

ADULT STUDENTS IN UNIVERSITY: LONG-TERM
PERSISTENCE TO DEGREE-COMPLETION

by

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ABSTRACT

Long-term persistence to degree completion by adult university students represents a different focus from most adult education participation research and higher education dropout research. Much of the research on adults in university has treated these adults as a new (non-traditional) group, despite evidence that many had been enrolled as traditional-age students. Samples limited to first-year students, part-time students, and students in special programs provide only a limited perspective on the whole population of adults in university.

It was hypothesized that adults who had been in university as traditional-age students and returned later (Re-entry studenty) would be more persistent to degree completion than adults who had enrolled for the first time at age twenty-five or older (Adult Entry students). While the hypothesis was not clearly supported, differences between the two groups were discovered.

Six hypotheses were generated from the literature on adult participation and on higher education dropouts. These were tested using bivariate analysis. The multivariate techniques of multiple regression and discriminant analysis were employed to examine differences between Re-entry students and Adult Entry students in persistence to degree completion.

The most important variable affecting Re-entry students' persistence was Grade Point Average; the most potent variable with Adult Entry students was work-related problems. With both groups, persistence was affected by satisfaction. Early-career mobility had an ambiguous effect; downward mobility in early career was associated with persistence by Adult Entry students; upward mobility correlated with persistence by Re-entry students.

A new typology of adult student in higher education is suggested. First-time students--new students who have never previously been enrolled--are a high-risk group (prone to dropout), but those who persist initially may become more persistent than Re-entry students.

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CHAPTER 1
BACKGROUND TO THE PROBLEM

Introduction

For the last two decades, there has been a considerable interest in adult students in colleges and universities in North America. There have been a number of studies of adult students beginning in the 1970s (summarized by Cross, 1981) and continuing in the 1980s (for example, Davila, 1985). There has been some excitement generated by the topic, as suggested by titles like The New Majority: Adult Learners in the University (D. Campbell, 1984) and Adult Learners: Key to the Nation's Future (Commission on Higher Education and the Adult Learner, 1984).

At least some of the interest in adult students is related to demographics. The age group which has traditionally supplied the university student population has declined as a proportion of the population, creating a problem for the institutions in enrollment and in support. This has generated two responses: looking to alternative "markets" such as adults, and attacking the dropout problem by attempting to retain a higher proportion of students, both traditional-age and adults.

Usually recruitment and retention are treated as separate problems. There is at best a peripheral mention of adults in dropout research and there is little consideration of persistence in studies of adults in university, where the emphasis is on attracting the adults in the first place. Persistence by adult students has seldom been studied specifically.

There is confusion about the adults in university, who are treated in many studies as if they were new to post-secondary education when, in fact, many are returnees who had been enrolled as traditional-age students. Also, there is some distortion due to research focusing on participation or on persistence, which has resulted in studies focused on different populations, in neither case representative of adult students in university. These two issues are discussed briefly in the following sections, preceding a statement of the problem which is the focus of the research reported in this study. The chapter concludes with a brief outline of the rest of the dissertation.

Adults in University: New Students or Not?

Some research indicates that adult students and traditional-age students (those aged 24 or less, many of whom would have enrolled immediately after high school) have similar motives for participation in higher education. This could lead to the response that the institutions do not have

to make any special adjustments for adult students (Solmon and Gordon, 1981). However, if it is true that adult students are mainly like traditional-age students and are, in fact, often returning former traditional-age students, this conclusion may be suspect. Universities may have to make considerable adjustments if new, different kinds of students are to be recruited. If the most persistent adult students are the returning students and not those who are genuinely new to higher education, this may be additional evidence that the process is not successful with different kinds of students.

In Canada, 37.4% of the students in post-secondary credit programs in 1984-85 were aged 25 and over. Students aged 25 or more made up 75% of part-time enrollment in credit programs, which had grown in Canada by 54.5% between 1975 and 1984, compared to a growth of 23.3% in full-time enrollment in the same period (Statistics Canada, 1986). In the United States, enrollment in post-secondary education decreased for the first time in over forty years in 1984, then increased in 1985 despite a prediction of further decrease by demographers. The increase has been attributed to attracting older, part-time students (Cross, 1987). Possibly, returning "stop-outs" may account for some of this increase in enrollments by adults (Smart and Pascarella, 1987).

Much of the speculative literature on adult students in higher education describes a population of students new to college or university--a second-chance, upwardly mobile group who had not previously enrolled in a higher education program. Empirical studies result in a different picture. Many (an increasing proportion in the 1970s) of these adult students were returnees who had had some previous post-secondary education (Picot, 1980). In the U.S., students aged 25 and over made up only 2% of new enrollments in 1980, but were over 38% of the total enrollment (Tinto, 1987). Certainly, many of the adult students in university are not new.

In this dissertation, adult students are defined as individuals twenty-five years of age and older, enrolled in degree programs. Definitions of adult students in adult education typically exclude full-time students; however, almost all individuals 25 and older would have qualified as adults in that they would have been, at least at one time, in productive roles other than student. An age definition is relatively simple and has been used frequently in research (examples in Cross, 1981); using age 25 as a demarcation is common (Davila, 1985), and while it may exclude some who should be considered as adult students, it is a fairly safe boundary for assuring that all included are indeed adults. The limitation to credit programs is

necessary because of the interest in long-term participation in programs not just courses.

Participation and Persistence

There is some definitional (or perhaps territorial) confusion about adult students. Part-time students are sometimes grouped with students in non-credit (often general interest) programs as being part of Continuing Education (D. Campbell, 1984). Yet adults are more likely to move back and forth between part-time and full-time status in credit programs than from non-credit to credit courses (J. Campbell, Henstchel, Rossi, and Spiro, 1984). Adult students in higher education may have more in common with traditional-age students in higher education than with students in other adult education programs.

Studies of adult post-secondary students tend to be limited to first-year students or students in special adult programs (Cross, 1981). These studies give a picture of adult students as a group more representative of the population at large than are traditional-age higher education students. Some other studies--for example, surveys of part-time students at all levels (Levy-Coughlin Partnership, 1981; Humphreys and Porter, 1978) give a different picture. These studies indicate that many of the adult students, and perhaps the most persistent and

successful, are not new to the system. However, these studies did not focus on persistence.

Studies of dropouts from higher education often involve only first-year students and seldom go beyond four or five years (Lenning, Beal, and Sauer, 1980). When the time frame is extended to ten years, it is found that many apparent dropouts eventually complete degrees at the same or a different institution (Eckland, 1964). Studies of adult students, using individuals at all levels not just first-year, would include some of the later graduates classified in other studies as dropouts. A greater proportion would not be identified as new to higher education.

Participation research is an emphasis in the literature of adult education (Darkenwald and Merriam, 1982), while the study of persistence vs. dropout is a focus of higher education (Lenning, Beal, and Sauer, 1980). The adult education emphasis leads to concentrating on the recruits or the new students in the programs, and can result in misrepresenting the population of adults in university. The higher education focus on the dropout decision frequently leads to putting too short a time frame on the research. The results in both instances are sample selections which are not representative of the population of adult students in university.

Statement of the Problem

The research reported here focuses on differences in persistence to degree completion between those adult students who have been traditional-age students and those who started in post-secondary education as adults. If previous experience in post-secondary education affects how individuals respond to the student role and if the quality of the experience affects persistence, then there should be significant differences between the two groups. The differences may be important for our understanding of adult students' persistence and attrition in higher education.

Looking at both full-time and part-time adults at all levels of undergraduate study and using a ten-year time frame should result in avoiding some of the gaps in previous research. The study combines the adult education emphasis on participation and the higher education emphasis on persistence. It looks both at adults who are new to higher education and those who have returned after stopping out, but were post-secondary students as pre-adults. Those who first enrolled at age 25 or older are classified as Adult Entry students; those who enrolled initially in post-secondary education at a younger age are classified as Re-entry students. An effort is made to analyze differences between these groups in terms of variables associated with persistence in research with traditional-age students, and

to assess the effects of the variables with adult students in general.

In addition to the theoretical interest, this knowledge should be of value to university administrators and adult educators interested in program and institutional growth and survival. It could also benefit the adult students themselves and their counsellors.

The Remaining Chapters

The next chapter, Chapter 2, is a review of the literature from three major sources: the adult education participation literature, higher education dropout studies, and the literature on adult participation in higher education, including the literature on marketing.

In Chapter 3, there is some further literature review. Two existing models, one of adult participation and one of university dropout, are analyzed in the process of developing the conceptual framework for this research. The chapter contains the definitions and hypotheses used in this study, and a model used to group the hypotheses. The emphasis is on the differences between adults who are new to higher education (Adult Entry) and those who had been students in postsecondary education as traditional-age students (Re-entry).

Chapter 4 outlines the research procedure followed. Records of adult students at Simon Fraser University in the

fall of 1973 were analyzed and a sample of younger male students was surveyed by mail, with a follow-up survey of some non-respondents by telephone. The chapter contains discussions of the questionnaire development and survey processes, as well as of the differences between respondents and non-respondents, compared on the basis of student records data.

In Chapters 5 and 6, the hypotheses from Chapter 3 are tested, using mainly the survey data with some information from student records. The hypotheses on background characteristics of students are tested in Chapter 5; Chapter 6 deals with hypotheses on the effects of the experience of being a student (participation factors). Data analyses in both chapters use mainly univariate and bivariate techniques.

Chapter 7 employs multivariate techniques--multiple regression and discriminant analysis--to analyze three groups, the full mail survey sample, and the Adult Entry and Re-entry subgroups of the mailed survey. Each of the three groups is analyzed separately, using both types of analysis.

In Chapter 8, the findings are summarized. A revision of the Adult Entry/Re-entry typology is suggested to account for some of the observed relationships and the results of testing some of the hypotheses. The limitations of this study, implications for administrators, and suggestions for further research are included in this final chapter.

CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

With the aging of the population of North America together with a decline in the size of the population of traditional age for attendance in university, it has become important both to keep as many as possible of the traditional-age students who enroll and to recruit individuals of non-traditional age as students.

The two resulting streams of research--dropout studies and adult participation studies--have been essentially separate until very recently. Dropout studies, mainly from higher education, have usually focused on full-time traditional-age students. Participation studies, mainly from adult education, have been more concerned with who the adults are and what they want than with what facilitates their persistence.

Adult education researchers tend to emphasize individual needs, and to downplay credit and credentials; higher education researchers generally emphasize institutional survival. However, it is worthwhile to combine the adult education and higher education perspectives and to include long-term considerations in a study of

dropout/persistence. Whichever perspective is taken, the student (individual) or institutional, understanding of long-term persistence should prove insightful.

This chapter examines four bodies of literature that are relevant to the subject of adult participation in higher education, from both the individual and the institutional perspective. First, there is a review of the literature from adult education on participation in educational programs in general and credit programs in particular. Second, the literature on dropout in higher education is reviewed. A sub-section of the review of dropout studies deals with research from the 1960s which used a ten-year time frame. The third section deals with adult participation in post-secondary education, an area which has been of interest for the last two decades to researchers and administrators both in adult education and higher education. A sub-section focuses on selected sociological studies of adults in higher education. Finally, some relevant suggestions from the literature on vocational counselling and social mobility are considered.

In Chapter 3, two models from the literature are examined. They are placed in the next chapter, which deals with the conceptual framework for this study, as part of the discussion of preliminary steps towards developing a model of long-range participation and persistence.

Adult Education Participation Research

Participation is a major emphasis in adult education research. There have been a number of surveys of participants, and of the general population regarding participation, beginning with Johnstone and Rivera's in 1962 (Johnstone and Rivera, 1965). Since then, in addition to surveys, there has been a proliferation of studies of motivation of participants (Boshier, 1976), and studies of the connections between adult development and participation (Weathersby and Tarule, 1980). Much is known about participation in adult education; what is less clear is how much the knowledge helps in understanding adult participation in higher education.

Credit programs, especially credit programs in higher education, create difficulties for adult education researchers (Darkenwald and Merriam, 1982). For one thing, typical definitions of adult used by researchers often exclude full-time students. Many students attending university or college full-time would qualify as adults by another commonly used definition: that of having a productive role in society. In addition, some adults alternate periods of part-time and full-time study. Nonetheless, there is much to be learned from adult education participation studies. Participation research has

unique importance in adult education because of the voluntary nature of most adult learning activities.

While adult learning needs are recognized as much broader than can be met by the offerings of the formal education system, let alone higher education for adults, the potential demand for credit programs is often determined from surveys of learners and would-be learners. These surveys describe millions of potential students. Surveys of participants and would-be participants in adult education (Johnstone and Rivera, 1965; Carp, Peterson, and Roelfs, 1974; Waniewicz, 1976; others summarized by Darkenwald and Merriam, 1982) are concerned with much more than learning for credit, but even the estimates of numbers of adults expressing interest in credit programs result in totals described by Cross (1981, p. 17) as "wildly optimistic." For example, Carp, Peterson, and Roelfs (1974) found 78% of the U.S. adult population interested in formal learning, with 12% of these (9% of the population) interested in learning for credit. Of all active learners, 5% (2% of the population) were taking credit courses. An Ontario survey by Waniewicz (1976) estimated learners and would-be learners to total 48% of the population. (Undoubtedly some of the other 52% might have been "interested in" learning.)

