, so comparison to Astin's findings is somewhat difficult. The student motivational variables which Reed selected for investigation were as follows: meaningfulness of daily college tasks, relevance of college to the student's future goals, warmth of interpersonal relations, academic challenge, importance of grades, college's implementation of selected educational objectives, college's concern for the individual, field of interest, and some additional items. Although the instrument used by Reed was not a sophisticated one, a chi-square analysis found eight items to be predictive of voluntary dropouts. Three of the significant items were for the variable "relevance of college to future goals," referring to the student's long range goals and his evaluation of present college attendance as an effective means of attainment; two items were for the variable "warmth of interpersonal relations," referring to the student's assessment of the warmth of interpersonal relations within the college community. The three additional items which predicted attrition were as follows: "my academic work at this college makes more demands on my time than I had anticipated," "completion of my college education is of importance

to my parents," and "I become bored and restless at this college." In Reed's study two aspects of his methodology are important to note; in the first place, he is investigating only a female sample, and secondly, his measurement of motivational variables is done with an exploratory instrument and at the end of the freshman year, rather than at the beginning as in other studies of this nature.

A fourth study (DeVecchio, 1970) found that non-returning students intended to complete fewer years of college than returning students, thus reaffirming the conclusions drawn by Astin. In addition, non-returning students earned significantly lower scores than returning students on an Academic Motivation scale based on students' responses to a group of questions concerning their attitudes toward college and study habits. Interestingly, this author included the Thinking Introversion and Complexity scales of the Omnibus Personality Inventory in his study, as in the Trent and Medsker study, but did not find significant differences between returning and non-returning students on these scales. However, it should be noted that the students in DeVecchio's study were freshmen from a public community college, not from a university.

Hackman and Dysinger (1970) reported that they were able to differentiate meaningfully between persisters and three types of withdrawals on the basis of pre-college data. The "commitment-relevant variables" which their

study found to be significant were as follows: plans to continue at present college, earliness of decision to attend college, parents' perception of importance of college work for student's future, and parents' perceptions of student's commitment to higher education. Interestingly, in their study the reported highest level of education planned by student or expected from parent was not found to be significantly different for persisters. Hackman and Dysinger did conclude that the commitment of a student and his parents to obtaining a college education, as measured before actual enrollment in college, significantly related to whether or not the student persisted beyond his freshman year.

In summary, the evidence from studies of motivational factors related to attrition indicates that inclusion of these types of variables is important in attempts to understand the dropout phenomenon. There has been considerable variability in the past in the manner of investigating motivational variables. Measures of motivation have included items from academic challenge to importance of college to parents. Such variability is also evident in research into personality characteristics related to attrition, as will become more apparent in the following pages.

For the purposes of this review, the studies will be categorized according to the nature of their findings, that is, in terms of six personality characteristics frequently

found to discriminate dropouts from nondropouts.

Nonconformity, as reflected on the Conformity scale of the Minnesota Counseling Inventory, was found by Brown (1960) to be highest for male dropouts from one institution and highest for female dropouts from another institution.

Johnson (1970) also found mean differences on the Conformity scale, as well as on the Family Relationship scale between persisters and non-persisters. Barger and Hall (1964) found that students who score high on the Pd or Ma scales of the Minnesota Multiphasic Personality Inventory more frequently perform poorly or drop out of college than is the case for the average student. Morgan's (1974) study of an all-male population found that Nonconformity, as measured by this scale on the Omnibus Personality Inventory, was related to attrition. The work of Trent and Medsker (1968), however, sheds a different light on the issue of student conformity. Their description of the persisting student, based on a higher score on the Nonauthoritarianism scale, was of an individual who is generally flexible and realistic in his relationships, unromantic and uncynical, tolerant, objective, and free of dependency on rules or rituals for dealing with ideas, objects and people. This description seems to contradict previous descriptions of persisters as being conforming individuals.

It becomes evident that considerable overlap occurs when attempts are made to categorize personality characteristics.

In spite of this overlap, further consideration must be given to Morgan's study. Morgan found that the Nonauthoritarianism scale of the O.P.I. was related to attrition; that is, individuals who scored high on this scale were least likely to persist. These findings contradict the findings of Trent and Medsker. Another study using the Omnibus Personality Inventory (Hannah, 1971) did not report differences between stay-ins and dropouts on either the Nonconformity or the Nonauthoritarianism scales; those scales which were found to differentiate between stay-ins and dropouts were Complexity, Impulse Expression, Personal Integration, Anxiety Level, Altruism, Response Bias. The nature of the sample studied by these authors must be considered in the interpretation and generalization of their findings; the 2,874 students were all from 13 small private colleges in the United States.

Impulsivity is a third personality characteristic which has been related to attrition in more than one study. Vaughan (1968) in his attempt to differentiate between dismissals and voluntary withdrawals found that the former were more likely to be impulsive, overly active, and restless, and lacked deep emotional commitment, as reflected on the Pd scale of the M.M.P.I. The student who withdrew for non-academic reasons did not manifest these characteristics to a degree significantly in excess of the persisting student. Vaughan emphasized the importance of distinguishing

between academic dismissals and voluntary withdrawals. Although Astin (1964) did not make this distinction, his study of 6,660 high aptitude students tended to confirm that dropouts were more impulsive than nondropouts. On the California Personality Inventory, dropouts tended to score lower than nondropouts on the Self Control scale, and to be more aloof, self-centered and assertive. A smaller, more recent study by Maudal, Butcher, and Mauger (1974) using the Personality Research Form and the Minnesota Multiphasic Personality Inventory tends to confirm Astin's findings. Maudal et al. divided their sample into persisters, dropouts and transfers. Their findings suggested that persisters were students who aspired to accomplish difficult tasks, were able to work toward distant goals, did not particularly seek out or enjoy exciting activities, and tended to be more inwardly inclined than their dropout counterparts. On the other hand, students who dropped out exhibited a relatively greater enjoyment of new and different experiences and adapted more readily to changes in the environment; they were described as being spontaneous, impetuous, and impulsive, but also requiring sympathy and reassurance from others and feeling alienated and singled out if reassurance was not forthcoming. Transfers had the lowest mean scores among the groups on Social Introversion and Needs for Harmavoidance and Achievement, and were about the same as dropouts on Need for impulsivity. In cross-

validation, personality variables were found to be more important predictors in the case of transfers than dropouts, whereas for the latter group academic variables were better predictors. This latter finding suggests that excluding transfers from the sample of dropouts provides a clearer understanding of apparent personality differences. With regard to impulsivity, however, the two groups, transfers and dropouts, were basically the same. Thus, despite the apparent commonality of the investigations of Astin, of Vaughan, and of Mauger et al., there are definite methodological differences which place limitations on the interpretation of the findings.

As well as nonauthoritarianism, nonconformity and impulsivity, Social Extraversion has been found to relate to attrition. Studies which have examined this variable will be discussed next.

In DeVecchio's (1972) study of non-returning community college freshmen, the Social Extraversion scale of the Omnibus Personality Inventory was found to be significantly higher for non-returning students than for returning students. Again the nature of the sample is noteworthy; perhaps the motivations and dispositions of the individual who attends a community college are not comparable to those of an individual who attends a university. Corfield and Ogston (1973) studied freshmen students at the University of Calgary and found that students who continued to second year without

change and those who withdrew but returned the following year were found to have significantly lower extraversion scores than those who withdrew during their freshman year. These results tend to confirm DeVecchio's findings in a university setting, supporting the notion that dropouts tend to be more socially extraverted. Another study using a college sample, though all female, (Swisdak & Flaherty, 1964) found the Socialization scale of the California Personality Inventory to be a good predictor of potential dropouts. One limitation of this study was the small sample size; another limitation was the fact that significant differences were only at the .10 level.

The fifth personality characteristic which has recurred in various investigations of attrition has been independence; the results of these investigations, however, have been quite inconsistent. Trent and Medsker reported that their group of persisters tended to be more self-reliant and autonomous than the withdrawals. Rossman and Kirk (1970), however, found the opposite to be true; that is, voluntary withdrawals were found to be more independent than persisters, failures or withdrawal-returnees. These findings were supported in a study by Bean and Covert (1973) where a measure of independence was found to differentiate persisters and withdrawals for the females in the sample. These studies by Rossman and Kirk, and by Bean and Covert, both emphasize the importance of differentiating between dismissals or

academic failures and voluntary withdrawals; perhaps the fact that these withdrawals were leaving with good academic records is in part related to the finding that they were found to be more independent. It should be further noted that Bean and Covert did not find independence to be significantly related to withdrawal for the males in their sample; thus, the importance of classification by sex is reiterated.

The sixth personality characteristic to be discussed in this overview of dispositions showing a relationship to attrition is hostility. Rose and Elton (1966) investigated personality differences between students who withdrew from college within their first semester (Defaulters), students who persisted successfully through one year (Successful Persisters), students who persisted unsuccessfully through one year (Probation Persisters), and students who persisted successfully but voluntarily did not return for the second year (Dropouts). These authors reported that students who dropped out of college were significantly more hostile than students who persisted or defaulted; high scores on the Maladjustment and Hostility scales of the Rotter Incomplete Sentence Blank and a low score on the Scholarly Orientation scale of the Omnibus Personality Inventory appeared to interact to differentiate the Dropout from the Persister. A second study (Chambers, Barger, and Lieberman, 1965) using a different personality measure, the "Picture

Identification Test," found dropouts to be more aggressive than survivors. The definition of dropouts used by these latter authors, however, does not isolate those students who were succeeding from those who were failing when they left the university. Thus, the extent to which the results from the Rose and Elton study can be considered as supported by the findings of Chambers et al. becomes questionable.

In summary, the findings of investigations into the personality and motivational characteristics of the university dropout have displayed considerable overlap and inconsistency. In spite of the nature of the results, certain trends become apparent, some of which tend to confirm certain psychological interpretations suggested in the theoretical perspective. For instance, a profile of the dropout as being unmotivated, nonconforming, impulsive and hostile would tend to corroborate the psychological formulations of the causes of underachievement proposed by Bricklin and Bricklin. Dropouts high in impulsivity and nonconformity might also fall into the Pervin et al. description of attributes of creative individuals. The motivational factors also come into consideration when one examines the importance of the individual's relationships to his academic and family environments. Undoubtedly, understanding the dropout is a multi-faceted and complex issue, not simplified by the variations in approaches to the examination. The next section will summarize specific criticisms of the methodological

limitations of the research in the area of university dropouts.

Methodological Criticisms

In summary, there are three major factors which render extremely difficult the comparison and confirmation of results of dropout research. The first factor is the nature of the sample studied. Institutions vary from private to community colleges; some samples are all male, some are all female.

Secondly, the criteria used for classifying the sample display large differences. Whether attempts are made to isolate transferring students from those who are dismissed for academic reasons, or to distinguish between withdrawals who are succeeding and those who are beginning to fail, seems to depend upon the researcher.

Thirdly, although some replication and generalization is possible in the area of personality factors related to attrition, there has been a considerable number of different measures used to evaluate these characteristics.

Thus, those attributes which characterize the university dropout remain quite unclear. The necessity exists for a multivariate approach to the phenomenon in order to permit the isolation of independent effects of various factors on attrition.

Having established the theoretical and experimental background, the problems posed by the present study can be

formulated in terms of the hypotheses being stated in null form.

General Null Hypothesis

There is no significant difference in ability, or in demographic or personality factors among Nondropouts (ND's), Failing Dropouts (FD's), and Dropouts (D's), between males and females, nor between Arts and Science students.

Specific Null Hypotheses

1. There is no significant difference in mean scholastic aptitude scores among ND's, FD's and D's, between males and females, nor between Arts and Science students.

2. There is no significant difference in the Admissions Averages among ND's, FD's and D's, between males and females, nor between Arts and Science students.

3. There is no significant difference in age among ND's, FD's and D's, between males and females, nor between Arts and Science students.

4. There is no significant difference in the means of the Responsibility scale of the Gordon Personal Profile (GPP) among ND's, FD's and D's, between males and females, nor between Arts and Science students.

5. There is no significant difference in the means of the Ascendancy scale of the GPP among ND's, FD's and D's, between males and females, nor between Arts and Science students.

6. There is no significant difference in the means

of the Emotionality scale of the GPP among ND's, FD's and D's, between males and females, nor between Arts and Science students.

7. There is no significant difference in the means of the Sociability scale of the GPP among ND's, FD's and D's, between males and females, nor between Arts and Science students.

8. There is no significant difference in the means of the Cautiousness scale of the Gordon Personal Inventory (GPI) among ND's, FD's and D's, between males and females, nor between Arts and Science students.

9. There is no significant difference in the means of the Original Thinking scale of the GPI among ND's, FD's, and D's, between males and females, nor between Arts and Science students.

10. There is no significant difference in the means of the Personal Relations scale of the GPI among ND's, FD's and D's, between males and females, nor between Arts and Science students.

11. There is no significant difference in the means of the Vigor scale of the GPI among ND's, FD's and D's, between males and females, nor between Arts and Science students.

12. A. There is no significant association between dropout status and the frequency of certain responses on the demographic items, i.e., language, family income,

scholastic attainment of father, and main reason for attending university.

B. There is no significant association between dropout status and the frequency of certain responses on the demographic items, i.e., language, family income, scholastic attainment of father, and main reason for attending university, when the faculty of the student is taken into consideration.

C. There is no significant association between dropout status and the frequency of certain responses on the demographic items, i.e., language, family income, scholastic attainment of father, and main reason for attending university, when the sex of the student is taken into consideration.

Method

This chapter presents the setting, the instruments, the selection procedure, and the statistical analyses that were used in this study.

Setting

The University of Ottawa Counselling Service (UOCS) conducted an Orientation Testing Programme (OTP) in September of each year since 1966, in order to gather information regarding freshmen entering the University of Ottawa. Specially developed biographical questionnaires and standardized psychological tests were administered in English or French to the participants. Computerized records of this information has been kept by the UOCS through the University of Ottawa Computing Center.

Instruments

From the biographical questionnaire used in the OTP, the five following items were selected: sex, mother tongue, total family income, scholastic attainment of father, and main reason for attending university. These items are further described in Appendix A.

With regard to the variables reflecting socioeconomic status, consideration was given to quantifying this

information through the use of transformation scales (Blishen, 1967; Pineo and Porter, 1967). However, the questionnaire data was not sufficiently elaborate to provide the required information. Thus, it was decided that the items reflecting total family income and father's scholastic attainment would provide the data most relevant to the study of dropouts.

The Otis Self-Administering Test of Mental Ability, Higher Form A, consists of 75 items made up of antonyms, synonyms, arithmetic problems, general information, syllogisms, analogies, proverbs and directions. The higher form is designed for use with high school students and college freshmen and has been used extensively at the UOCS for educational and vocational counselling.

The measures of personality characteristics used in the OTP at the UOCS were the Gordon Personal Profile (GPP), consisting of four scales as described in Appendix B, and the Gordon Personal Inventory (GPI), consisting of four scales as described in Appendix C. The GPP has been found to contain scales which contribute to factor traits significant in predicting college achievement (Smith, 1959). But Smith does not consider students who dropped out of university. A study by Willingham (1958) looked at dropouts from a Naval Air Training Program, and did not find the scales of the GPP to be valid. The question arises, then, as to whether the scales of the GPP would differentiate

between university dropouts and nondropouts. In addition, are any of the scales of the GPI useful in differentiating between those who drop out of and those who remain at the University of Ottawa?

Participants

The participants in this study were 397 University of Ottawa undergraduate students who:

1. participated in the OTP between September 1969 and September 1973 inclusively;
2. indicated their University of Ottawa Student Identification Number (UOSN);
3. reported on the Questionnaire that they were registered in the first year of a programme in the Faculty of Arts or the Faculty of Pure and Applied Sciences;
4. reported on the Questionnaire their sex, mother tongue, family income, father's education, and their main reason for attending university;
5. completed the Otis Test of Mental ability, Form A;
6. completed the Gordon Personal Profile and the Gordon Personal Inventory; and,
7. were included in the files (active or inactive) of academic records in the University of Ottawa Registrar's Office.

Students participating in the OTP during other years were disregarded because the information required did not appear consistently from year to year.

First year students were chosen because they were more in need of accurate prediction than other groups, and because the dropout phenomenon is of most relevance to this group.

The Faculties of Arts and Science were chosen because they had the largest enrolment. Thus, students who registered in faculties or schools other than Arts or Science were disregarded.

Selection Procedure

In view of the fact that the necessary data was not all available from the same source, several steps were involved in gathering the required information.

Step one. Lists of names and UOSN of first-year students who had formally withdrawn from the Faculties of Arts and Science in the academic years 1969-70 to 1973-74 inclusively were obtained from the Registrar's office.

Step two. These lists were matched with lists of students who participated in the OTP between the years 1969 and 1973 inclusively.

Step three. Of those participants remaining after the removal of the group of Dropouts, a random sample of first-year Arts and Science students (Nondropouts) were selected from the UOCS computerized records. For the two groups (Dropouts and Nondropouts), information regarding sex, language, family income, father's education, and main

reason for attending university was retrieved from the UOCS computerized records.

Step four. The transcripts of all the participants were retrieved from the files of the Registrar's Office. The age and admissions average of each of the participants were recorded, where available, from the transcript.

Step five. The transcripts of the Dropout group were examined individually to determine the presence or absence of failures on the academic record. Those students whose records revealed one or more course failures were separated and labelled Failing Dropouts; those whose records revealed no failures were labelled Dropouts.

Step six. The transcripts of the group of Nondropouts were examined individually to determine if the students met the definition of Nondropout; that is, if they continued with their academic programme for the appropriate period of time.

These steps resulted in three groups of students: 188 Nondropouts; 194 Dropouts; and, 15 Failing Dropouts eligible for analysis (see Table 1). Using the UOSN, the age and admissions average were merged with the other pertinent data from the UOCS records.

Statistical Analysis

In this section, the statistical procedures used to analyze the data will be described.