These studies consistently show that level (years) of education is perhaps the best predictor of participation and interest in further education, and that it is an even better

predictor of desire for vocational/professional education (rather than general interest), for credit and for degrees. The more years of education an individual has, the more likely further education will be desired.

Much of the research on adult learning is not relevant to considerations of credit higher education. For instance, the research on adult learning projects (Tough, 1978) is sometimes used to argue for de-formalization of adult education (Brookfield, 1984). Still, vast potential markets can and have been projected from numbers of adults engaged in learning projects; adults in transition in their personal lives who are, therefore, in need of learning (Aslanian and Brickell, 1980); and adults facing developmental tasks at some stage of their life or some stage of intellectual, cognitive, ethical, or ego development (Weathersby and Tarule, 1980).

While it is not clear that these individuals involved in learning projects, transitions, or various stages of different kinds of development can be attracted to credit programs let alone higher education, their learning needs are sometimes interpreted as opportunities for programs. Adult development has been recommended as a unifying purpose for higher education (Chickering and Associates, 1981).

Studies of motivation of participants in adult education (Burgess, 1971; Boshier, 1976) have not focused on adults in credit programs and higher education. For

example, Morstain and Smart (1977) used Boshier's Educational Participation Scale to analyze motivational orientations; however, their survey includes students taking general interest courses and has a large number of degree-holders (attending a community college), thus predisposing a greater response to Escape/Stimulation and similar interests than might be the case with credit-course students and students still pursuing degrees.

In general, adult education researchers have tended to take an individual, rather than an institutional, perspective--sometimes militantly so. They emphasize removing barriers and improving access. While adult educators have been concerned with promoting the cause of adult students in post-secondary education (D. Campbell, 1984), the marginal relationship of adult education to many institutions of formal education may predispose a non-institutional focus. Continuing education (non-credit) and part-time credit students are often grouped although evidence indicates few adults move from non-credit to credit programs (J. Campbell and others, 1984) and that adults in credit programs, part-time or full-time, may have more in common with traditional-age credit students (Kuh and Ardaiaolo, 1979; Shannon, 1986).

In any case, it is difficult to make conclusions about adults who are pursuing degrees from studies of participation in adult learning in general. Adults in

higher education have been studied; research on this specific group will be examined after reviewing the literature on dropouts from higher education.

Dropout Research in Higher Education

Dropout has been a concern in adult education as well as higher education (Boshier, 1973), but has not been so pronounced. The concern in adult education has most often been with dropouts from single courses rather than from programs. This section deals with the literature on dropouts from higher education, both the more traditional studies of short-term dropout and a few studies which took a long-term perspective.

General Dropout Studies

Researchers in higher education have placed great emphasis on dropout research. Research on dropouts in higher education has been carried on since at least 1913 (Summerskill, 1962). Some of the research has been concerned with waste of talent--almost a societal perspective (Iffert, 1958; Pervin, 1966), while more recently the concern has been with institutional survival in the face of adverse demographic trends (Bean, 1982a; Tinto, 1987).

The effects of several variables on dropout have been studied extensively, including student and institutional

characteristics (Iffert, 1958; Summerskill, 1962; Astin, 1975; Pantages and Creedon, 1978; Lenning, Beal, and Sauer, 1980). In fact, a problem has often been to sort out which are the most important variables. Astin (1975) used 37 variables to develop a predictive equation of dropout using multiple regression. There has been some theoretical integration in recent research using models such as Spady's (1971) and Tinto's (1975). Both models emphasize person-environment fit. An important element is family background, which Spady says affects "normative congruence" with higher education. Spady and Tinto emphasize support systems, and social and academic integration. Bean and Metzner (1985) have recently developed a model for non-traditional students, but their definition of non-traditional emphasizes commuter status more than adulthood.

To the extent that dropout research has anything to say about them, it is not favourable to adult students. The findings on age, while not consistent, generally indicate that older students are more likely to drop out (Lenning, Beal, and Sauer, 1980; Pantages and Creedon, 1978). Part-time students have a higher rate of dropout (Astin, 1975), and adults are disproportionately represented among part-time students (Statistics Canada, 1986; Cross, 1987). Spady's and Tinto's models emphasize social integration, which is much less likely for part-time students and, in fact, is less likely for full-time adults than traditional-

age students (Kuh and Ardaiole, 1979). However, research based on Tinto's model suggests that academic integration is much more important than social integration (Munro, 1981; Pascarella and Terenzini, 1980). Tinto's model will be considered further in the next chapter.

Long-term Perspective in Dropout Research.

Some studies from the 1960s indicated that a ten-year time frame for dropout research would change the perspective on a number of variables (Eckland, 1965; Pervin, 1966; Jex and Merrill, 1967). A recent longitudinal study, based on the Tinto model, suggests that some findings are more or less confirmed but that different variables best explain persistence by men compared to women--institutional commitment for men; social involvement for women (Pascarella, Smart, and Ethington, 1986).

In fact, long-range persistence may be qualitatively different from short-term, and the findings from dropout research based on a short-term focus might not apply. A study of part-time students in Ontario, many of whom had been students for several years, indicated that they felt dropping out was a problem--for first-course and first-year students--but it did not apply to them (Levy-Coughlin, 1981). The emphasis on variables might change; for example, Astin's (1975) study of a national (U.S.) survey concluded that parental income (a social class indicator) had little

predictive value (p. 35). He did not include it as one of the 37 variables used in the regression equation for predicting dropout within five years. Longer-range studies, such as Eckland's (1965) and Pervin's (1966) give more emphasis to social class than did Astin. Their studies indicate that students from higher social class backgrounds are more likely to complete degrees if the time frame is extended to ten years. Some recent research suggests that quality of high school (which may be an indicator of social class) is a better predictor of persistence by adults than Grade Point Average (Kuh and Cracraft, 1986).

Some students do not drop out but stop out, returning later to the same or a different institution. They may or may not have intended to return when they left originally. Stopping-out has not been studied as extensively as dropping-out (Cope and Hannah, 1975). When it has been investigated, there are indications that returning students may be even more persistent than first-time students (Pervin, 1966). Some of the research on dropouts indicates the dropouts may be more mature than "stayins" (Suczek and Alfert, 1966). One study found that the longer individuals stayed out, the more improvement in Grade Point Average they achieved when they returned (Bluhm and Couch, 1972). One might wish that Astin (1975) had followed up with further study of differences between those dropouts who stated they expected to return and those who did not expect to return.

Given that his stopouts (those who had left for one year only) were in between persisters and dropouts (by his definition again) on many variables, it would be reasonable to expect differences between those dropouts who did and those who did not expect to return.

Stopouts, as described by Eckland and Pervin, undoubtedly make up a fair proportion of part-time and adult students, especially as a majority of adult students in universities in Canada are returnees (Picot, 1980).

Higher education researchers have tended more to take an institutional, rather than an individual, perspective, both in dropout studies and as will be seen in the next section, studies of adult students.

The conclusions from dropout studies appear somewhat limited, according to the population sampled, particularly the time-frame used. Studies based on longer time frames suggest somewhat different conclusions from those reported in short-term studies.

Research on Adults in Higher Education

In the years immediately after World War II, adults made up a large proportion of students in higher education but that was a temporary phenomenon and universities were subsequently pre-occupied with expanding to meet increased demand from traditional-age students (D. Campbell, 1984). The trend to greater participation by adults, and interest

in adult students on the part of higher education researchers, is relatively recent.

Descriptive and Market Studies

To some extent, the interest in adult students coincides with the decline in growth of traditional-age enrollment and reflects an institutional perspective (Cross, 1981). This coincides with an increase in interest in marketing by higher education institutions (Barton, 1978; College Entrance Examination Board, 1980; Ihlanfeldt, 1980).

Some studies are limited to part-time students (not always restricted by age), and some include full-time students of adult age. Surveys of part-time adult students (Solmon and Gordon, 1981; others summarized by Cross, 1981) describe a population which has shorter, or lower-standard, educational backgrounds than traditional-age students and is more representative of the general population in social class and ethnic terms than traditional-age students. In fact, representativeness is usually looked at in terms of race or sex rather than social class; limited information is acquired on social class origins and upward social mobility is ascribed on the basis of simply participating in post-secondary education. In addition, these surveys are usually limited in various ways: to part-time students; to first-year students; to students in continuing education or in

special adult degree programs (Sharp and Sosdian, 1979; Cross, 1981).

The temptation exists to assume that adult students are a "second-chance" or "back-door" group grabbing an opportunity for upward mobility previously denied them. Pike (1975) assumed that part-time students in Ontario must be mostly students who had not taken academic as opposed to vocational preparation in high school, on the basis that 70% of grade 13 (academic) students in the province went immediately to full-time university study. However, a survey of part-time students in Ontario indicates that half had been full-time students in the past (Levy-Coughlin, 1981); their sample, including students at all levels, suggests a much more well-educated group than surveys of first-year level students in the U.S. (Solmon and Gordon, 1981). Unfortunately, social class origin data are not available on these students, and occupational information cannot be analyzed to yield much additional information, either, with such categories as "professional-managerial."

A U.S. study (limited to one institution) which included full-time adult students indicates that in some respects they may differ more from part-time adult students than from traditional-age students (Kuh and Ardaiole, 1979). For example, full-time adults are least likely to attend university to get a better job, with part-time adults most motivated by hopes of getting a better job. In other

respects (for example, social class origins and participation in extra-curricular activities) full-time adult students differed more from traditional-age students than part-timers. Their study, however, was limited to first-year students for all categories (full-time and part-time adult-age students, and traditional-age students), which can be misleading if the interest is adult students in general. Still, the study points out the further danger of generalizing about all adult students from studies of part-timers.

Some of the research on adults deals with their experience as higher education students. Adults register disproportionately in liberal arts programs but this may be dictated by availability of courses. Family members are frequently considered, especially in research on women re-entering higher education (Lenz and Shaevitz, 1976); adult students either usually have family support, or do not consider it important (Davila, 1985). Work responsibilities do not seem to affect dropout rates; one study found adults with many credits were more likely to be employed full time than adults with few credits (Davila, 1985). Adult students tend to be unaware or critical of services; in one study, inexperienced students made few complaints about counselling while senior level students were more dissatisfied (Davila, 1985), as had been found earlier by Iffert (1958).

The marketing impulse behind higher education's interest in adults may result in improved services to adult students. As Cross says, "...colleges that place institutional needs above those of the adults they are trying to attract will probably lose out in the long run" (Cross, 1981, p. 38). However, the institutions may be overly-optimistic about the market. Anderson and Darkenwald (1979b) suggest that non-traditional age students represent a narrow base for expanding post-secondary enrollments. They question the conclusions or assumptions of some descriptive studies that adult recruits to higher education are a new market, different from students the institutions have served in the past.

Sociological Research on Adults in Higher Education

Some of the research employing a longer time frame or at least looking at adults at more than one level of post-secondary education has a sociological perspective. Sociological investigations of adult students give a somewhat different picture from the surveys mentioned so far (although not inconsistent with the Ontario survey by Levy-Coughlin, 1981). These differences may be due to the population selected for the study. Unfortunately, Eckland's U.S. study (1965) and Humphreys and Porter's Canadian study (1978) are limited to single institutions, while Hopper and Osborn's U.K. study (1975) was limited to full-time students

who had completed degrees. Nonetheless, the fact that these studies go beyond first-year students makes them more representative than many surveys, and in addition they do give us information about the effects of social class and mobility on participation.

Eckland's study (1965) was mentioned in the discussion of dropout studies but it is also relevant here because of its sociological basis and because of what it suggests about who at least some of the older undergraduates are. He shows that expanding the time frame to ten years changes the picture of who completes degrees. While short-term dropout rates do not seem to be affected by social class, students of higher social class origin are more likely to return or transfer, that is, to be stopouts rather than dropouts. Eckland's research not only questions some emphases (or lack of emphases) in higher education dropout research but also has some relevance to understanding of adult students, as the later graduates and returned stopouts would be included in that category.

Hopper and Osborn (1975) studied adults at the time of graduation. They found that these graduates often had marginal social status (different from their parents) and were more often downwardly mobile than upwardly; pursuit of a degree was often a tactic to defend their declining status. In addition, Hopper and Osborn describe among their respondents an initial "warming-up" to education followed

by an ineffective "cooling-out." In other words, these adults had had some initial success in education or had been socialized to relate success in life with success in education, even if they had at some stage dropped out of education for a while. They were students who had had educational opportunities, who were not in any way new to the system.

Humphreys and Porter's study (1978) largely confirms Hopper and Osborn's findings. Their sample of all part-time students at Carleton University includes many of the downwardly mobile individuals who have returned to higher education, and another category--a smaller group of upwardly mobile students who have had long careers as part-time students and who, in addition, had already exhibited upward mobility before pursuing higher education. The authors specifically repudiated the idea that part-time study or adult programs are primarily a second chance for the educationally deprived.

The sociological perspective can be found in adult education research as well, for example in the discussion of recruitment of adults from lower social class backgrounds (see summary in Cross, 1981). A German study by Muller (1973) suggests that education pursued by adults increases the correlation between parental and offspring social class. Thus, adult education may be used to correct downward

mobility, just as Hopper and Osborn and Humphreys and Porter suggest higher education is used.

Studies of adult participants in post-secondary education have produced varying conclusions due, at least in part, to the differences among the samples selected. Studies of first-year students, which by their nature eliminate returned stopouts, tend to indicate a population of upwardly mobile students, although this classification is often simply ascribed to them by the authors without any supporting evidence. Studies of part-time students at all levels, adult graduates, and returned stopouts suggest a population which is as likely to be downwardly mobile. Obviously, conclusions based on restricted samples of adult students have limited generalizability.

Other Relevant Research

A number of research areas outside of adult education and higher education contribute suggestions which may be relevant to the study of adults in post-secondary education.

The findings of Hopper and Osborn (1975), Muller (1973), and others suggest that social mobility affects participation by adults in higher education. The social mobility literature contains a number of suggestions about the interaction of social class and education. For example, Sewell and Hauser (1975) indicate that social class origin

affects both educational and occupational outcomes, and education itself affects occupational achievements.

Another suggestion comes from the vocational counselling literature and indicates that the type of job itself has effects on the value of education to an individual (Holland, 1973; Holland and Gottfredsen, 1976). Of the six categories in Holland's typology of occupations (1973), social occupations accord the most status to education, and only in social and enterprising occupations is there a strong correlation between education and earnings (Gottfredsen, 1980). Thus type of job and job environment, as well as level of job (and what this indicated in individual cases about social mobility) may be predictors of participation and persistence. Lenning, Beal, and Sauer (1980) have suggested the usefulness of Holland's typology in dropout research.

Summary

The bodies of literature reviewed here--participation research, dropout studies, studies of adults in higher education--all tend to have limited focuses. Adult education participation research usually focuses on non-credit programs. Higher education dropout research usually takes a short time perspective and tends to emphasize traditional-age students. Studies of adults in higher education are usually descriptive, are sometimes based on a

marketing perspective, and are often limited to narrow populations, such as first-year or special program students.

Two smaller sub-categories of the literature have greater insights to offer for understanding the problem of long-term persistence by adults. In addition, they point out some of the limitations of the other research. Dropout studies based on a longer time frame, usually ten years, suggest that some conclusions of other dropout research may be questionable and also suggest that at least some adult students must be returned stopouts. A few studies of adults in higher education from a sociological perspective point out the dangers of making conclusions from speculation and from studies based on narrow populations.

While it may be possible to find variables and concepts relevant to adults in higher education in a number of sources, there is still much to be learned from applying ideas from adult education and higher education even though these research areas have not focused specifically on the problems of participation and persistence over a long term by adults in higher education. In the next chapter, a conceptual framework will be developed combining participation and dropout considerations.

CHAPTER 3
CONCEPTUAL FRAMEWORK
FOR THE STUDY OF LONG-RANGE
PARTICIPATION AND PERSISTENCE

Introduction

This chapter extends the review of the literature, in its discussion of models of adult participation and higher education dropout. From two better-known models, the elements which would be emphasized in long-term participation by adults in higher education are suggested, first in a simplified model and then in an elaborated version which incorporates variables used in the research to be described in later chapters.

A distinction is made between adult students who started their university education as traditional-age students (Re-entry students) and those who started as adults (Adult Entry students). Incorporating this distinction, and two additional categories of specific variables, the simplified model is elaborated into the model which is used to develop the hypotheses which follow.

After the discussion of the initial hypothesis about the difference in persistence between the two groups of adult students, additional hypotheses are organized into

those involving background characteristics and those involving participation factors, as suggested by the model. Six hypotheses are presented involving the effects of different variables on persistence by adult students.

Following the presentation of the hypotheses, a brief chapter summary is provided.

Models of Participation and Dropout

As mentioned previously, two models from the literature are relevant to long-term persistence by adults. These are Cross's model of adult participation and Tinto's model of dropout from higher education. This section deals with these models and how they have been adapted for this study.

The Cross Model of Adult Participation

The Cross model has not been used as extensively in adult education as the Tinto model has been in higher education dropout research. In fact, no participation model has been widely adopted. There has been considerable research based on the typology of adult learners developed by Houle (1961). This extensive motivational orientations research (Burgess, 1971; Boshier, 1976; Boshier and Collins, 1985) has not focused generally on what happens to adult learners with various motivations for participation (Boshier and Collins, 1985). Development of predictive models based

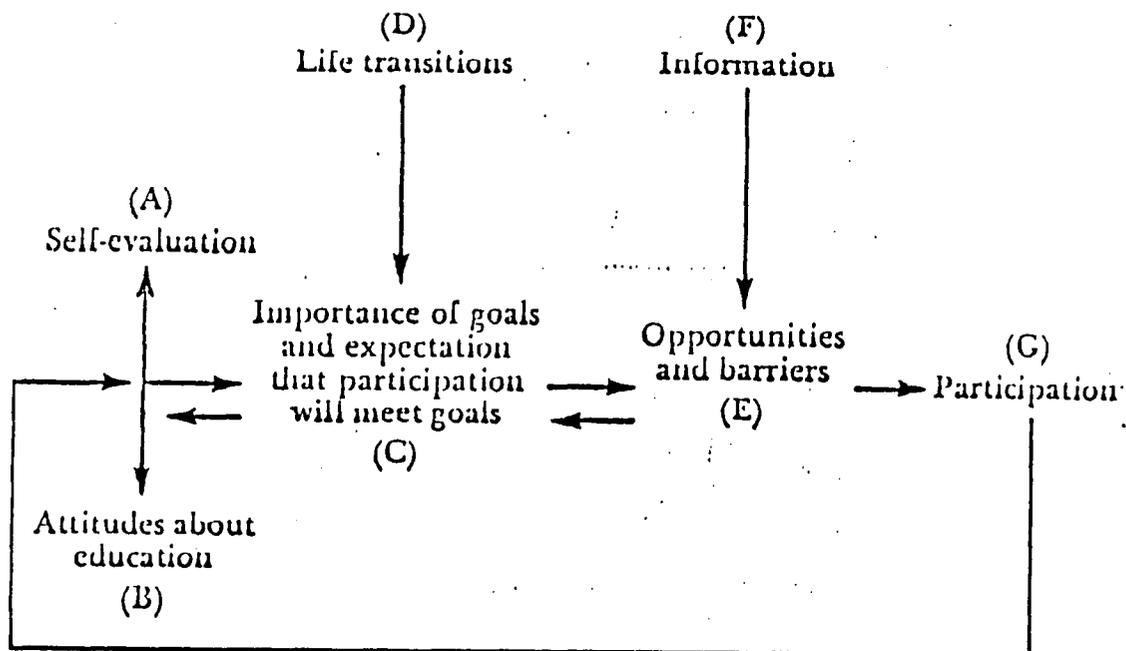
on motivational orientations has been suggested (Rogers, Gilleland, and Dixon, 1988).

However, participation models are an ongoing interest in adult education (for example, Darkenwald and Merriam, 1982; Cookson, 1986); this interest is in participation in adult education in general, not just in higher education or even credit programs. A number of the models of participation in adult education literature have been summarized by Cross (1981, p. 109-124). The model synthesized by Cross herself (1981, p. 124) is of some interest to researchers dealing with adults in higher education (Kuh and Cracraft, 1986).

Cross's Chain-of-Response model (see Figure 1) included six groups of variables which would affect an adult deciding to take a course. The model can be adapted to consideration of long-term persistence with emphasis on front-end or long-term variables (A,B,C) rather than short-term or immediate factors (D,E,F) and on the feedback loop itself-- participation affecting, especially, attitudes to education. The feedback loop could provide a way of looking at continuing participation and perhaps, eventually, long-term participation. Long-term persisters will have had a fair amount of experience with education and, probably, will have established educational goals. According to Hopper and Osborn (1975), they will have been "warmed-up" to education

FIGURE 1: CROSS'S MODEL OF ADULT PARTICIPATION.

(CROSS, 1981)



because of past experience. One might, therefore, expect that the adults most likely to return to education, if they had dropped out in the past, could be distinguished from dropouts who do not return by already-established differences in attitudes to education and perceptions of the relevance of education. In any case, information and barriers, and perhaps demands arising from life transitions, would have more effect on enrollment at specific times than on long-range participation, so for purposes of this investigation the emphasis is on the input or long-term elements of the model (A, B, and C).

Even if the study were limited to those who may have started their education as adults, it might be expected that differences in educational experience and goals could be used to predict those more or less likely to continue to participate for a number of courses and years.

Participation models are specifically intended to describe adult behavior and thus should provide some insight for a study of long-term persistence, which is ongoing participation. The Cross model, compared to others from adult education, some of which (Cookson, 1986) are too general, focuses more on credit and higher education. It should be helpful in understanding degree-seeking behavior by adults.

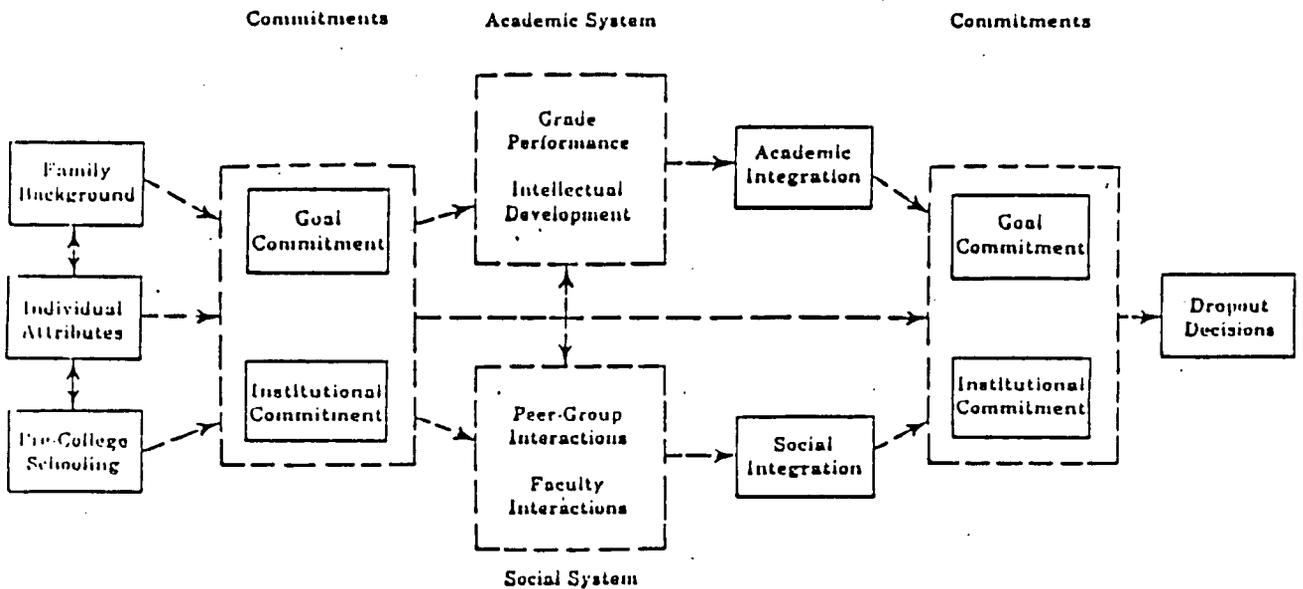
The Tinto Model of Dropout from Higher Education

There are a number of models of attrition in higher education. Several of these, including the Tinto model, (1975) and its predecessor the Spady model, are summarized by Lenning, Beal, and Sauer, 1980, pp. 43-49. The Tinto model continues to be utilized frequently (Weidman, 1985; Pascarella, Smart, and Ethington, 1986). A recent model by Bean (1982a,b; also Bean and Metzner, 1985) has a high explanation of variance, but depends for most of that on "intent to leave" (measured in the spring with re-enrollment/non-enrollment checked in the fall), which could

almost be considered a dependent variable; certainly it is not a very useful variable for long-range predictions.

Tinto's model (Figure 2) has been tested fairly extensively. A common finding is that academic integration (often measured as involvements with academic staff outside of class) is more important in retention than social integration (involvement with other students) (Munro, 1981;

FIGURE 2: TINTO'S MODEL OF ATTRITION. (TINTO, 1975)



Pascarella and Terenzini, 1980). Tinto's 1975 model is the basis for research by Pascarella and several others. Their emphasis on academic integration and on faculty/staff interactions as a means of academic integration is incorporated in Tinto's modification of the model (Tinto, 1987) which moves faculty/staff interactions from the social to the academic system. Other changes include some to the wording (for example, "Skills and Abilities" instead of "Individual Attributes") and the addition of "External Commitments" to the Commitments at Time 2 (the right-hand end, just before dropout).

Adaptation of the Tinto model to adult students will probably result in greater emphasis on the input elements than on the intervening variables. Adult students are not as likely to integrate socially as traditional-age students are, especially if most of the students are traditional age. Adults are more likely to have outside commitments to families, jobs, even social activities (Tinto, 1987). Likewise, part-time students may not be as likely to have as much academic integration as full-timers. Therefore, given that these effects are reduced or even absent, the emphasis would have to be placed on the background characteristics, on the input end of the model (as with the Cross model on participation). Even institutional commitment is less likely to be a factor, especially for part-time students, as commuting distance limits choices severely for adults,

especially part-time students. Family background and pre-college schooling would probably account for much more of the variation in long-range persistence vs. dropout, when applying the Tinto model with adult students than in studies of dropout among traditional-age students, because of the reduced effect of intervening variables. The element of external commitments in Tinto's 1987 model does add something of importance for adults, whose job and family situations are likely to be more complex than they are for traditional-age students. However, the model still emphasizes goal and institutional commitment as more important than external commitments (1987, p. 105-106).