1. To test hypotheses 1 to 11, a 3-factor 2 X 2 X 2

Table 1
Frequency Distribution of the Dropout Variable

Dropout Status	N	Percentage
Nondropout (ND)	188	47.4
Dropout (D)	194	48.9
Failing Dropout (FD)	<u>15</u>	<u>3.8</u>
Total	397	100.0

Note: For the multivariate analysis of variance, there were only 216 students with complete sets of data.

multivariate analysis of variance was used to determine the difference between groups (ND's vs. D's, males vs. females, and Arts students vs. Science students) on the 11 quantitative predictors. (Although it was originally planned to have a group of subjects in the FD category, only 3.8%, or 15 students, qualified for this category. Therefore, as suggested in the thesis proposal seminar, the FD category was combined with the Dropout category. All tests of the hypotheses were computed using only two categories of dropout status.) The multivariate analysis of variance provided a multivariate F -ratio which indicated the differences between each of the two groups (ND's vs. D's, males vs. females, Arts students vs. Science students) taking into consideration the 11 predictors simultaneously. In addition, the multivariate analysis of variance programme provided univariate F -ratios which indicated which of the 11 variables taken alone differentiated the levels of each factor. Using those variables found in the multivariate analysis of variance to differentiate the levels of any of the three factors, a discriminant function analysis was computed to determine the optimal combination of variables which discriminated between the two levels of dropout status.

2. To test hypothesis 12a, b, and c, a Chi-square analysis was used on the qualitative variables to determine whether there was a relationship between dropout status and language, between dropout status and father's education,

between dropout status and family income, and between dropout status and main reason for attending university, for (1) all subjects, (2) Arts students only, (3) Science students only, (4) males only, and (5) females only. The Cramer's V statistic was used to measure the strength of those relationships which were found to be significant.

For statistical significance, it was decided to accept the .01 level of probability in all cases where significance was tested. The results of these analyses are presented in the next chapter.

Results

The present chapter presents the results of the analyses performed on the data. The first section describes the testing of the first 11 hypotheses, and the second section describes the testing of the 12th hypothesis.

1. A multivariate analysis of variance was used to test the first 11 hypotheses simultaneously. Table 2 presents the means for the 11 dependent (predictor) quantitative variables. Table 3 presents the results of the multivariate analysis of variance. It can be seen that the overall difference between dropout and non-dropout status, as measured by the 11 dependent variables, was not statistically significant (Multivariate F -ratio=.66, $df=11,208$, $p < .78$). Therefore, in general, hypotheses 1 to 11 cannot be rejected for the dropout status factor.

The results further indicated that the overall difference between Arts and Science students, as measured by the 11 dependent variables, was statistically significant (Multivariate F -ratio=2.62, $df=11,198$, $p < .004$). Therefore, with regard to Arts and Science comparisons, there were indications of overall differences in the 11 dependent variables. Specifically, the univariate F -ratio ($F=8.55$, $df=1,208$, $p < .004$) for differences in I.Q. score as

Table 2
Means of the Quantitative Dependent Variables

	Nondropout				Dropout			
	Arts		Science		Arts		Science	
	M	F	M	F	M	F	M	F
Age	19.14	18.39	19.00	18.75	18.91	18.16	19.30	19.00
HS Grade	68.32	70.78	71.15	74.15	66.87	71.30	68.58	68.58
Otis IQ	116.39	114.05	120.24	123.75	114.91	115.48	116.90	128.20
Ascendancy	19.91	16.92	20.05	16.50	20.72	20.55	19.13	20.20
Responsibility	21.80	21.97	25.00	23.00	21.14	23.10	22.93	21.60
Emotional Stability	20.43	20.29	24.90	22.00	21.51	21.94	21.83	19.20
Sociability	19.73	18.66	18.33	19.50	20.77	20.90	18.40	23.80
Cautiousness	21.45	22.76	25.14	25.25	21.00	23.68	24.57	19.20
Original Thinking	25.14	21.87	28.10	22.50	23.00	25.00	25.53	25.40
Personal Relations	20.93	22.03	22.33	23.50	20.40	23.52	22.80	22.20
Vigor	23.41	22.82	25.05	23.00	23.74	23.58	23.40	26.00

Table 3

Factor 1 (Dropout Status):
 Multivariate Analysis of Variance of Difference Between
 Nondropout and Dropout on 11 Dependent Variables

Dependent Variable	df		Multivariate F-ratio	Level of sign.
Combination of 11 dep.var.	11,198		0.66	p < .78
	MS	df	Univariate F-ratio	Level of sign.
Age	0.03	1,208	0.01	.90
HS Grade	90.15	1,208	2.39	.12
Otis IQ	6.98	1,208	0.07	.79
Ascendancy	115.62	1,208	3.43	.07
Responsibility	5.59	1,208	0.19	.66
Emotional Stability	4.76	1,208	0.14	.71
Sociability	81.44	1,208	2.08	.15
Cautiousness	0.84	1,208	0.02	.89
Original Thinking	0.36	1,208	0.01	.92
Personal Relations	6.09	1,208	0.16	.69
Vigor	2.20	1,208	0.07	.78

Table 3 (cont'd.)

Factor 2 (Faculty):
Multivariate Analysis of Variance of Difference Between
Arts and Science on 11 Dependent Variables

Dependent Variable		df	Multivariate F-ratio	Level of sign.
Combination of 11 dep. var.		11,198	2.62	p < .004
	MS	df	Univariate F-ratio	Level of sign.
Age	8.36	1,208	3.87	.051
HS Grade	34.12	1,208	0.90	.343
Otis IQ	799.52	1,208	8.55	.004
Ascendancy	4.62	1,208	0.14	.712
Responsibility	121.77	1,208	4.20	.042
Emotional Stability	122.60	1,208	3.50	.063
Sociability	65.23	1,208	1.66	.197
Cautiousness	229.52	1,208	5.42	.021
Original Thinking	273.69	1,208	7.90	.006
Personal Relations	46.65	1,208	1.22	.271
Vigor	24.85	1,208	0.85	.359

Table 3 (cont'd.)

Factor 3 (Sex):
Multivariate Analysis of Variance of Difference Between
Males and Females on 11 Dependent Variables

Dependent Variable		df	Multivariate F-ratio	Level of sign.
Combination of 11 dep. var.		11,198	2.82	p < .002
	MS	df	Univariate F-ratio	Level of sign.
Age	20.25	1,208	9.37	.003
HS Grade	422.21	1,208	11.17	.001
Otis I.Q.	10.90	1,208	0.17	.733
Ascendancy	112.73	1,208	3.34	.069
Responsibility	14.53	1,208	0.50	.480
Emotional Stability	6.70	1,208	0.19	.663
Sociability	1.20	1,208	0.03	.861
Cautiousness	58.39	1,208	1.38	.242
Original Thinking	55.44	1,208	1.60	.207
Personal Relations	138.47	1,208	3.62	.059
Vigor	2.73	1,208	0.09	.761

Table 3 (Cont'd.)
 Interactions of Factor 1 (Dropout Status)
 by Factor 2 (Faculty) by Factor 3 (Sex)

Interaction	df	Multivariate F-ratio	Level of Significance
Dropout Status by Faculty	11,198	0.85	$p < .59$
Dropout Status by Sex	11,198	1.29	$p < .23$
Faculty by Sex	11,198	1.47	$p < .15$
Dropout Status by Faculty by Sex	11.198	0.46	$p < .93$

measured by the Otis, indicated differences between the two faculties. That is, the faculty of Science students had a higher mean I.Q. (119.5) than the Arts students (115.2). The univariate F -ratio ($F=7.90$, $df=1,208$, $p<.006$) for differences in Original Thinking as measured by the G.P.I. indicated differences between the two faculties. That is, the faculty of Science students had a higher score (26.22) than the Arts students (23.72). This higher score could be interpreted to mean that the Science students in this sample are more intellectually curious, like to work on difficult problems, enjoy thought-provoking questions and discussions, and like to think about new ideas more than Arts students.

Two other dependent variables approached statistical significance in terms of being able to differentiate between the faculties of Arts and Science. With regard to Cautiousness, as measured by the G.P.I., the univariate F -ratio ($F=5.42$, $df=1,208$, $p<.03$) indicated that the Science students (24.37) were more cautious, considered matters more carefully before making decisions, and were less likely to take chances or run risks than the Arts students (22.09). The fourth dependent variable which showed some ability to differentiate between the two faculties was Responsibility, as measured by the G.P.P. ($F=4.20$, $df=1,208$, $p<.05$). That is, the Science students (23.55) indicated a higher ability to stick to tasks, to be persevering and determined, and to be relied on than did the Arts students (21.92).

The data analysis further indicated an overall significant difference between Male and Female subjects, as measured by the 11 dependent variables (Multivariate F -ratio=2.82, $df=11,198$, $p<.002$). Therefore, with regard to comparisons between male and female subjects, there were indications of overall differences in the 11 dependent variables. Specifically, the univariate F -ratio ($F=11.17$, $df=1,208$, $p<.001$) for differences in High School Average, indicated that the female subjects (71.02) had higher Admissions averages than did the male subjects (68.35). In addition, the univariate F -ratio ($F=9.37$, $df=1,208$, $p<.002$) for differences in age revealed a sex difference. That is, male subjects were found to be older (19.08) than were the female subjects (18.36).

There were no statistically significant interactions between the three independent variables.

To summarize this section, the data analysis does not enable rejection of hypotheses 1 to 11 for dropout status. That is, when the Dropout group was compared with the Non-dropout group, there were no differences in I.Q. score, Admissions Averages, age, in the means of the scales of the G.P.P. (Responsibility, Ascendancy, Emotionality, Sociability), or in the means of the scales of the G.P.I. (Cautiousness, Original Thinking, Personal Relations, Vigor). With regard to faculty differences, null hypotheses 1 and 9 were rejected. That is, there were significant differences

in I.Q. score and in the Original Thinking scale, with Science students scoring higher than Arts students on both. Finally, with regard to male and female differences, hypotheses 2 and 3 were rejected. That is, females had higher Admissions Averages than males, and males were older than the females.

A subsequent discriminant function analysis was conducted to supplement the statistical tests of the multivariate analysis of variance. It was found that discrimination between Nondropouts and Dropouts was not possible on the basis of the predictor variables used. An attempted classification procedure resulted in approximately chance accuracy; approximately 50 per cent were correctly classified, while approximately 50 per cent were incorrectly classified.

2. Hypothesis 12a, b, and c were tested by the use of Chi-square analyses. Hypothesis 12a states that there is no significant association between dropout status and the frequency of certain responses on the demographic items, i.e. language, family income, father's education, and main reason for attending university. Table 1 in Appendix D presents the frequency distribution of dropout status and mother tongue. The Chi-square for the association between dropout status and mother tongue was 0.43805 ($df=2$, $p < .80$). Therefore, there was no association between dropout status and mother tongue. In Appendix D, Table 2 presents the

frequency distribution of dropout status and family income. The Chi-square for the association between dropout status and family income was 10.882 ($df=6$, $p<.25$). There was, therefore, no significant association between dropout status and family income. Nor was an association found between dropout status and father's education ($\chi^2=10.362$, $df=7$, $p<.25$). Table 3 in Appendix D presents the frequency distribution for dropout status and father's education. There did, however, appear to be some association between dropout status and main reason for attending university ($\chi^2=24.293$, $df=13$, $p<.05$). Table 4 presents the frequency distribution of dropout status and main reason for attending university. Since the Chi-square statistic only gives the level of significance between two variables, a subsequent statistic, Cramer's V, was computed to measure the strength of association between the two variables. That is, the level of statistical significance indicated by the Chi-square statistic could be associated with a trivial relationship. A measure of strength of association, Cramer's V, would give some indication of the non-triviality of a significant Chi-square. The Cramer's V for the association between dropout status and main reason for attending university was 0.254. This means that 6 per cent of the variance of dropout status is accountable by knowledge of main reason for attending university. Thus, it may be concluded that there is virtually no real or substantial relationship between dropout status and

Table 4

Frequency Distribution of Dropout Status and
Main Reason for Attending University

Reason	Nondropout	Dropout	Total
1.	13 3.4	20 5.3	33 8.8
2.	76 20.2	82 21.8	158 41.9
3.	24 6.4	14 3.7	38 10.1
4.	0 0.0	2 0.5	2 0.5
5.	36 9.5	31 8.2	67 17.8
6.	2 0.5	3 0.8	5 1.3
7.	6 1.6	10 2.7	16 4.2
8.	0 0.0	1 0.3	1 0.3
9.	13 3.4	8 2.1	21 5.6
10.	0 0.0	6 1.6	6 1.6
11.	0 0.0	4 1.1	4 1.1
12.	9 2.4	10 2.7	19 5.0
13.	1 0.3	2 0.5	3 0.8
14.	4 1.1	0 0.0	4 1.1
Total	184 48.8	193 51.2	377 100.0

$\chi^2=24.29$, $df=13$, $p<.05$

62
main reason for attending university.

Hypothesis 12b states that there is no significant association between dropout status and the frequency of certain responses on the demographic items, i.e. language, family income, father's education, and main reason for attending university, when the student's faculty is taken into consideration. Using only the Arts students in the analysis, the Chi-square for the association between dropout status and language was 1.861 ($df=2$, $p<.5$); the Chi-square for the association between dropout status and family income was 5.776 ($df=6$, $p<.5$); the Chi-square for the association between dropout status and father's education was 7.134 ($df=7$, $p<.75$); and the Chi-square for the association between dropout status and main reason for attending university was 21.32 ($df=13$, $p<.10$). Tables 4, 5, 6, and 7 in Appendix D present the respective frequency distributions. For the Arts students in the sample, therefore, no association was found between dropout status and language, between dropout status and family income, between dropout status and father's education, nor between dropout status and main reason for attending university.

When only Science students were taken into consideration, no association was found between dropout status and language ($\chi^2=3.297$, $df=2$, $p<.25$), nor between dropout status and main reason for attending university ($\chi^2=9.467$, $df=11$, $p<.75$). Tables 8 and 9 in Appendix D present the frequency distributions. There was, however, a significant association

between dropout status and family income for Science students ($\chi^2=22.012$, $df=6$, $p<.005$). The Cramer's V for the association between dropout status and family income for Science students was 0.391; that is, 15 per cent of the variance of dropout status is accountable by knowledge of family income. Examination of Table 5 reveals that generally there was a higher proportion of dropouts whose family income was less than \$10,000, whereas there was a higher proportion of nondropouts whose family income was above \$10,000. This could be interpreted to mean that in the Science faculty, dropouts came from poorer families. Some association also appeared to exist between dropout status and father's education for Science students ($\chi^2=14.92$, $df=7$, $p<.05$); the Cramer's V for this association was 0.319. This means that 10 per cent of the variance of dropout status is accountable by knowledge of father's education for students in the Science faculty. Table 6 presents the frequency distribution.

In summary, hypothesis 12b cannot be rejected for Arts students in the sample, but can be rejected for the Science students, where an association was found to exist between dropout status and family income, and a moderate association was found between dropout status and father's education.

Hypothesis 12c states that there is no significant association between dropout status and the frequency of

Table 5

Frequency Distribution of Dropout Status and
Family Income for Science Students

Level	Nondropout	Dropout	Total
Less than \$3,000	$\begin{smallmatrix} 3 \\ 2.1 \end{smallmatrix}$	$\begin{smallmatrix} 3 \\ 2.1 \end{smallmatrix}$	$\begin{smallmatrix} 6 \\ 4.2 \end{smallmatrix}$
\$3,000 - 4,999	$\begin{smallmatrix} 3 \\ 2.1 \end{smallmatrix}$	$\begin{smallmatrix} 11 \\ 7.6 \end{smallmatrix}$	$\begin{smallmatrix} 14 \\ 9.7 \end{smallmatrix}$
\$5,000 - 9,999	$\begin{smallmatrix} 11 \\ 7.6 \end{smallmatrix}$	$\begin{smallmatrix} 32 \\ 22.2 \end{smallmatrix}$	$\begin{smallmatrix} 43 \\ 29.9 \end{smallmatrix}$
\$10,000 - 14,999	$\begin{smallmatrix} 21 \\ 14.6 \end{smallmatrix}$	$\begin{smallmatrix} 23 \\ 16.0 \end{smallmatrix}$	$\begin{smallmatrix} 44 \\ 30.6 \end{smallmatrix}$
\$15,000 - 19,999	$\begin{smallmatrix} 7 \\ 4.9 \end{smallmatrix}$	$\begin{smallmatrix} 8 \\ 5.6 \end{smallmatrix}$	$\begin{smallmatrix} 15 \\ 10.4 \end{smallmatrix}$
\$20,000 - 24,999	$\begin{smallmatrix} 10 \\ 6.9 \end{smallmatrix}$	$\begin{smallmatrix} 2 \\ 1.4 \end{smallmatrix}$	$\begin{smallmatrix} 12 \\ 8.3 \end{smallmatrix}$
More than \$25,000	$\begin{smallmatrix} 8 \\ 5.6 \end{smallmatrix}$	$\begin{smallmatrix} 2 \\ 1.4 \end{smallmatrix}$	$\begin{smallmatrix} 10 \\ 6.9 \end{smallmatrix}$
Total	$\begin{smallmatrix} 63 \\ 43.8 \end{smallmatrix}$	$\begin{smallmatrix} 81 \\ 56.2 \end{smallmatrix}$	$\begin{smallmatrix} 144 \\ 100.0 \end{smallmatrix}$

$$\chi^2=22.012, df=6, p<.005$$

Table 6
Frequency Distribution of Dropout Status and
Father's Education for Science Students

Level	Nondropout	Dropout	Total
1.	7 4.8	22 15.0	29 19.7
2.	6 4.1	8 5.4	14 9.5
3.	12 8.2	22 15.0	34 23.1
4.	5 3.4	8 5.4	13 8.8
5.	6 4.1	9 6.1	15 10.2
6.	4 2.7	5 3.4	9 6.1
7.	13 8.8	5 3.4	18 12.2
8.	10 6.8	5 3.4	15 10.2
Total	63 42.9	84 57.1	147 100.0