Higher education dropout models represent attempts to develop theoretical formulations of the phenomenon. The Tinto model has been one of the more widely applied. However, it has been found that the model works less well in some settings, for example two-year colleges (Pascarella and Chapman, 1983). An effort to use the model in a long-term study indicates that different models may be required for men and women (Pascarella, Smart, and Ethington, 1986). Rather than applications of the same model to different situations, what may be required is adaptation, or even development of a new model (or several models for different situations).

Bean and Metzner (1985) suggest that the Tinto model is only appropriate for traditional students in residential

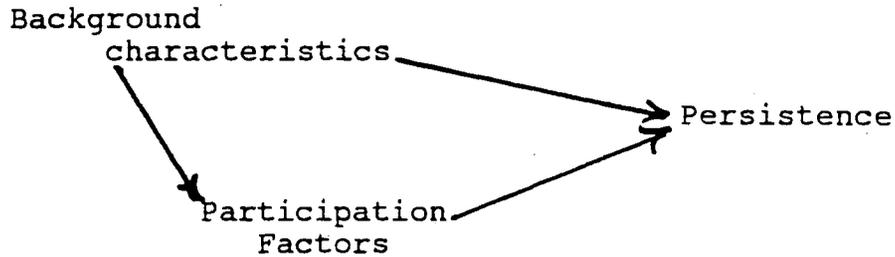
four-year colleges (universities in Canada). Their adaptation of Bean's 1982 model for non-traditional students still contains the element of "Intent to Leave" which applies specifically to short-term (consecutive year) dropout studies. In addition, their definition of non-traditional emphasizes commuter status and includes age only as a possible, not a necessary, characteristic. They do, however, suggest that external variables (similar to Tinto's external commitments) are more important with non-traditional students than academic variables.

A Model of Long-term Persistence by Adults

In the discussion of the Cross and Tinto models it was clear that applying the models to long-term considerations results in emphasis on the input elements of the models. Under these circumstances, it would seem that there are, perhaps, not many intervening variables, except the quality of the experience itself, when considering long-range persistence by adults. What is left is a simple model like Figure 3.

This is not to suggest that the specific elements from the Cross and Tinto models such as attitudes, goals, and family background should be dropped. They are important and some of them will be added later (see Figure 4). What is argued here is a simplification of the structure of the model

FIGURE 3:
SIMPLIFIED MODEL OF FACTORS AFFECTING LONG-RANGE PERSISTENCE



for long-term considerations, at least as some degree of generality is desired. Factors which may influence model enrollment/non-enrollment decisions at specific times may not be as important in a long-term model.

The emphasis in the figure is on the input elements or background characteristics which affect persistence directly as well as indirectly through their influence on participation factors. The way individuals respond to the experience of being students is affected by background characteristics.

For adult students, one factor which can be considered as a part of their background is whether or not they had first enrolled as traditional-age students. In this research, those adults who had previously enrolled at age 24 or younger are classed as Re-entry students, while those who

had never enrolled before age 25 are classed as Adult Entry students.

If the variable of interest were participation only, a population of adult students in post-secondary credit programs might be more representative of the population in general than are traditional-age students. However, as was seen in the review of the literature, when the focus is on long-term persistence, the population of interest changes from newly recruited adults in higher education to a group more like traditional-age students in many respects, as the adults approach completion of degrees. In other words, excluding first-year students and those simply taking one or two specific courses, the remaining adult students may be a very "traditional" group, in terms of things like social class of origin, education of family members (parents, siblings), vocational experience and goals, and attitude and expectations about education. In addition, many of them (Re-entry students) had been traditional-age university students. These differences, related to differences in populations selected for study, as discussed in Chapter 2, are shown in Table 1. This is a study of a population from all years of university, not just the first-year students.

TABLE 1:
 HYPOTHESIZED DIFFERENCES RELATED TO POPULATIONS
 SAMPLED AND TO LONG-TERM PERSISTENCE

Adult Student Populations Sampled		
First year	All years	Graduates
mostly Adult Entry, "new" students	Adult Entry and Re-entry	mostly Re-entry, "traditional" except in age

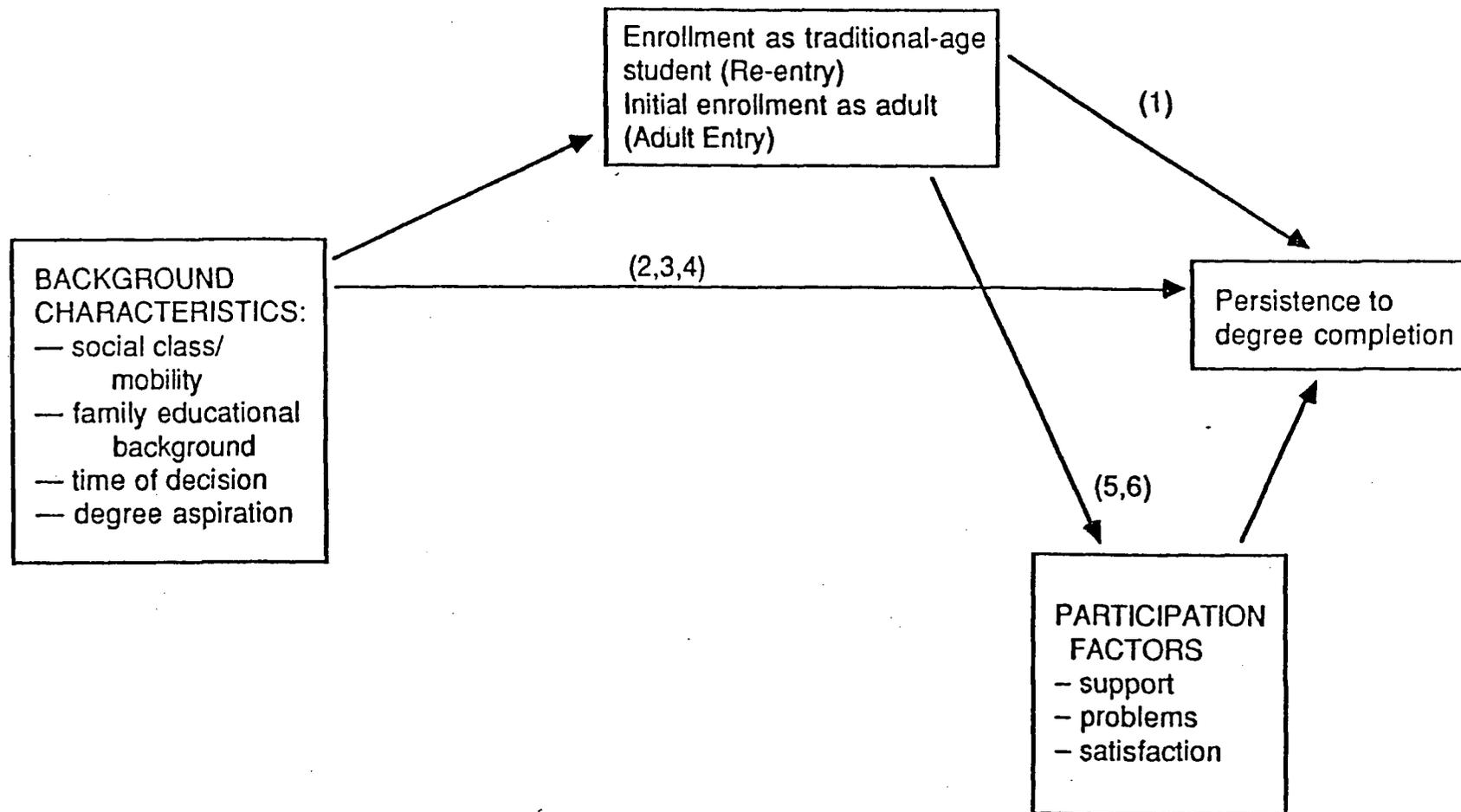
In addition to the categorization of Re-entry and Adult Entry students, other variables which may affect persistence can be specified. Background characteristics such as social class and the educational experience of family members may influence whether or not an individual proceeds to university as a traditional-age student. These characteristics may also affect how a student adapts to a university environment, thus influencing the response to participation factors. In addition, these background characteristics may have a direct effect on persistence, as the importance of completing a degree could be influenced by such factors as time of decision, degree aspiration (an indicator of goal commitment), family experience with higher education, and social class and mobility.

Factors influencing how an individual responds to the experience of being a student include support or lack of it from family, employers, and others; problems of various kinds and ability to cope with them; and satisfaction with various aspects of student life. These participation factors are hypothesized to affect persistence and are themselves affected by background characteristics. In particular, Re-entry students and Adult Entry students may respond differently to participation factors, with the previous experience of Re-entry students in higher education contributing to greater persistence.

Figure 4 is an elaboration of Figure 3, incorporating the Re-entry/Adult Entry distinction and listing background characteristics and participation factors.

The same relationships exist in Figure 4 as outlined in the simplified model in Figure 3. Background characteristics influence persistence directly and indirectly. The major addition shown in Figure 4 is the Re-entry/Adult Entry categorization, which is expected to affect response to participation factors, as an element separate from background characteristics. The same background characteristics which result in individuals being more likely to start their post-secondary education as

**FIGURE 4: MODEL OF LONG-RANGE PERSISTENCE
BY RE-ENTRY AND ADULT ENTRY ADULT STUDENTS**



traditional-age students will affect their persistence directly. Participation factors are treated as intervening variables in the model. The effect of background characteristics is dealt with through the Re-entry/Adult Entry categorization.

The hypotheses which follow are based on the relationships suggested by the model. Numbers on the arrows correspond to hypothesis numbers, indicating the effects which are described in the hypotheses.

Hypotheses

In this and the previous chapter, variables related to participation and persistence were identified. Hypotheses can be suggested using these as independent variables with persistence to degree-completion as the dependent variable. (They are grouped in this section according to the model in Figure 4). After the presentation of the initial hypothesis on the Re-entry/Adult Entry distinction, three hypotheses based on background characteristics are stated, which connect these variables directly to degree-completion. Two additional hypotheses deal with participation factors as possible intervening variables.

Adult Entry vs. Re-entry.

The ten-year dropout studies (Eckland, 1964; Pervin, 1966; Jex and Merrill, 1967) suggest that many adult

students were in post-secondary education as traditional-age students. It would seem reasonable that this educational experience would be an advantage, in that they would have knowledge of the higher education environment based on their direct experience.

Hypothesis 1: Re-entry students are more likely to persist to degree completion than Adult Entry students.

It is, in any case, worthwhile to compare the two groups of adult students: those who had been traditional-age students (Re-entry) and those who had started as adults (Adult Entry). Former traditional-age students have been identified as a large proportion of adult students in higher education, although research has tended to emphasize new students.

This is a key hypothesis. While some differences are expected between Re-entry and Adult Entry students in background characteristics, most of these variables affect persistence directly, independent of their relationship to the Re-entry/Adult Entry categories. However, the hypotheses on participation factors (Hypotheses 5 and 6) deal with the effects of intervening variables on the persistence of the two categories, Adult Entry and Re-entry students.

Background Characteristics

Educational experience, including postsecondary experience; time of decision and degree aspiration (which may be indicators of attitude to education); a history of family participation in education; and social mobility have all been related to persistence to varying degrees in previous research. As discussed in the previous chapter, social mobility may be more strongly related to long-term persistence than it is to persistence in the short-term. In the previous discussion of models, it was suggested that these background characteristics may be generally more important in long-term persistence than the intervening variables suggested in models like those of Cross and Tinto.

As shown in the model (Figure 4), background characteristics have some effect on whether or not an individual enrolls as a traditional-age student. The same characteristics which result in greater likelihood of an individual enrolling in post-secondary education as a traditional-age student are expected to encourage persistence to degree-completion. As enrollment as a traditional-age student categorizes an adult as Re-entry and therefore more likely to persist (Hypothesis 1), the hypotheses in this section deal with the direct effects of background characteristics on persistence.

Time of Decision. Within the Re-entry and Adult Entry categories persistence can be predicted from the length of time post-secondary participation and particularly degree-completion have been definitely planned. Surveys of dropouts indicate that some intend to return and some do not (Astin, 1975). Those Re-entry students who had perceived themselves as dropouts might be more tentative about returning, and less likely to complete a degree than those who had perceived their departure from post-secondary education as definitely temporary. Adult Entry students who had planned for a long time to attend college or university and get a degree would be more likely to persist as students than those whose decisions to enroll were more recent.

Hypothesis 2: The longer adult students have planned to complete degrees and the farther they planned to go with their education, the more likely they are to persist to degrees. More specifically:

- (a) The earlier that adult students made their decision to pursue education beyond secondary school, the more likely they are to complete degrees, even as adult students.
- (b) Re-entry students will be more likely to complete if they had intended to return when they left post-secondary education as traditional-age students than if they were uncertain or had perceived themselves as dropouts at that time.
- (c) Adult Entry students will more likely complete degrees if attending a college or university was fulfillment of a long-time

ambition than if their decision to attend was recent.