$\chi^2=14.92$, $df=7$, $p < .05$

certain responses on the demographic items, i.e. language, family income, father's education, and main reason for attending university, when the sex of the student is taken into consideration. Using only male students in the analysis, the Chi-square for the association between dropout status and language was 2.498 ($df=2$, $p < .50$); the Chi-square for the association between dropout status and family income was 11.390 ($df=6$, $p < .10$). Tables 10 and 11 in Appendix D present the frequency distributions. For the male students in the sample, therefore, no significant association was found to exist between dropout status and language, nor between dropout status and family income. However, a significant association was found between dropout status and father's education for male students ($\chi^2=19.701$, $df=7$, $p < .01$). Table 7 presents the frequency distribution. The Cramer's V for the association between dropout status and father's education for male students was 0.284; that is, 8 per cent of the variance of dropout status is accountable by knowledge of father's education for male students. Some association was also found to exist between dropout status and main reason for attending university for the male subjects ($\chi^2=22.32$, $df=12$, $p < .05$); Table 8 presents the frequency distribution. The Cramer's V for the association between dropout status and main reason for attending university was 0.302; that is, 9 per cent of the variance of dropout status is accountable by knowledge of attending university

Table 7
Frequency Distribution of Dropout Status and
Father's Education for Male Students

Level	Nondropout	Dropout	Total
1.	18 7.4	30 12.3	48 19.7
2.	14 5.7	14 5.7	28 11.5
3.	15 6.1	35 14.3	50 20.5
4.	12 4.9	21 8.6	33 13.5
5.	13 5.3	15 6.1	28 11.5
6.	10 4.1	8 3.3	18 7.4
7.	12 4.9	9 3.7	21 8.6
8.	15 6.1	3 1.2	18 7.4
Total	109 44.7	135 55.3	244 100.0

$\chi^2=19.701$, $df=7$, $p<.01$

Table 8

Frequency Distribution of Dropout Status and
Main Reason for Attending University for Male Subjects

Reason	Nondropout	Dropout	Total
1.	11 4.5	19 7.8	30 12.2
2.	45 18.4	49 20.0	94 38.4
3.	14 5.7	9 3.7	23 9.4
4.	0 0.0	2 0.8	2 0.8
5.	20 8.2	19 7.8	39 15.9
6.	0 0.0	3 1.2	3 1.2
7.	4 1.6	9 3.7	13 5.3
9.	10 4.1	7 2.9	17 6.9
10.	0 0.0	5 2.0	5 2.0
11.	0 0.0	4 1.6	4 1.6
12.	5 2.0	6 2.4	11 4.5
13.	0 0.0	1 0.4	1 0.4
14.	3 1.2	0 0.0	3 1.2
Total	112 45.7	133 54.3	245 100.0

$\chi^2=22.32$, $df=12$, $p<.05$

for the male subjects. Thus, it may be concluded that for the male subjects there is only a moderate relationship between dropout status and father's education, and between dropout status and main reason for attending university.

For the females in the sample, the Chi-square for the association between dropout status and language was 4.361 ($df=2$, $p<.25$); the Chi-square for the association between dropout status and family income was 9.358 ($df=6$, $p<.25$); the Chi-square for the association between dropout status and father's education was 8.245 ($df=7$, $p<.50$); and the Chi-square for the association between dropout status and main reason for attending university was 8.245 ($df=11$, $p<.75$). Tables 12, 13, 14, and 15 in Appendix D present the respective frequency distributions. It is evident, then, that for the female subjects, no significant association was found to exist between dropout status and language, between dropout status and family income, between dropout status and father's education, nor between dropout status and main reason for attending university.

To summarize this section, the data analysis does not enable rejection of hypothesis 12a, nor hypothesis 12c. However, hypothesis 12b was rejected. That is, when the faculty of the student was taken into consideration, there was a significant association between dropout status and family income.

In the following chapter, the results will be discussed in light of their implications.

Discussion

This chapter will first re-examine the objectives of the present study and summarize the outcome. Subsequent sections will discuss the limitations and sources of error, and offer suggestions for future research in the area of university dropouts.

The present study was designed to investigate selected characteristics of dropouts at the University of Ottawa in an attempt to enable prediction of those students who may be prone to dropping out. It was felt that a multivariate approach would permit the isolation of independent effects of several student characteristics on university attrition. The characteristics which were selected for examination were those related to scholastic ability and performance, demographic factors and personality traits. It was hoped that such an investigation would provide some confirmation and clarification of previous findings in the area of university dropouts, as related to the student population at the University of Ottawa.

The outcome of the statistical investigation of existing data on the above-described student characteristics did not provide definitive isolation of variables which would discriminate between those students who drop out of

university and those who do not.

The most significant finding was that for students in the faculty of Science, a relationship existed between family income and dropout status. That is, Science students who dropped out of the University of Ottawa came from poorer families, whereas those who persisted came from wealthier families.

Other findings in the present study reflected faculty and sex differences, independent of dropout status. Specifically, differences were found between Arts and Science students, the latter scoring higher on scholastic ability, as measured by the Otis Self-Administering Test of Mental Ability. In addition Science students obtained significantly higher scores than Arts students on the Original Thinking scale of the Gordon Personal Inventory. The interpretation of this latter finding was that the group of students from the Science faculty, more than Arts students, liked to work on difficult problems, were intellectually curious, enjoyed thought-provoking questions and discussions, and liked to think about new ideas.

The sex differences which were found to exist revealed that the females in the sample were of a younger age and had a higher admission average than did the males under investigation.

The following section will discuss the limitations of the present study as well as the possible sources of

error. The first consideration is of the instruments employed in data collection. The Otis Self-Administering Test of Mental Ability, the Gordon's Personal Profile, the Gordon's Personal Inventory, and the Biographical Questionnaire were chosen primarily because of their past and present implementation at the University of Ottawa Counselling Service. These specific measures of scholastic ability, demographic and personality factors had not previously been utilized in the exploration of student attrition. Their use in the present study was justified, it was felt, in view of the fact that they were considered to be valid measures of the variables under investigation. In addition, regarding the Otis, it was felt that a measure of intelligence at the time of university entrance would provide information comparable to that provided by college admissions tests, such as in the Chambers et al. (1965) study. Concerning the use of the GPP and the GPI, the scales have been demonstrated to be acceptably reliable, with split-half reliability coefficients of approximately .82. Although the scales used in the present study did not demonstrate personality differences between dropouts and nondropouts, it should be reiterated that previous investigations of personality characteristics have been quite contradictory and inconclusive, suggesting that the issue is a complex and multifaceted one. It is felt that one of the complicating

factors in formulating a personality profile of the university dropout is the classification of participants in the present study, to be considered next.

In defining the participants in the present investigation, attempts were made to isolate those dropouts who were failing at the time of withdrawal from those who were succeeding. A study by Suczek and Alfert (1966) reflected that dropouts who left in good standing had personality characteristics different from those who were failing; the dropouts in their study were asked to respond to a questionnaire from three to six months after their withdrawal. However, in the present study, collection of information regarding academic standing at the time of withdrawal was extremely difficult. At the outset it was felt that trying to obtain such information from the students themselves via questionnaire would be quite fruitless, in view of the fact that they had withdrawn from the university three to eight years previously. In addition, the academic records often did not reflect any grades for the student. Subsequently, only 15 students were found to be eligible for the Failing Dropout group. It is felt that the inability to separate the students on the basis of academic standing was the major limitation of the present study.

The third possible source of error to be considered is the selection procedure used in the data collection.

Although the information was considered to be accurate and representative, the fact that not all of the participants had complete sets of data reduced the number of subjects used in the multivariate analysis of variance to approximately 54% of the original sample. The remaining sample size was sufficiently large to permit a multivariate analysis of variance procedure; but possibly larger groups of dropouts and nondropouts would have displayed significant differences.

A fourth possibility to be considered is that the statistical analyses chosen might have been inappropriate. The use of multivariate analysis of variance for the quantitative variables was considered to be the best selection for the purposes of this type of investigation, namely to assess ~~the~~ effects of 11 variables simultaneously as well as independently. The Chi-square analyses and subsequent use of the Cramer's V statistic were thought to be the most appropriate in determining the significance of variables which were not quantitative.

In view of the above discussion of possible limitations, it is concluded that the sources of data for the present study were credible, and that, within the acceptable standards for research, the measures used were reliable and valid.

On the basis of the literature review as well as the data collection and analysis involved in the preparation

of this thesis, a number of suggestions for future investigation of university attrition are forthcoming.

In the first place, it is recommended that more thorough and systematic attempts be made at the time of the student's withdrawal to collect information as to his reason for leaving. Even for those students who neglect to complete a withdrawal form, some type of follow-up contact in the form of a questionnaire, personality assessment, or perhaps an exit interview, would be helpful in coming to a more complete understanding of the motives and concerns of those who drop out. It would seem that between the time of entrance to the University of Ottawa and the decision to withdraw, some change takes place. Further understanding of such a transition could lead to development of methods of preventing or coping with such a process.

Secondly, in view of differences noted in the present study between the faculties of Arts and Science, it is felt that further investigation might explore other faculties in order to provide a more complete awareness of factors which predispose a student to persistence in or withdrawal from a particular faculty.

Thirdly, exploration of other demographic characteristics of those students who withdraw, such as size of home town, participation in extracurricular activities (on or off campus), or involvement in part-time employment, is recommended.