Time of decision [2(a)] can apply to any post-secondary students: traditional-age students or adult students. The other parts of the hypothesis are expected to differentiate degree-completers from non-completers within the Adult Entry and Re-entry groups. All parts of the hypothesis are related to the length of time higher education has been part of an individual's life plan. Old plans are more likely to contribute to persistence than new plans.

Family Educational Background; Degree Aspiration. Other input factors will be related to persistence. Family educational background and degree aspiration have been associated with persistence in other research. Family background is part of the Tinto model and could be a source of attitudes about education in the Cross model. Degree aspiration has been connected with degree completion in other research (Lenning, Beal, and Sauer, 1980; Bean and Metzner, 1985) and could be considered a measure of goal commitment in the Cross and Tinto models. These variables may be more or less important than they have been found in dropout or participation research, but they will still have effect.

Hypothesis 3: Adults who persist in post-secondary education to completion of degrees, as opposed to

adult participants in higher education who do not complete degrees will

- (a) more likely have family members with advanced education,
- (b) more frequently have planned to pursue advanced degrees, when they started post-secondary education.

The hypothesis could also be applied to traditional-age students: it is, in fact, expected that persistent adult students will be more like traditional-age students--particularly those with characteristics associated with degree-completion among that age group--than they will be like adult non-persisters. They are not really "new" to higher education.

Social Class/Mobility. The emphasis so far has been on attempting to differentiate from among all adult students those who are most likely to persist to degree completion. However, similarities among participants are also expected, partially accounting for the decision to participate in the first place. These similarities between persisters and non-persisters will have more to do with enrollment than persistence. For example, anomalous or marginal social status (Hopper and Osborn, 1975, p. 13, 125-126, definition of marginality) is expected to be common to both groups. However, it is expected that the newer students, the ones less likely to persist, will more likely be upwardly mobile, while more of the other students will be downwardly mobile.

Maintaining status, or correcting for decline in status was an important motivator among the degree-completing adults studied by Hopper and Osborn (1975). Eckland (1965) found that students from higher class families were more likely to return to higher education after leaving.

Hypothesis 4: There will be a higher proportion of individuals downwardly mobile in social class among adults who persist to degrees than among non-persisters. There will be a higher proportion of upwardly mobile individuals among non-persisting adults than persisters (mobility by comparison to the class of family of origin).

Individuals from higher social classes will be more likely to have had family members pursue higher education and will, therefore, have more understanding of the benefits of education. They may also be more inclined to take some action, including educational, to change their current status. On the other hand, upwardly mobile individuals may expect more immediate payoff from courses and thus have less patience for the long grind to a degree. They may, in fact, be too busy to pursue their education or sufficiently satisfied with their status not to perceive a need to do anything about it.

Hypotheses 2 to 4 deal with variables which are expected to have direct effect on persistence, as shown by the arrow from background characteristics to persistence in Figures 3 and 4. These background characteristics will also have some effect on adult students' response to their experience in higher education, treated here through the Re-entry/Adult Entry distinction. Table 2 is a summary of the hypotheses in the form of expected differences between degree-completers and non-completers in background characteristics.

Participation Factors

While the emphasis in the model (Figure 4) is on the effects of background characteristics, the experience itself--what happens to adult students when they participate as students--is expected to have some effect on persistence. Adult Entry and Re-entry students may have different expectations and react in different ways. How adults are affected by problems of being a student, and their perception of these problems; and how satisfied or dissatisfied they are with their experience in higher education may be related to whether or not they were students before they became adults.

TABLE 2:
SUMMARY OF HYPOTHESES:
BACKGROUND CHARACTERISTICS AND DEGREE COMPLETION

	Degree	
	Completers	Non-Completers
Hypothesis 2		
(a) early time of decision		late time of decision
(b) stopouts - intended to return (Re-entry)		perceived selves as dropouts (Re-entry)
(c) long-time ambition to attend (Adult Entry)		recent plan to attend (Adult Entry)
Hypothesis 3		
(a) tradition of higher education in family		no tradition of higher education in family
(b) advanced degree aspiration		no advanced degree aspiration
Hypothesis 4		
(a) downward social mobility		upward social mobility

Satisfaction. Those with the characteristics sometimes ascribed to the new "market" (Adult Entry students) may be pursuing higher education for different reasons (from Re-entry students) and may be affected in different ways by the experience. Their more recent decision to participate may be based on a change of vocational goal or on having a job in an environment where status and advancement were perceived to be related to educational advancement or credentials. As a result, they may expect more immediate signs that their courses will benefit them, perhaps that the content will have immediate application. As well, Re-entry students will adapt more easily because of their greater familiarity with higher education. There is a much greater probability of satisfaction with the whole experience by the Re-entry than the Adult Entry students: with the courses and with the educational environment, including instructors and other students.

Hypothesis 5: Adult Entry students will differ from Re-entry students in response to their educational experience, in that they will

- (a) expect more immediate payoff from their courses such as more immediate application of course content to work or other situations,
- (b) feel less comfortable with other students, and
- (c) experience less satisfaction with courses and instructors.

While some of the literature on motivation suggests that success causes satisfaction, some recent higher education research indicates that satisfaction is a cause of persistence and higher achievement (Pascarella and Chapman, 1983). The ambiguity about satisfaction is, perhaps, one more argument for placing emphasis on background characteristics, where the causal direction is more certain. The model here suggests that satisfaction is related to expectations and previous experience, which are related to persistence, according to Hypothesis 1. However, differences in satisfaction should have some direct effect on persistence.

Support; Problems. Adult Entry students will perceive and perhaps, in fact, encounter more problems in pursuing their education than Re-entry students, both problems with the student role (studying) and with the additional burdens of being a student (financial problems, and conflict with other areas of their lives, particularly family and job responsibilities). They may have less support from their families (which may be due to inexperience family members have had in higher education). Support and problems may be perceived as the effects of external situations or commitments on students' persistence.

Hypothesis 6: Adult Entry students will experience more problems with the student role than Re-entry students, in ways which will negatively

affect their persistence to degree completion. Specifically, they will

- (a) perceive that they have less support for their educational efforts from family members and others close to them, and
- (b) more frequently have problems, (such as financial difficulties, job pressures, or difficulties with studying) which affect their persistence to degree-completion.

Support has frequently been mentioned as an important variable in participation and persistence by adults, particularly married adults (Bishop and Van Dyk, 1977; Lenning, Beal and Sauer, 1980). Support by parents, other family members, and employers may also be important. It is assumed that inexperience of family members with higher education (Hypothesis 3) will make it difficult for some students, more often Adult Entry students than Re-entry students, to obtain support.

Similarly, perception of and response to problems may be related to inexperience, in this case of the students themselves (Hypothesis 1). Financial problems may be related to unfamiliarity with student lifestyle on the part of the students themselves and their families. Difficulties with study are obviously related to inexperience. Adult Entry students, with a more recent commitment to higher education, may be less determined to persist if they encounter problems.

Hypotheses 5 and 6 deal with intervening variables which are middle elements in the Cross and Tinto models. The expectation is that there will be differences in how these affect Adult Entry and Re-entry students, and the effect on persistence or degree-completion will be as intervening variables.

Table 3 provides a summary of the relationships from the hypotheses on participation. Because the variables in hypotheses 5 and 6 are intervening variables in the model (Figure 4), the summary is of differences between Re-entry and Adult Entry students, with the Re-entry students expected to be more likely to complete degrees.

Summary

The framework here is consistent with the Cross and Tinto models. Educational background factors are predicted to have a considerable effect on reactions to the academic environment (other students, uncertain relevance of studies) and therefore on the factor of academic integration, which has been found most important in research based on Tinto's model. It is also suggested that educational background will affect the perception that education is or can be the route to achievement of goals and perception of the strength and importance of support and barriers: thus

TABLE 3:
SUMMARY OF HYPOTHESES:
PARTICIPATION FACTORS AND ENTRY STATUS*

	Re-entry	Adult Entry
Hypothesis 5	<p>delayed application (credential emphasis)</p> <p>comfortable with other students, scholastic environment</p> <p>high satisfaction</p>	<p>immediate application (content/skill emphasis)</p> <p>problems with other students, scholastic environment</p> <p>low satisfaction</p>
Hypothesis 6	<p>perceive higher level of support from family and others</p> <p>fewer financial and other problems</p>	<p>perceive lower level of support from family and others</p> <p>more financial and other problems</p>

*Re-entry students expected to be more persistent to degree-completion (Hypothesis 1).

giving potentially greater emphasis to the importance of goals than to other elements in the Cross model. However, because of the difference in emphasis here, neither of the models will be tested directly.

The hypotheses in this chapter form the basis of the research reported in the following several chapters. Chapter 4 deals with the actual data collection; the testing of the effects of different variables and combinations of variables on long-term persistence are reported in Chapters 5 to 7. The utility of the model in explaining the empirical results is discussed in Chapter 8.

CHAPTER 4

RESEARCH DESIGN AND SURVEY PROCEDURES

Introduction

In this chapter, an outline of the research design is reported. The first section of the chapter outlines the initial data collection plans and reasons for their selection. Then the procedure for the mailed survey is described in some detail, including efforts to increase the response rate.

Respondents and non-respondents to the survey are compared on the basis of available data. Limitations to the reliability of the sample, particularly for making certain kinds of comparison, are suggested. A telephone survey of some non-respondents is described briefly. This report is followed by a description of the variables used. The chapter concludes with a brief outline of the data analysis procedure used in later chapters.

Sources of Data

The design initially had two parts: a study of a large number of student records followed by a mail survey of a somewhat smaller number of those students whose records had

been analyzed. The use of two data sources was necessary to test all hypotheses.

First, the study of records provided a base of hard data for the research, enabled partial direct testing of Hypothesis 1, allowed a check of the reliability of the data collected by survey, and gave some idea of the generalizability of the survey data to a wider population. The records, however, did not provide data on most of the hypotheses. (If the student records data had included, for example, father's occupation, it would have been possible to test Hypothesis 4 more easily.)

The softer survey data were needed to test Hypotheses 2 through 6. The survey was based on a more restricted population than the sample for the study of records, because otherwise the data analysis would have been unwieldy. (This is discussed later.)

Simon Fraser University (S.F.U.) was selected mainly because it has been comparatively accessible to adult students, particularly those wishing to attend part-time. It had had policies comparatively favorable to adult students for a long time. S.F.U. was the first university in British Columbia to set up a part-time degree program. By offering at least undergraduate Arts courses at night on

a regular rotation, S.F.U. made it possible for adults to make long-range plans to pursue degrees. A 1982 survey of three B.C. universities indicated that S.F.U. had higher proportions of students 25 years of age and older and students who considered themselves part-time than the University of British Columbia or the University of Victoria (Taylor and Weldon, 1982).

Thus, S.F.U. has been comparatively attractive to adult students in B.C. It has been involved with adult students since its beginning in 1965 and remains relatively attractive to adults. That its programming for adults is not a recent innovation was especially important for this study, in order to obtain a population of adult students who could have been attending over a long time-period, specifically ten years.

The selection of S.F.U. was also practical and convenient. In addition, the Division of Continuing Studies, the Office of Academic Advice, and the Registrar's Office were all cooperative and very helpful.

Student Records Data

All students who were enrolled at S.F.U. in the third trimester of 1973 and whose birthdates preceded December 1, 1948 were included in the study of records. The selection of age 25 as a minimum age is consistent with other studies, required less data collection than would have been necessary

using a role definition of adult, allowed for the possibility of having both students who started as traditional-age students (Re-entry) and as adults (Adult Entry), and still allowed for a substantial population to be sampled. While some adult students were undoubtedly left out by this use of an age criterion, there was reasonable confidence that all included were adults. The initial analysis involved 1435 usable records of students who were 25 years of age or older when enrolled at S.F.U. over ten years ago. (There were 1561 total records, but these included 126 records which were not usable for this study).

The study of records was used to partially test Hypothesis 1; age of initial registration at S.F.U. was used as an indicator of Adult Entry or Re-entry status. In addition, records data provided some variables which could be used to provide context and perspective for the data obtained by survey. Grade Point Average and time at university were not included in the model or hypothesis because they can be viewed as dependent variables as much as they are independent variables. They are included, however, in the multivariate analysis (Chapter 7).

The Mailed Survey

Most of the variables used in this research come from data obtained from a mailed questionnaire. This section

contains a discussion of the sample selection and of the development of the questionnaire.

Sample. The survey was limited to males who were between 25 and 34 years of age when registered at S.F.U. in the fall of 1973. The selection of a ten-year age cohort was somewhat arbitrary. However, it meant that all respondents could feasibly still be young enough to continue to work for degrees in 1983 (or at the time of the survey in 1985), if they had not already completed. It also reduced the need to include health or physiological considerations in the questionnaire.

In 1983, a random sample was selected of all male undergraduates at S.F.U. born in the years from 1939 to 1948. The decision to limit the mailed survey by sex and age was based mainly on feasibility and practicality. Including females would for some variables result in a need for almost double the number of respondents to allow for sound statistical analyses. While it was expected that the model outlined in the preceding chapter would apply to both sexes, there are differences between the sexes suggested in the literature, particularly in reasons for dropping out: differences in the influence of family relationships, effects of social mobility, importance of vocational goals, and the timetable for developmental stages. With respect to the model (Figure 4), it was expected that some of the

participation factors studied--in particular support and problems--would have different effects if females were included. Another reason for selecting males here is the fact that mature women in higher education have been a more popular group for study: re-entry as a term has been mainly applied to women.

Eliminating older males did not reduce the population by much. The distribution by age was not continuous; there were only 82 male students aged 35 and older at Simon Fraser in the fall of 1973, compared to 809 between 25 and 34. Some of the reasons for limiting the age range of the sample have been mentioned; it was also expected that older males would respond differently to the student experience (participation factors), and would therefore complicate the interpretation and analysis of the data unnecessarily.

Questionnaire. The survey involved use of a questionnaire to collect data to test Hypotheses 2, 3, 4, 5, and 6. The questionnaire was developed over an extended period using items from a variety of other questionnaires and original items, reference to Asking Questions (Sudman and Bradburn, 1982) and other sources, and consultation with a number of other researchers, including the Simon Fraser Office of Academic Advice. (See Appendix C for the Questionnaire.)

The main intent was to get good occupational and educational histories of the respondents, and respondents' educational plans in the past and at the time of the survey--Questions 1 to 7 deal with educational history and planning (and 17 and 21 with family educational history). Several of the questionnaires studied in preparing the instrument for the mail survey used checkoff categories when asking for occupation (using categories such as "professional," "managerial," or even "professional/managerial" -- not very precise or informative.) Respondents were asked to name their past and present occupations (6(b), 7(b), 9, 10, 11) and their father's principal occupation (20) because much social class and other information can be lost using category questions. It was hoped also to use the Holland categories (Holland, 1973) which required specific occupational titles.

Check lists were used for questions on motives (8), support (12,15), satisfaction (13), problems (14), and mother's education (21), in order to condense the questionnaire and because these data were not expected to be as important as employment and educational histories. Where possible, open-ended questions were included as well. Marital status, size of family, and age of children were included because of the possibility these life situation considerations could affect students.

Four adult students who had attended S.F.U. later than the sample population (two degree-completers and two non-completers) completed the questionnaire and commented on wording and time requirements. When asked to suggest additional items, these individuals tended to discuss things which affected one person specifically (such as access to particular Science courses). Whatever came up was usually something covered in one of the questions. That, along with a request from the Office of Academic Advice at S.F.U., was the reason for including Question 22, an open ended question which asks respondents to make recommendations for improvement of S.F.U.'s treatment of adult students.

Finally, a few items were deleted to keep the questionnaire short enough so as to minimize time for respondents and mailing costs. One question on job history (which would have gone between 7 and 9) was cut, along with a question essentially duplicating 8 on reasons for enrollment but asking respondents what they perceived as important motives for others in pursuing postsecondary education (so as to see if these adults perceived themselves as different). In addition a few suggested problems in 14 were deleted and father's education was dropped (because the most relevant item was considered to be father's occupation).

A few questions turned out not to generate useful data: the questions on occupational category (Holland, 1973) and

sources of support, in particular. This problem was probably due to the relative homogeneity of the sample which may have resulted in a restricted range of values for certain variables.

Mailed Survey: Response Rate

Initially, 340 males born between 1939 and 1948 (25 to 34 years of age in the fall of 1973) were randomly selected from the group of 809 males in that age range in the Student Records. Two more were selected immediately, as original selections had "ADDRESS UNKNOWN" on student records and no similar name was found in a British Columbia City Directory. So, the total sample selected was 342, although only 340 questionnaires were mailed initially.

Before any questionnaires were sent out, some effort was made to check addresses. All addresses were the most up-to-date, in 1984, known by either the Simon Fraser Registrar's Office or the Alumni Office. All British Columbia addresses were checked by using British Columbia City Directories and phonebooks (the City Directories were more useful); out-of-town telephone directories were used for those in the sample addresses listed outside of B.C., but in Canada. It was not possible to check foreign addresses. (Three questionnaires were sent to the United States, one each to Australia and West Germany.) As a

result, 99 of the 340 questionnaires mailed went originally to different addresses from those provided by S.F.U.

Records were kept of the number of addresses and the order used, and the number of questionnaires sent to different individuals, but not, unfortunately, of the number returned by Canada Post--there were over one hundred. (This was simple oversight; the main effort went into trying to find another address for these individuals.) Ninety-six different addresses were tried for second mailings--for 10, this was a third address (from the 99 addresses different from S.F.U. records originally); for 86, this was the second address for the individual. For an additional 32, the original S.F.U. address was tried when a new address had not worked. Follow-up questionnaires were sent to the same address to which one had previously been sent in 125 cases where the questionnaires were not returned by Canada Post and there had been no response.

Finally, 106 usable questionnaires were returned, a response rate (out of 342) of 31.0%. Follow-up studies are not something one embarks on optimistically. "Autopsy studies" typically have response rates of between 15% and 40% (Lenning, Beal, and Sauer, 1980). It had been hoped that with the help of the Simon Fraser Alumni and Registrar's offices, a higher rate could have been obtained. However:

- (1) Simon Fraser Alumni Office defines alumni only as people "who have completed degrees, certificates, or diplomas", thus eliminating most non-completers from consideration. In addition, the office was inactive before 1981. (Telephone conversation with Christine Liotta, Simon Fraser Alumni Office, July 5, 1985).
- (2) The Registrar's Office until recently made little or no effort to keep track of stopouts. Requests for transcripts were not recorded, so opportunities to update addresses were missed. (Telephone conversation with David Smithers, Director of Systems Analysis, Simon Fraser Registrar's office, July 5, 1985. He considered a 30% response rate from alumni to be good.)

In 1983, the Office of Analytical Studies at S.F.U. surveyed 1978-1982 graduates by mail and achieved a 38.3% response rate, a result similar to the 37.4% for graduates in this survey.

Questionnaires were sent out with a cover letter from the researcher assuring confidentiality and anonymity, and from the Simon Fraser Office of Continuing Studies, which has a special interest in part-time and adult students (see Appendix C). Stamped and addressed return envelopes were enclosed. Short of monetary incentive, a follow-up questionnaire (which was sent) is the only strategy consistently effective in increasing response rate (Fuqua, Hartman, and Brown, 1982).

However, the major problem was felt to be not so much non-response as non-contact--members of the sample who could not be "located". As stated, over one hundred questionnaires were returned by Canada Post. Two or more

different addresses were tried for 141 individuals. Probably fewer than 240 questionnaires were actually delivered to the correct individuals; perhaps less than half of the sample received them. The response rate for those who actually received the questionnaire may have been over 50%. A subsequent telephone survey confirmed this conclusion.

Respondents and Non-respondents Compared

Table 4 reports the response rate on two dimensions: age of initial registration at S.F.U. and completion or non-completion of degrees at S.F.U. Age of initial registration can be used as a rough indicator of Re-entry or Adult Entry status, with those who registered initially at age 24 or less being Re-entry students by definition and those who registered at age 25 or older being probable Adult Entry students. (Some of those who started at S.F.U. at an older age were transfers and, therefore, might be Re-entry.)

Both age of initial registration and degree-completion at S.F.U. had an effect on the response rate. In the overall sample, 68.1% were aged 25 or older when they first registered at S.F.U. but only 59.4% of the 106 respondents were. While only 47.4% of the sample had received S.F.U. degrees, 57.5% of the respondents had done so. (As noted in the table, four of the 45 non-degree respondents had

TABLE 4
 RESPONSE RATE BY DEGREE COMPLETION
 AND AGE OF INITIAL REGISTRATION AT S.F.U.

	Age Category:		
	24 or less	25 or older	Totals
Degree:			
Completers	39.0% ¹ (77)	36.0% (86)	37.4% (163)
Non-completers	<u>40.6% (32)</u>	<u>21.8% (147)</u>	<u>25.1% (179)</u> ²
Sample	39.4% (109)	27.0% (233)	31.0% (342)
	(Total number of respondents: 106)		
	$\chi^2 = 8.33, d.f. = 1, p < 0.01$		

¹Percentages indicate proportion responding in each category. For example, 30 of 77 (39.0%) completers in 24 or less category responded.

²Four respondents completed degrees elsewhere, two in each age category.

received degrees elsewhere. It is impossible to estimate proportions of similar individuals in the whole sample. They may be, like S.F.U. degree-holders, more likely to respond than non-completers.)

As can be seen in Table 4, the response rates for three of the four age/degree groups are roughly equivalent, with the rate for non-completers 25 and older at first registration considerably less than for the other categories. To some extent this is due to the low rate of response by new students who registered for the first time in the fall of 1973, as discussed later.

Response rate was related to three other factors (at least):

- (a) Length of time between initial enrollment at Simon Fraser and the Fall of 1973.
- (b) (Related to time spent.) Number of credits received at Simon Fraser.
- (c) Grade Point Average.

Basically, the effects are more or less the same for degree-completers (at S.F.U.) and non-completers--taking into account the basic 3:2 ratio that completers were more likely to respond than non-completers. However, in some cases, there is an interaction effect between the above factors and degree-completion which increases the difference.

Length of Time. Only 19 (18.4%) of the 103 in the sample who had initially registered in the fall of 1973 responded to the mailed questionnaire. As all students in

the sample were 25 or older in the fall of 1973, this to some extent accounts for the low response rate of non-completers among those who registered for the first time when aged 25 or more. (The response rate for others in this category was 30.6%, still less than for the other three age/degree groups in Table 4.) Of those whose first registration had occurred between the fall of 1971 and the summer of 1973, 32.8% responded; the response rate of those who had registered prior to the fall of 1971 was 38.2%. Within each of these groups, degree-completers were more likely to respond than non-completers. Table 5 reflects the effect of interaction between degree completion and time spent at S.F.U.: most of those who had registered prior to Fall, 1971 and were still around two years later subsequently graduated; most initial Fall, 1973 registrants did not; and those who registered between 1971 and 1973 are evenly split between degree-completers and non-completers. The results are again significant for the effect of time at S.F.U. on response rate in that those who had been at S.F.U. longer were more likely to respond.

TABLE 5:

RESPONSE RATE OF DEGREE COMPLETERS AND NON-COMPLETERS BY TERM OF INITIAL REGISTRATION.

Simon Fraser Degree Status:	Fall, 1973	Fall, 1971 to Summer, 1973	Prior to Fall, 1971
Completers ¹	33.3% (18)	34.9% (63)	40.2% (82)
Non-completers	15.3% (85)	30.6% (62)	32.1% (28)
$\chi^2 = 10.50, d.f. = 2, p < 0.01$ (N = 338)			

¹Four respondents who completed degrees elsewhere not included.

Number of credits Number of credits earned is similar to time spent at Simon Fraser as an indicator of extent of participation. It is a possible indicator of level--e.g., first year, second year--but that cannot be determined with certainty because of the presence of transfer students. Of those with 30 or fewer credits, 22.7% of the sample responded; of those with between 31 and 60 credits, 29.2% responded; of those with 61 or more credit hours, 36.5% responded. These results are fairly consistently maintained when completers and non-completers are compared (see Table 6); more degree-completers than non-completers responded at each level. The results are slightly non-linear--in particular, due to the small size of the degree-completer group with between 31 and 60 credits. Possibly because of this non-linearity, the effect of number of credits is not significant.

TABLE 6:

RESPONSE RATE OF DEGREE-COMPLETERS AND NON-COMPLETERS BY NUMBER OF CREDIT HOURS AT S.F.U. (TOTAL BY SUMMER, 1983).

	Number of Credits		
	0 - 30	31 - 60	61 +
Simon Fraser			
degree			
Completers	26.7% (45)	44.4% (18)	37.0% (100)
Non-completers	20.5% (83)	23.4% (47)	35.1% (37)
	$\chi^2 = 2.67, \text{ d.f.} = 2, .20 < p < .30$		

Grade Point Average The response rate for individuals with grade point averages between 0 and 1.99 was 23.8%; for those with G.P.A.s between 2.00 and 2.99, it was 27.6%; for those with G.P.A.s between 3.00 and 4.00, 32.7%. In Table 7, response rates are again compared on the basis of degree completion, this time also using grade point average.

TABLE 7:
RESPONSE RATE OF DEGREE-COMPLETERS AND NON-
COMPLETERS BY GRADE POINT AVERAGE.

Simon Fraser degree:	<u>Grade point Average</u>	
	2.99 or less	3.00 to 4.00
Completers	33.7% (86)	36.0% (86)
Non-completers	20.9% (91)	28.9% (76)

$\chi^2 = 1.25, d.f. = 1, n.s.$

G.P.A. is dichotomized because of the very small number of degree-completers below 2.00. As can be seen from Table 7, the level of the difference is not significant.

The group of respondents is more representative of degree-completers than non-completers. Non-completers of

degrees who registered at S.F.U. at age 25 or older are definitely under-represented in the mail survey sample, partly because of the low response rate among new students who registered at S.F.U. for the first time in the fall of 1973. This low response rate results in a small number for Adult Entry students who did not complete degrees. This limits the range of possible analyses and comparisons of groups; otherwise, the data can be treated as reasonably representative.