A fourth issue which warrants further investigation is

the significance of high school average as a possible moderator variable. One method for examining this factor more closely would be to divide a sample of dropouts into those who had high admission averages, and those who had low admission averages. It would seem that having an extremely successful high school background would also relate to personality and demographic factors. Therefore, the extent to which high school average might enhance the predictive accuracy of such factors is worthy of further investigation.

In conclusion, although the topic under investigation offers considerable scope for further investigation and clarification, the findings of the present investigation could be considered to be valid and reliable.

Bibliography

- Appley, M.H. & Moeller, G. Conforming behavior and personality variables in college women. Journal of Abnormal and Social Psychology, 1963, 66, 284-290.
- Arbuckle, D.S. Self-ratings and test scores on two standardized personality inventories. Personnel and Guidance Journal, 1958, 37, 292-293.
- Ashbaugh, J., Levin, C., & Zaccaria, L. Persistence and the disadvantaged college students. Journal of Educational Research, 1973, 67 (2), 64-67.
- Astin, A.W. Personal and environmental factors associated with college dropouts among high aptitude students. Journal of Educational Psychology, 1964, 55, 219-227.
- Astin, A.W. Predicting Academic Performance in College. New York: The Free Press, 1971.
- Astin, A.W. Preventing Students from Dropping Out. San Fransisco: Jossey-Bass, Inc., 1975.
- Barger, B., & Hall, E. Personality patterns and achievement in college. Educational and Psychological Measurement, 1964, 24, 339-346.
- Barger, B., & Hall, E. Interaction of ability levels and socioeconomic variables in the prediction of college dropouts and grade achievement. Educational and Psychological Measurement, 1965, 25, 501-508.
- Bayer, A. The college dropout: factors affecting senior college completion. Sociology of Education, 1968, 41, 305-316.
- Bean, A.G. & Covert, R.W. Prediction of college persistence, withdrawal and academic dismissal: a discriminant analysis. Educational and Psychological Measurement, 1973, 33 (2), 407-411.
- Beyer, D.E. An analysis of selected intellectual and nonintellectual characteristics of dropouts and survivors in a private college. Dissertation Abstracts International, 1972, 32 (7-A), 3773-3774.

- Black, D.B. Methods of predicting freshman success, summary and evaluation. Alberta Journal of Educational Research, 1966, 12, 111-126.
- Blanchfield, W.C. College dropout identification: a case study. The Journal of Experimental Education, 1971, 40 (2), 1-4.
- Blishen, B.R. Socioeconomic index for occupations in Canada. Canadian Review of Sociology and Anthropology, 1967, 4 (1), 41-53.
- Bock, R.D., & Haggard, E.A. The use of multivariate analysis of variance in behavioral research in Whitla, W. (ed.), Handbook of Measurement in Education, Psychology and Sociology. Boston: Addison & Wesley, 1966.
- Bordeleau, J. et Gelineau, Guy L'Universite buissonniere, Montreal: Presses de l'Universite de Montreal, 1974.
- Braun, J.R. Stereotypes of the scientist as seen with the GPP and GPI. Journal of Psychology, 1962, 53, 453-455.
- Braun, J.R., Alexander, S., & Weiss, R. Relationship between the Gordon Personality Inventory and consensus of peer ratings. Psychological Reports, 1961, 2, 455.
- Bricklin, B. & Bricklin, P.M. Bright Child, Poor Grades: The Psychology of Underachievement. New York: Delacorte Press, 1967.
- Brooks, W., & Emery, L. College dropouts: a view from two schools. Canadian Counsellor, 1974, 8 (4), 146-151.
- Brown, F.G. Identifying college dropouts with the Minnesota Counseling Inventory. Personnel and Guidance Journal, 1960, 39, 280-282.
- Buros, O.K. (ed.) The Sixth Mental Measurements Yearbook. New Jersey: The Gryphon Press, 1965.
- Cangemi, J.P., & Coan, D.L. A clinical method for identifying potential dropouts. College Student Journal, 1973, 7 (1), 78-82.
- Chambers, J.L., Barger, B., & Lieberman, L.R. Need patterns and abilities of college dropouts. Educational and Psychological Measurement, 1965, 25 (2), 509-516.

- Cope, R.G. Are students more likely to drop out of large colleges? College Student Journal, 1972, 6 (2), 92-97.
- Cope, R.G., & Hannah, W. Revolving College Doors: the Causes and Consequences of Dropping Out, Stopping Out and Transferring. New York: Wiley, 1975.
- Corfield, V.K., & Ogston, D.G. Personality correlates of academic stability among university freshmen. Canadian Psychologist, 1973, 14 (3), 281-289.
- Cox, J.B. Six-year trends in undergraduate wastage: University of Birmingham educational survey. University of Birmingham, 1971.
- Cronbach, L.J. Essentials of Psychological Testing, Third Edition. New York: Harper & Row, 1970.
- Crookshanks, J.D., & Herman, A. Predictors of success and status of college students. Canadian Counsellor, 1975, 2 (2).
- De Vecchio, R.C. Characteristics of non-returning community college freshmen. Journal of College student Personnel, 1972, 13, 429-432.
- Dutt, L.E. Student persistence in college: an analysis. Dissertation Abstracts International, 1972, 32 (9-A), 4943.
- Florey, H.E. A study of the relationship between first semester freshmen and persistent students at the University of Alabama on selected perceptions, characteristics and attitudes. Dissertation Abstracts International, 1972, 32 (9-A), 4980.
- Goodyear, R.K. A review of psychologically oriented interventions for potential dropouts. Journal of Educational Research, 1973, 67 (2).
- Gordon, L.V. Gordon Personal Inventory: Manual. New York: Harcourt, Brace, & World, Inc., 1963.
- Gordon, L.V. Gordon Personal Profile: Manual. New York: Harcourt, Brace, & World, Inc., 1963.
- Goren, A.L. Facts and fiction about college dropouts: reflections of a college administrator, in Antiachievement: Perspectives on School Dropouts. Los Angeles, Western Psychological Services, 1970.

- Hackman, R. and Dysinger, W. Commitment to college as a factor in student attrition. Sociology of Education, 1970, 43, 311-324.
- Hannah, W. Personality differentials between lower division dropouts and stayins. Journal of College Student Personnel, 1971, 12, 16-19.
- Hanson, G.R., & Taylor, R.G. Interaction of ability and personality: another look at the dropout problem in an institute of technology. Journal of Counselling Psychology, 1970, 17, 540-545.
- Hays, W.L. Statistics For the Social Sciences. New York: Holt, Rinehart and Winston, Inc., 1973.
- Hoffman, P.W. A comparative study of student retention and attrition at Manchester College. Dissertation Abstracts International, 1971, 32 (2-A), 738.
- Horrocks, J.E. Assessment of Behavior: the Methodology and Content of Psychological Measurement. Ohio: C.E. Merrill Books, Inc., 1964.
- Iffert, R.E. Study of college retention and withdrawal. College and University, 1956, 31, 435-477.
- Ikenberry, S.O. Factors in college persistence. Journal of Counselling Psychology, 1961, 8, 322-329.
- Irvine, D.W. Multiple Prediction of College Graduation from Pre-Admission Data. The Journal of Experimental Education, 1966, 35, 84-89.
- Johansson, C.B., & Rossman, J.E. Persistence at a liberal arts college: a replicated, five-year longitudinal study. Journal of Counselling Psychology, 1973, 20 (1). 1-9.
- Johnson, D.E. Personality characteristics in relation to college persistence. Journal of Counselling Psychology, 1970, 17, 162-167.
- Knoell, D.M. A critical review of research on the college dropout in Pervin, L.A., Reik, L.E., & Dalrymple, W. (eds.). The College Dropout and the Utilization of Talent. Princeton: Princeton University Press, 1966, 63-81.
- Lee, D.C. Characteristics of Freshmen Entering the University of Ottawa, Ottawa: University of Ottawa Counselling Service, 1972.
- Marsh, L.M. College dropout: a review. Personnel and Guidance Journal, 1966, 44, 475-481.

- Maudal, G.R., Butcher, J.N., & Mauger, P.A. A multivariate study of personality and academic factors in college attrition. Journal of Counselling Psychology, 1974, 21 (6), 560-567.
- McIntosh, B.M., Wilson, L.N., & Lipinski, B.G. The extent and nature of student attrition in the first five years at Simon Fraser University. Canadian Counsellor, 1974, 8 (3), 163-174.
- Mehra, N. Retention and Withdrawal of University Students. The Canadian Administrator, November 1974, Vol. 14, No. 2.
- Morgan, M.K. Male university attrition: a discriminant analysis. Research in Higher Education, 1974, 2 (3), 281-289.
- Morrison, J.L. Why the disadvantaged dropout: the administrators' view. College Student Journal, 1973, 7 (2).
- Nicholi, A.M. Harvard dropouts: some psychiatric findings. American Journal of Psychiatry, 1967, 124, 651-657.
- Nichols, R.C. Nonintellective predictors of achievement in college. Educational and Psychological Measurement, 1966, 26, 899-915.
- Nie, N.H., Hull, C.H., Jenkins, J.G., Steinbrenner, K., & Bent, D.H. Statistical Package for the Social Sciences, Second Edition. New York: McGraw-Hill, Inc., 1975.
- Panos, R.J. & Astin, A.W. Attrition among college students. American Educational Research Journal, 1968, 5, 57-72.
- Pervin, L.A., Reik, L.E., & Dalrymple, W. (eds.) The College Dropout and the Utilization of Talent. Princeton: Princeton University Press, 1966.
- Pineo, P.C. & Porter, J. Occupational Prestige in Canada. The Canadian Review of Sociology and Anthropology, February 1967, Vol. 4 #1, p. 24-40.
- Reed, H.G. College students motivations related to voluntary dropout and over-achievement. Journal of Educational Research, 1968, 61 (9), 412-416.
- Rose, H.A., & Elton, C.F. Another look at the college dropout. Journal of Counselling Psychology, 1966, 13, 242-245.