In subsequent chapters, some differences will be noted between the information obtained from the questionnaire responses and that obtained from the Student Records data. In some cases, these differences may be due to systematic differences between respondents and non-respondents. The low response rate has to be accepted as one of the risks in studying a problem requiring a long time-frame when conducting a longitudinal study is impractical.

Telephone Survey

Although the 31.0% response rate may have been reasonable given the circumstances, an effort was made to telephone a sample of the non-respondents, mainly to find out why the response rate was as low as it was. Twenty-four non-respondents were interviewed by telephone.

The sample selection was limited to the lower mainland of B.C. for practical reasons. One three-digit random

number (144) was selected from a table of random numbers and every tenth non-respondent above and below that number was called (thus 4,14,... , 234) from the list of 236 non-respondents, as long as the individual was located in the lower mainland and a number for him could be found. Otherwise, the next number down was selected. Similarly, substitutes for telephone non-respondents were found by going down the list from each non-respondent (wrong person, number not in service, no answer to three consecutive calls, refusal to be interviewed). This system, slightly less random, was designed to assure a spread of respondents over the list, which followed the Student Records arrangement by trimester of initial registration at Simon Fraser.

The 24 non-respondents interviewed consisted of 13 who had not completed degrees at Simon Fraser and 11 who had. (Two of the non-completers had received degrees after 1973 elsewhere, and one already had had a degree, although he had done undergraduate work at Simon Fraser.) This balance, more like the sample than the respondents to the mailed questionnaire, was not deliberately sought, but probably resulted from the slightly varied sampling technique used. Still, there is a suspicion that the sample of non-completers obtained is not a representative group; there were no interviewees who had had a very short experience at S.F.U. (less than three trimesters, or one year), and three

of the four who refused to be interviewed were non-completers.

The results of the telephone survey suggest that non-contact was the major cause of non-response to the mailed survey. Seven of the twenty-four former students who were successfully interviewed said they had not received the mailed questionnaire--they had moved recently and the mail had not been forwarded, or they had just not received it. Perhaps they simply could not remember receiving it, or did not want to admit ignoring or failing to respond to the questionnaire.

To obtain 24 respondents, it was necessary to select and attempt to telephone 73 individuals. (See Table 8.) In

TABLE 8:
RESULTS OF THE TELEPHONE SURVEY

Result:	Number
Interviewed	24
No contact	21
Wrong number	24
Refusal	4
Total	73

fact, the response rate for the telephone survey was 32.9%-- not much different from the 31.0% for the mail survey. The 73 names were obtained using all Lower Mainland and Fraser Valley City Directories and telephone directories. It was summer, a bad time to find people at home, and 21 could not be reached. There were 24 cases whose address, according to the 1984 Vancouver City Directory agreed with the Simon Fraser address and the 1985 Vancouver Telephone Directory, yet whose number was not in service by July, 1985. There were four refusals: one degree-completer and three non-completers.

Based on the telephone survey, it is possible to make an estimate of the numbers who actually received the mailed questionnaire. The 24 wrong numbers would almost certainly not have, so a maximum of 67.1% (49 of 73) would have received it. If 67.1% of all the mail survey sample received the survey, the response rate would have been 46.2% (31.0/67.1). In addition, some of the 21 non-contacts and some of the seven in the telephone survey who stated they never received it would certainly have been non-recipients. The estimate that over 50% of those who actually received the mail survey responded to it seems quite reasonable.

The 17 interviewees who had received but had not returned the questionnaire gave a number of different reasons for not returning it--some said they had meant to do

it but were either too busy or had misplaced it; two said they didn't fill in questionnaires but they did answer questions over the phone, one cheerfully and one not; one gave the reason as "ambivalence"--mixed positive and negative reactions to S.F.U. (See Table 9.)

TABLE 9:
TELEPHONE INTERVIEWEES' REASONS FOR NOT
COMPLETING QUESTIONNAIRE.

Reason:	Number
never received	7
too busy	10
lost it	4
disinclined	2
mixed feelings	1
Total	<u>24</u>

The main function of the telephone survey was to help understand why the response rate for the mail survey was fairly low. The results indicate that the mail survey response rate was probably about as good as could have been expected. Probably at least a third of the mailed questionnaires were not received by the intended respondents. As stated earlier, the results were nearly as good as S.F.U. obtained in a study of graduates who had attended more recently than the sample surveyed here. (An

abridged questionnaire was given to the telephone respondents. The results are in Appendix D.)

Analysis

This section describes the variables obtained from student records and the mailed survey, and outlines the methods of analysis used in later chapters.

Variables

The variables used in data analysis included information from both the questionnaire and from the student records. As well as the dependent variable, degree completion, there were eleven variables used with the mailed survey sample. The variables are described briefly below with summary statistics presented in Table 10, giving the mean, standard deviation, and minimum and maximum score for each variable. These variables are used mainly in the multivariate analysis in Chapter 7; for these procedures, z-scores (based on standard deviation) were used rather than raw scores so the much larger ranges for some variables such as Satisfaction do not distort the results. Nonetheless, the greater number of possibilities for variables based on wider ranges (such as satisfaction, Grade Point Average (G.P.A.), and time since enrollment) may make them more sensitive than others, particularly the two-group

TABLE 10.
 VARIABLES USED IN MULTIVARIATE ANALYSIS OF DEGREE
 COMPLETION: SUMMARY STATISTICS

Variable:	Mean	Standard Deviation	Minimum	Maximum	N
Degree ¹	.575	.494	0	1	106
Entry ¹	.444	.509	0	1	98
Time of Decision	2.491	1.071	1	4	106
Social Mobility	.531	1.917	-5	+5	98
Early-career Mobility	1.412	1.390	-1	+5	97
Level of Aspiration	1.351	1.849	-5	+5	97
Desire for Change	.544	.571	0	2	103
Satisfaction	10.373	2.044	5	15	102
Work-related problems	.470	.611	0	2	100
Time since Enrollment	15.990	10.419	0	53	105
Grade Point Average	2.860	.584	1.00	4.00	92
Mother's Education	1.827	.955	0	3	104

1. Two-Group Categorical variables.

categorical (either-or) variables, such as degree completion or not and Entry/Re-entry.

Most of the variables are required for the hypotheses. G.P.A. and time since enrollment, obtained from student records, are included mainly for use in multivariate analysis. There were no hypotheses using G.P.A. time since enrollment, and partly because they can be viewed almost as much as dependent as independent variables.

For some of the variables, the range of scores is much narrower than the potential range. These situations are described in the definition of the variable.

It will be observed that the N varies from 92 to 106. This variation is due mainly to non-responses to some questions in some of the questionnaires.

Degree: The dependent variable throughout all the analyses is completion of a Bachelor's degree at S.F.U. between the fall of 1973 and the summer of 1983. This is a categorical variable.

Entry: This categorical variable is sometimes used as an independent and sometimes as a control variable. The two categories are Adult Entry, those who registered initially in postsecondary education at age 25 or older, and Re-entry, those who had been university students at ages younger than 25, but had not completed their degree programs and had re-

entered the university after attaining the age of 25. There were no respondents to the mail survey who had started before age 25 without leaving university for at least a year before 1973.

Only 98 of the 106 were definitely identified as Entry or Re-entry on the basis of Question 2. (Appendix C.) Guesses could have been made on the remaining eight using initial registrations dates and birthdates, but this was avoided. Because of cross-tabulation of Entry with other variables in Chapters 5 and 6, Ns in some tables are less than 98 when respondents who answered Question 2 left out some other question.

Time of Decision: Based on a four-category questionnaire item, asking individuals when they had initially decided to attend college or university: before they had begun attending high school, during high school, in the first three years after high school, or later. This is an ordinal variable.

Social Mobility: Based on a comparison of father's occupation with level of initial job held for at least one year by respondents. Using a six-level scale, theoretically the maximum score could have been +5 (six minus 1), the minimum -5 (1 minus 6). In fact, scores of 1 or 6 for fathers or sons were almost non-existent, scores of 2 rare, so the range was closer to -2 to +2 (3 minus 5 to 5 minus

3). (Eighty-four of 98 respondents who answered this question were in the -2 to +2 range.)

Alternative measures, comparison of father's occupation with respondent's later occupations, either at the time of registration or at the time of the survey, showed little mobility upward or downward and the resulting scores did not prove useful in analysis.

Early-career mobility: A comparison of initial occupation with occupation held by respondents when they re-registered (Re-entry) or initially registered (Adult Entry) at university. Again, the theoretical range for the variable was -5 to +5; because respondents exhibited little downward mobility within their own careers, the actual spread of scores was less than for Social Mobility. (Eighty-one of 97 had scores between 0 and +2.)

Level of Aspiration: This measurement was based on a comparison of the social class indicated by respondents' occupations at the time of the survey with the level of jobs they stated they would like to have in the future, if they wished to change careers or advance within their own careers. Because few respondents were at lower levels at the time of the survey, this variable had a restricted range, in effect between zero and two. (Seventy-four of 97 respondents were in this range.)

Desire for Change: Respondents were given one point if they had changed occupations since registration and another one if they stated a further desire for change, whether this was a desire for upward mobility or not. The possible range for this variable was from zero to two. There were only two individuals with scores of two.

Satisfaction: This was an additive index based on answers to five of seven questions on satisfaction with the experience of being a university student. The questions used were on satisfaction with classes, course content, scheduling, instructor contact, and class size. Two questions--on satisfaction with social life and with counselling--were not included in the index for multivariate analysis because they did not contribute. They are analyzed separately in the section on testing of Hypothesis 5. The responses to questions dealing with satisfaction with social life and counselling did not differentiate degree-completers and non-completers. The maximum possible score on this variable was 15, minimum 5, but nobody scored lower than 6.

Work-Related Problems: Initially, an additive index of problems was attempted with the mailed survey sample. However, neither this index nor four of the five categories of problems (personal, family, study-related, financial) correlated significantly with degree-completion. Only one item, work-related problems, was a useful predictor and, in

fact, was very important in the analysis. The range for this item was from zero to two.

Time since Enrollment: This value was obtained by subtracting the term of initial registration at Simon Fraser from the term when a degree was obtained or the respondent last attended. (Earliest possible: 1965-3; last possible: 1983-2--a maximum possible score of 53.) The variable does not refer to the actual number of semesters attended.

Grade Point Average: The distribution of the values for grade point average was the nearest thing to a continuous variable in this analysis, with an upper limit of 4.00. Undergraduate G.P.A. was only available for 92 respondents. The other 14 had taken some graduate courses and records data unfortunately only provided graduate G.P.A.s in these cases.

Mother's Education: This was based on an eight-category question in the questionnaire recoded to three levels of lesser to greater lengths of formal education, because some of the original eight categories were nearly empty.

Data Analysis

The hypotheses and subhypotheses were tested using univariate and bivariate techniques, including cross-tabulations and correlations. These analyses are reported

in Chapters 5 and 6, using both survey and records data to test the individual hypotheses.

Multiple regression was used to assess relative importance of the independent variables and determine if a useful equation could be developed to predict persistence. While multiple regression originally was considered most useful for prediction (of behavior such as dropout), it can also be used for explanation (Kerlinger and Pedhazur, 1973).

Discriminant analysis was used to determine the extent to which the variables in the model do, indeed, discriminate between the two groups: persisters and non-persisters. It can be used to determine whether individual characteristics predict group membership as the dependent variable in a regression equation, and has the value of assisting in understanding the differences between groups and in studying the relations among variables within different populations and groups (Kerlinger and Pedhazur, 1973; Cooley and Lohnes, 1971). It was expected this analysis would produce profiles of persisters and non-persisters similar to Tables 2 and 3 in Chapter 3.

The multivariate techniques, multiple regression and discriminant analysis are discussed in Chapter 7.

CHAPTER 5
TESTING HYPOTHESES: BACKGROUND FACTORS
AND DEGREE COMPLETION

Introduction

In this chapter and the next, the analysis focuses on data obtained from males aged 25 to 34 in 1973 as collected by the mailed questionnaire. There are occasional references in these chapters to student records data, for the test of Hypothesis 1 and as a means of checking validity.

The remainder of this chapter consists of sections examining in turn Hypotheses 1 to 4 on the effects of selected background characteristics of respondents on degree-completion. The summary includes an expansion of Table 2, Chapter 3, which summarizes the relationships with persistence which are stated in the hypotheses about Background Factors.

Hypothesis Testing

Analyses in Chapters 5 and 6 are either univariate or bivariate, examining mainly direct relationships between

independent variables and degree-completion. A control variable may be introduced to check for spurious relationships, or because the hypothesis specifically mentions interactions of more than one independent variable. In particular, various motives and experiences of subjects were expected to affect degree-completion differently for Adult Entry than for Re-entry students.

The hypotheses were examined chiefly through the use of contingency tables, with conclusions based on the direction of the relationships, if any, and statistical significance, usually tested by chi square, when appropriate. Occasionally, limitations in the data (for example, with Hypothesis 2) made such testing doubtful. The procedure chosen here was to test the literal hypotheses but to be conservative in making conclusions or claiming support. While one should be alert to both Type 1 and Type 2 error, avoiding Type 2 (accepting hypotheses which should not be accepted) was considered somewhat more important in a model-building process. Better to be sure of the materials for a model before working on the structure.