- Rossmann, J.E., & Kirk, B.A. Factors related to persistence and withdrawal among university students. Journal of Counselling Psychology, 1970, 17 (1), 56-62.
- Sewell, W.H. & Shah, V.P. Parents' education and childrens' aspirations and achievements. American Sociological Review, 1968, 33, 191-209.
- Sewell, W.H. & Shah, V.P. Socioeconomic status intelligence and the attainment of higher education. Sociology of Education, 1967, 40, 1-23.
- Sexton, V.S. Factors contributing to attrition in college populations: 25 years of research. Journal of General Psychology, 1965, 72, 301-326.
- Smith, D.D. Traits and College achievement. Canadian Journal of Psychology, 1959, 13, 93-101.
- Spady, W.G. Dropouts from higher education: an interdisciplinary review and synthesis. Interchange, 1970, 1 (1), 64-85.
- Spady, W.G. Dropouts from higher education: toward an empirical model. Interchange, 1971, 2 (3), 38-62.
- Stagner, R. The relation of personality to academic aptitude and achievement. Journal of Educational Research, 1933, 26, 648-660.
- Stanfiel, J.D. Socioeconomic status as related to aptitude, attrition and achievement of college students. Sociology of Education, 1973, 46 (4), 480-488.
- Starr, A., Betz, E.L., & Menne, J. Differences in college student satisfaction: academic dropouts, nonacademic dropouts and nondropouts. Journal of Counselling Psychology, 1972, 19 (4), 318-322.
- Suczek, R.F. & Alfert, E. Personality characteristics of college dropouts. Berkeley: University of California Department of Psychiatry, Student Health Service, 1966.
- Summerskill, J. Dropouts from college in Sanford (ed.) The American College. New York: Wiley, 1962, 627-657.
- Swisdak, B. & Flaherty, S. A study of personality differences between college graduates and dropouts. The Journal of Psychology, 1964, 57, 25-28.

- Tinto, V. Dropout from higher education: a theoretical synthesis of recent research. Review of Educational Research, 1975, 45, 89-125.
- Trent, J.W. & Medsker, L.L. Beyond High School. San Francisco: Jossey Bass, 1968.
- Vaughan, R.P. College dropouts: dismissed versus withdrew. Personnel and Guidance Journal, 1968, 46, 685-689.
- Vorreyer, W.J. Relationship of selected adjustment factors, college ability and achievement to dropouts and non-dropouts of college freshmen. Journal of Educational Research, 1963, 56, 362-363.
- Waller, C. Research related to college persistence. College and University, 1964, 39, 281-294.
- Weiss, D.J. Factor analysis and counseling research. Journal of Counselling Psychology, 1970, 17 (5), 477-485.
- Willingham, W.W., Nelson, P., & O'Connor, W. A note on the behavioral validity of the Gordon Personal Profile. Journal of Consulting Psychology, 1958, 22, 378.
- Willingham, W.W., & Ambler, R.K. The relation of the GPI to several external criteria. Journal of Consulting Psychology, 1963, 27, 460.
- Winer, B.J. Statistical Principles in Experimental Design. New York: McGraw-Hill, 1971.
- Yoshino, I.R. College dropouts at the end of freshmen year. Journal of Educational Sociology, 1958, 32, 42-48.
- Zaccaria, L., & Creaser, J. Factors related to persistence in an urban commuter university. Journal of College Student Personnel, 1971, 12 (4), 286-291.

Appendix A

Items Selected from Biographical Questionnaire

A. Sex.....1. male

2. female

B. Mother tongue.....1. French

2. English

3. Other

C. Total family income (Father, mother, child who
contribute to the total family income).....

1. less than \$3,000

2. 3,000 - 4,999

3. 5,000 - 9,999

4. 10,000 - 14,999

5. 15,000 - 19,999

6. 20,000 - 24,999

7. 25,000 or more

D. Scholastic attainment of father.....

1. Primary school not completed

2. Primary school completed

3. High school not completed

4. High school completed

5. Post-secondary studies, not in a Uni-
versity (Normal School, Technological Training)

6. Incomplete University Studies

7. University Graduate (B.A., B.Sc., M.D.,
LL.B., B. Com.)

8. Graduate Studies (M.A., M.Sc., M.S.W., Ph.D.)

E. The following are various reasons for attending
university. Select the one most important reason for you.

1. To increase my earning power

2. To prepare for a career already chosen

3. To prepare for a career not yet chosen

4. To make friends

5. To increase my knowledge

6. To improve my social status

7. To make a better contribution to the
progress of the world

8. To find a suitable mate

9. To prepare myself for graduate studies

10. To develop further my appreciation of
the creative arts (Music, literature, etc.)

11. Did not know what else to do

12. To sharpen my thinking and reasoning
processes

13. My family wanted me to go to University

14. To acquire intellectual interests

Appendix B

Gordon Personal Profile

Description of Scales (Gordon, 1963)

Ascendancy

Those individuals who are verbally ascendant, who adopt an active role in the group, who are self-assured and assertive in relationships with others, and who tend to make independent decisions, score high on this Scale. Those who play a passive role in the group, who listen rather than talk, who lack self-confidence, who let others take the lead, and who tend to be overly dependent on others for advice, normally make low scores.

Responsibility

Individuals who are able to stick to any job assigned them, who are persevering and determined, and who can be relied on, score high on this Scale. Individuals who are unable to stick to tasks that do not interest them, and who tend to be flighty or irresponsible, usually make low scores.

Emotional Stability

High scores on this Scale are generally made by individuals who are well-balanced, emotionally stable, and relatively free from anxieties and nervous tension. Low scores are associated with excessive anxiety, hypersensitivity,

nervousness, and low frustration tolerance. Generally, a very low score reflects poor emotional balance.

Sociability

High scores are made by individuals who like to be with and work with people, and who are gregarious and sociable. Low scores reflect a lack of gregariousness, a general restriction in social contacts, and, in the extreme, an actual avoidance of social relationships.

Appendix C

Gordon Personal Inventory

Description of Scales (Gordon, 1963)

Cautiousness

Individuals who are highly cautious, who consider matters very carefully before making decisions, and do not like to take chances or run risks, score high on this Scale. Those who are impulsive, act on the spur of the moment, make hurried or snap decisions, enjoy taking chances, and seek excitement, score low on this Scale.

Original Thinking

High scoring individuals like to work on difficult problems, are intellectually curious, enjoy thought-provoking questions and discussions, and like to think about new ideas. Low scoring individuals dislike working on difficult or complicated problems, do not care about acquiring knowledge, and are not interested in thought-provoking questions or discussions.

Personal Relations

High scores are made by those individuals who have great faith and trust in people, and are tolerant, patient, and understanding. Low scores reflect a lack of trust or confidence in people, and a tendency to be critical of

others and to become annoyed or irritated by what others do.

Vigor

High scores on this Scale characterize individuals who are vigorous and energetic, who like to work and move rapidly, and who are able to accomplish more than the average person. Low scores are associated with low vitality or energy level, a preference for setting a slow pace, and a tendency to tire easily and be below average in terms of sheer output or productivity.

Appendix D

Table 1

Frequency Distribution of Dropout Status
and Mother Tongue

Language	Nondropout	Dropout	Total
French	106 27.4	120 31.0	226 58.4
English	72 18.6	71 18.3	143 37.0
Other	9 2.3	9 2.3	18 4.6
Total	187 48.3	200 51.7	387 100.0

$$\chi^2 = .4381, df=2, p < .90$$

Appendix D

Table 2

Frequency Distribution of Dropout Status and Family Income

Level	Nondropout	Dropout	Total
Less than \$3,000	5 1.4	7 1.9	12 3.3
3,000 - 4,999	18 4.9	19 5.1	37 10.0
5,000 - 9,999	48 13.0	63 17.1	111 30.1
10,000 - 14,999	47 12.7	53 14.4	100 27.1
15,000 - 19,999	21 5.7	27 7.3	48 13.0
20,000 - 24,999	21 5.7	12 3.2	33 8.9
More than 25,000	20 5.4	8 2.2	28
Total	180 48.8	189 51.2	369 100.0

 $\chi^2=10.882$, $df=6$, $p<.25$

Appendix D

Table 3

Frequency Distribution of Dropout Status and Father's Education

Level	Nondropout	Dropout	Total
1.	30 8.0	35 9.4	65 17.4
2.	21 5.6	19 5.1	40 10.7
3.	28 7.5	45 12.0	73 19.5
4.	22 5.9	31 8.3	53 14.2
5.	18 4.8	24 6.4	42 11.2
6.	12 3.2	11 2.9	23 6.1
7.	29 7.8	18 4.8	47 12.6
8.	19 5.1	12 3.2	31 8.3
Total	179 47.9	195 52.1	374 100.0

 $\chi^2=10.362$, df=7, $p<.25$

Table 4

Frequency Distribution of Dropout Status and
Mother Tongue for Arts Students

Language	Nondropout	Dropout	Total
French	71 30.6	63 27.2	134 57.8
English	46 19.8	47 20.3	93 40.1
Other	4 1.8	1 0.4	5 2.2
Total	121 52.2	111 47.9	232 100.0

$\chi^2=1.861$, $df=2$, $p<.50$

Table 5

Frequency Distribution of Dropout Status and
Family Income for Arts Students

Level	Nondropout	Dropout	Total
Less than \$3,000	2 0.9	4 1.8	6 2.7
\$3,000 - 4,999	15 6.8	8 3.7	23 10.4
\$5,000 - 9,999	37 16.7	30 13.6	67 30.2
\$10,000 - 14,999	26 11.7	28 12.7	54 24.3
\$15,000 - 19,999	14 6.3	19 8.6	33 14.9
\$20,000 - 24,999	11 5.0	10 4.5	21 9.5
\$25,000 & up	12 5.4	6 2.7	18 8.1
Total	117 52.7	105 47.3	222 100.0

$\chi^2=5.776$, $df=6$, $p<.50$

Table 6

Frequency Distribution of Dropout Status and
Father's Education for Arts Students

Level	Nondropout	Dropout	Total
1.	23 10.3	12 5.4	35 15.6
2.	15 6.7	11 4.9	26 11.6
3.	16 7.1	23 10.2	39 17.4
4.	17 7.6	22 9.8	39 17.4
5.	12 5.4	15 6.7	27 12.1
6.	8 3.6	6 2.6	14 6.3
7.	16 7.1	12 5.3	28 12.5
8.	9 4.0	7 3.1	16 7.1
Total	116 51.8	108 48.2	224 100.0

$\chi^2=7.134$, $df=7$, $p<.75$

Table 7

Frequency Distribution of Dropout Status and Main Reason for Attending University for Arts Students

Level	Nondropout	Dropout	Total
1.	6 2.7	9 4.0	15 6.7
2.	47 20.9	47 20.9	94 41.8
3.	18 8.0	7 3.1	25 11.1
4.	0 0.0	1 0.4	1 0.4
5.	24 10.7	19 8.4	43 19.1
6.	2 0.9	2 0.9	4 1.8
7.	2 0.9	0 0.0	2 0.9
8.	0 0.0	1 0.4	1 0.4
9.	8 3.6	5 2.2	13 5.8
10.	0 0.0	6 2.7	6 2.7
11.	0 0.0	2 0.9	2 0.9
12.	8 3.6	6 2.6	14 6.2
13.	1 0.4	1 0.4	2 0.9
14.	3 1.3	0 0.0	3 1.3
Total	119 52.9	116 47.1	225 100.0

$\chi^2=21.32$ $df=13$ $p<.10$

Table 8

Frequency Distribution of Dropout Status
and Language for Science Students

Language	Nondropout	Dropout	Total
French	35 23.0	56 36.8	91 59.9
English	26 17.1	22 14.5	48 31.6
Other	5 3.3	8 5.3	13 8.6
Total	66 43.4	86 56.5	152 100.0

$\chi^2=3.297$, $df=2$, $p<.25$

Table 9

Frequency Distribution of Dropout Status and Main Reason for Attending University for Science Students

Level	Nondropout	Dropout	Total
1.	7 4.7	10 6.7	17 11.4
2.	29 19.5	33 22.2	62 41.6
3.	6 4.0	7 4.7	13 8.7
4.	0 0.0	1 0.7	1 0.7
5.	12 8.1	12 8.1	24 16.1
6.	0 0.0	1 0.7	1 0.7
7.	4 2.7	10 6.7	14 9.4
9.	5 3.4	3 2.0	8 5.4
11.	0 0.0	2 1.3	2 1.3
12.	1 0.7	4 2.7	5 3.4
13.	0 0.0	1 0.7	1 0.7
14.	1 0.7	0 0.0	1 0.7
Total	65 43.6	84 56.4	149 100.0

$\chi^2=9.467$, $df=11$, $p<.75$

Table 10
Frequency Distribution of Dropout Status
and Language for Male Subjects

Language	Nondropout	Dropout	Total
French	66 26.1	90 35.6	156 61.7
English	43 17.0	40 15.8	83 32.8
Other	5 2.0	9 3.6	14 5.5
Total	114 45.1	139 54.9	253 100.0

$\chi^2=2.498$, $df=2$, $p<.50$

Table 11

Frequency Distribution of Dropout Status and
Family Income for Male Subjects

Level	Nondropout	Dropout	Total
Less than \$3,000	3 1.2	6 2.5	9 3.7
\$3,000 - 4,999	10 4.1	17 7.0	27 11.2
\$5,000 - 9,999	27 11.2	48 19.8	75 31.0
\$10,000 - 14,999	33 13.6	32 13.2	65 26.9
\$15,000 - 19,999	13 5.4	17 7.0	30 12.4
\$20,000 - 24,999	15 6.2	7 2.9	22 9.1
\$25,000 and up	9 3.7	5 2.1	14 5.8
Total	110 45.5	132 54.5	242 100.0

$\chi^2=11.390$, $df=6$, $p<.10$

Table 12

Frequency Distribution of Dropout Status and
Language for Female Subjects

Language	Nondropout	Dropout	Total
French	39 29.3	30 22.6	69 51.9
English	29 21.8	31 23.3	60 45.1
Other	4 3.0	0 0.0	4 3.0
Total	72 54.1	61 45.9	133 100.0

$\chi^2=4.361$, $df=2$, $p<.25$

Table 13

Frequency Distribution of Dropout Status and
Family Income for Female Subjects

Level	Nondropout	Dropout	Total
Less than \$3,000	2 1.6	1 0.8	3 2.4
\$3,000 - 4,999	8 6.3	2 1.6	10 7.9
\$5,000 - 9,999	21 16.7	15 11.9	36 28.6
\$10,000 - 14,999	14 11.1	21 16.7	35 27.8
\$15,000 - 19,999	8 6.3	10 7.9	18 14.3
\$20,000 - 24,999	6 4.8	5 4.0	11 8.7
\$25,000 and up	10 7.9	3 2.4	13 10.3
Total	69 54.8	57 45.3	126 100.0

$\chi^2=9.358$, $df=6$, $p<.25$

Table 14

Frequency Distribution of Dropout Status and
Father's Education for Female Subjects

Level	Nondropout	Dropout	Total
1.	12 9.3	5 3.9	17 13.2
2.	7 5.4	5 3.9	12 9.3
3.	13 10.1	10 7.8	23 17.8
4.	10 7.8	10 7.8	20 15.5
5.	5 3.9	9 7.0	14 10.9
6.	2 1.6	3 2.3	5 3.9
7.	16 12.4	9 7.0	25 19.4
8.	4 3.1	9 7.0	13 10.1
Total	69 53.5	60 46.5	129 100.0

$\chi^2=8.245$, $df=7$, $p<.50$

Table 15

Frequency Distribution of Dropout Status and
Main Reason for Attending University for Female Subjects

Level	Nondropout	Dropout	Total
1.	2 1.5	1 0.8	3 2.3
2.	31 23.7	33 25.2	64 48.9
3.	10 7.6	5 3.9	15 11.5
5.	16 12.2	12 9.2	28 21.4
6.	2 1.5	0 0.0	2 1.5
7.	2 1.5	1 0.8	3 2.3
8.	0 0.0	1 0.8	1 0.8
9.	3 2.3	1 0.8	4 3.1
10.	0 0.0	1 0.8	1 0.8
12.	3 2.3	4 3.1	7 5.3
13.	1 0.8	1 0.8	2 1.5
14.	1 0.8	0 0.0	1 0.8
Total	71 54.2	60 45.8	131 100.0

$\chi^2=8.245$, $df=11$, $p<.75$

Abstract

Previous research investigating university attrition has considered a wide variety of factors in relation to this phenomenon. The literature is criticized for the variability and inconsistencies which exist in the nature of the samples studied, the criteria for classification of dropouts, and the personality measures which have been used.

In the present study a 2 X 2 X 2 multivariate analysis of variance, testing the significance of 11 quantitative variables did not reflect significant differences between Nondropouts (n=107) and Dropouts (n=109); thus, these two groups did not differ in I.Q. score, admission averages, age, or personality characteristics. When dropout status was held constant, Females (n=78) were found to be lower than Males (n=138) in age and higher on admission average; Science students (n=60) were found to score higher than Arts students (n=156) on I.Q. score and on Original Thinking. Chi-square analyses for those variables which could not be considered in the multivariate analysis found an association to exist between dropout status (Nondropout=63, Dropout=81) and family income for students in the faculty of Science.

In conclusion, it was suggested that more systematic attempts be made in the future to collect information as

to students" reasons for withdrawing, that further investigation might explore other faculties, that other demographic variables be included, and that high school average be considered as a moderator variable in university dropout research.