The Entry Hypothesis

As stated in Chapter 3, it was expected that students with prior post-secondary experience would be more likely to persist than those without. Experienced students would know what to expect and there would be greater likelihood of

positive family attitudes to participating in higher education.

H1:

Re-entry students are more likely to persist to degree completion than Adult Entry students.

In this research, Re-entry students were defined as those who started post-secondary education at age 24 or less and Adult Entry as those who started post-secondary education at age 25 or older. In fact, there was a bimodal distribution in the mailed survey sample--with the mode for Re-entry 18 years of age at the time of initial registration at a university or college, and the mode for Adult Entry between 27 and 28 years of age for the start of their post-secondary experience. (See Appendix C, Question 2.)

It was possible to test this hypothesis using both student records data and the mailed survey. Because of the importance of the hypothesis in the model (Figure 4), both approaches were used.

Student Records data could not be coded precisely to categorize Adult Entry and Re-entry students, because some students who started at Simon Fraser University at age 25 or older may have attended another institution previously.

Some of those who started much younger and were still at S.F.U. in 1973 may have been in continuous attendance, perhaps part-time. However, by subtracting year of birth

from time of initial registration at S.F.U., an approximation can be calculated, ignoring the possibility of transfer. The result gives age at time of first registration at S.F.U.; those who had initially registered first at age 24 or younger are Re-entry students by definition. Those who started at age 25 or older are Adult Entry students. Those who had registered initially at S.F.U. in the fall of 1973 were left out. This group had a very low degree-completion rate at S.F.U., so leaving them out is consistent with the emphasis on avoiding Type 2 error. Only 44 (16.9%) of 261 males who registered initially in the fall of 1973 received degrees.

Table 11 shows degree completion rates for males aged 25 to 34 at the time of the survey, in two categories based on age of first registration at S.F.U. (This is the population, except for initial registrants in the fall of 1973, from which the survey sample was selected.) As can be seen, those who initially enrolled at 24 or less (Re-entry) were significantly more likely to complete degrees than those who enrolled at 25 or more (mostly Adult Entry). So, student records indicate support for the hypothesis.

TABLE 11:
 DEGREE COMPLETION AND AGE OF FIRST
 REGISTRATION OF MALE STUDENTS AGED 25-34 AT S.F.U.
 (STUDENT RECORDS DATA BY ADULT ENTRY AND RE-ENTRY STATUS)

Degree:	Age category:	
	24 or less	25-34
Completers	73.2% (208)	51.5% (186)
Non-Completers	26.8% (76)	48.5.% (175)
Totals:	100.0% (284)	100.0% (361)

(N= 645) $\chi^2 = 33.1$, d.f. = 1, $p < 0.001$

The mail survey data for this hypothesis are reported in Table 12. In the mailed survey, only slightly more than one-quarter of the Adult Entry students failed to complete degrees, while slightly more than half of the Re-entry students were non-completers. The results are significant, but not in the predicted direction or the same direction as student records data. On the basis of the mailed survey, Hypothesis 1 could be rejected.

TABLE 12:
 DEGREE COMPLETION AND NON-COMPLETION
 BY ADULT ENTRY AND RE-ENTRY STATUS (MAIL SURVEY).

Degree:	Status:	
	Re-entry	Adult Entry
Completers	48.1% (26)	72.7% (32)
Non-Completers	51.9% (28)	27.3% (12)
Totals:	100.0% (54)	100.0% (44)

(N = 98) $\chi^2 = 6.11$, d.f. = 1, $p < 0.05$

There were eight respondents to the mail survey not categorized as Re-entry or Adult Entry. (They did not answer Questions 2, 6, or 7.) These included the four who completed degrees at other institutions (although the two who completed their degrees after leaving S.F.U. might be considered Re-entry). On the basis of age and year of initial registration at S.F.U., the remaining four would have included three Re-entry (one completer, two non-completers) and one Adult Entry (non-completer). They were left out of analysis involving the Entry variable because it

was not certain what category they belonged to and because including them would not have affected the proportions significantly.

The findings on Hypothesis 1 are somewhat ambiguous. It may be argued that most of these Adult Entry respondents had already been students for some time in 1973 and, therefore, were fairly well committed students. The response rate of those who registered initially in the third trimester of 1973 was low (18.4%), and this group had a low rate of completion. As stated in Chapter 4, the lack of Adult Entry non-completers may be a deficiency of the sample. This may account to some extent for the findings with the mail survey. However, the hypothesis was supported with student records data even with fall, 1973 registrants excluded. The student records are "hard" data. Therefore, the conclusion must be that Hypothesis 1 is supported.

However, the results with the mail survey indicate that perhaps the hypothesis should be qualified and reconsidered. In fact, it may be that new students enrolled for the first time are at high risk to drop out, but that once Adult Entry students have spent some as yet undetermined minimum amount of time within the system, they may be no more prone to dropout than Re-entry. Perhaps even one advantage is that they are unlikely to have had negative experiences from being in post-secondary education. The Adult Entry/Re-entry distinction is reconsidered in Chapter 9.

Time of Decision

Extent of educational ambition, particularly credential ambition, was expected to affect persistence. Intention to complete degrees and to pursue advanced degrees influence degree completion. The length of time an ambition has been held is an indicator of its strength. The older the dream, the more likely it will be followed to fruition.

H2: The longer adult students have planned to complete degrees and the farther they planned to go with their education, the more likely they are to persist to degrees. More specifically:

- (a) The earlier that adult students made their decision to pursue education beyond secondary school, the more likely they are to complete degrees, even as adult students.
- (b) Re-entry students will be more likely to complete degrees if they had intended to return when they left post-secondary education as pre-adults than if they were uncertain or had perceived themselves as dropouts at that time.
- (c) Adult Entry students will more likely complete degrees if attending college or university was fulfillment of a long-time ambition than if their decision to attend was recent.

The data for 2(a) came from a question in the mailed questionnaire allowing four categories of time of decision from before high school to more than three years after high school. (See Appendix C, Question 1.) The results are reported for degree-completers and non-completers in Table 13.

TABLE 13:
TIME OF DECISION AND DEGREE COMPLETION

Time of decision:	Degree:	
	Completed	Not completed
Before high school	11	8
During high school	25	19
Less than 3 years after high school	11	4
More than 3 years after high school	18	10
Totals:	65	41

$\chi^2 = 1.49$ d.f. = 3, n.s.

While 67% of those who made decisions after high school completed, and only 57% of those who made earlier decisions completed, the relationship is not statistically significant. This might be an effect of having few Adult Entry non-completers.

Table 14 compares the Adult Entry and Re-entry sub-categories of the mailed survey for time of decision and degree-completion. The results are not significant for either group. The main difference is that 46 of 54 (85.2%) Re-entry students made early (before end of high school) decisions, while 33 of 44 (75.0%) Adult Entry students made late ones.

TABLE 14
TIME OF DECISION AND DEGREE COMPLETION:
ADULT ENTRY AND RE-ENTRY COMPARED

Time of decision:	Category:			
	Adult Entry		Re-entry	
	Degree	No degree	Degree	No Degree
Before high school	1	1	9	5
During high school	7	2	16	16
Less than 3 years after high school	6	2	3	3
More than 3 years after high school	18	7	-	-
Totals:	32	12	28	26

$$X^2(\text{Adult Entry}) = 0.65, \text{ d.f.} = 3, \text{ n.s.}$$

$$X^2(\text{Re-entry}) = 1.22, \text{ d.f.} = 3, \text{ n.s.}$$

The data for hypotheses 2(b) and 2(c) are based on a question asking for the main reason for re-enrolling (Re-

entry) or for enrolling for the first time (Adult Entry). (See Appendix C, Questions 6(a) and 7(a).)

Individuals were allowed to check one item only. Table 15 gives degree-completion percentages of those answering the motive question. The percentage shown is the percentage completing degrees of the group selecting each particular motive. Categories are not exactly parallel for Re-entry and Adult Entry students (because not all categories were identical), although "to complete a degree" and "to fulfill a long-time ambition" for Adult Entry students and "always intended to return" for Re-entry could be grouped as non-vocational. The "other" statement was usually something to do with time available (in one case as a result of an industrial accident), boredom or desire for stimulation.

None of these motives were predictors of success or failure. Nine of 10 Adult Entry students in the sample who said they had enrolled mainly "to fulfill a long-time ambition" completed degrees (showing some support for Hypothesis 2(c)), but most Adult Entry students in the sample did that, whatever their main motive at the time. However, the degree-completion and long-time ambition motives were mentioned more frequently than any of the other (mainly vocational) alternatives by Adult Entry students.

TABLE 15:
 PERCENT COMPLETING DEGREES BY MAIN
 MOTIVE AT TIME OF ENROLLING OR RE-ENROLLING

Main reason for enrolling	Status:	
	Adult Entry	Re-entry
Always intended to return		57% (21)
Long time ambition	90% (10) ¹	
To complete a degree	71% (21)	
Vocational motive ²	60% (10)	48% (25)
Other	50% (2)	50% (8)

¹In parentheses, number checking item. Percent refers to proportion of that number completing degrees.

²Combines four statements from question for Adult Entry; three statements from question by Re-entry.

Another question (Appendix C, Question 8) asked respondents what they considered important for attending post-secondary institutions at the time of the survey. This question focused on benefits attributed to higher education

by the respondents, which could have been influenced by their experience in addition to their motives or attitudes when they started. In addition, this question allowed multiple responses; respondents were allowed to check off as many items as they wished. One item was "To complete a degree;" one was "To meet people;" six items indicated vocational emphases; and three were based on personal or self- or world-understanding motives. While the question does not provide data directly relevant to Hypothesis 2, it might be that degree-completion and self/understanding motives are more related to a long-term desire to attend university than vocational or social motives. Only six individuals, all degree-completers, checked "To meet people." None of the other categories: degree completion, vocational reasons, or self/understanding reasons were significantly related to degree completion by the respondents. However, there were significant (at the 0.05 level) differences between the Adult Entry and Re-entry groups in likelihood of emphasizing vocational and self/understanding motives. Re-entry students were significantly more likely to stress vocational reasons for attending, while Adult Entry students were significantly more likely to emphasize personal reasons or understanding of self or the world. (See Table 16.)

TABLE 16:
EMPHASIS ON VOCATIONAL VS. SELF/UNDERSTANDING
REASONS FOR ATTENDING, BY ENTRY STATUS

Reason for attending:	Status:	
	Adult Entry	Re-entry
Vocational ¹	54.5% ³	88.5 %
Self/understanding ²	81.4%	57.7%
N =	44	52
X^2 (vocational) = 13.93, d.f.=1, p<0.01		
X^2 (self/understanding) = 6.44, d.f.=1, p<0.05		

¹Checked off one or more of six items.

²Checked off one or more of three items.

³Categories not mutually exclusive; individuals could check off items in both categories.

Within the categories, however, there was no relationship to degree-completion. Adult Entry students usually completed degrees; Re-entry students were equally likely to complete or not, whether they emphasized vocational or self/understanding motives. Given the indication in Table 15 that those with vocational motives were relatively less successful in completing degrees, it is perhaps not surprising that the less successful Re-entry

group would be more likely to stress vocational reasons for attending university.

While differences were found between Re-entry and Adult Entry students in time of decision and in motives for enrollment, the hypothesized connections with degree completion were not found. None of the sub-hypotheses of Hypothesis 2 was supported.

Family Educational Background; Degree Aspiration

Some variables, like time of decision in Hypothesis 2, were expected to affect persistence of Adult Entry and Re-entry students in the same manner. Family involvement in higher education and degree aspiration were also considered likely to affect the two groups' persistence in the same manner.

H3:

Adults who persist in post-secondary education to completion of degrees, as opposed to adult participants in higher education who do not complete degrees, will:

- (a) more likely have family members with advanced education, and
- (b) more frequently have planned to pursue advanced degrees when they started post-secondary education.

The influence of family educational involvement is somewhat ambiguous. Table 17 reports the relationship between mother's education and degree-completion for the mailed survey. The results are not significant.

TABLE 17:
MOTHER'S EDUCATION AND DEGREE COMPLETION

	Degree	
	Completed	Not completed
Mother's Education:		
Less than high school	24	13
High School completion	24	15
Post-Secondary Education	<u>12</u>	<u>13</u>
Total:	60	41
$\chi^2 = 1.88, d.f. = 2, n.s.$		

Statistically significant differences were discovered in mother's education between the Re-entry and Adult Entry groups. (See Table 18.) Half of the Adult Entry Students (21 of 42) had mothers with less than high school completion compared to 14 of 53 Re-entry students, while more Re-entry students had mothers who had at least some post-secondary education (18 to 6 of the Adult Entry students). Re-entry students' mothers had on average more years of education than Adult Entry students' mothers. Having relatively well-

TABLE 18:
MOTHER'S EDUCATION AND ENTRY STATUS

	Status ¹	
	Re-entry	Adult Entry
Mother's Education:		
Less than high school	14	21
High School completion	21	15
Post-Secondary Education	<u>18</u>	<u>6</u>
Total:	53	42
$\chi^2 = 7.33, d.f. = 2, p < 0.05$		

¹Six respondents could not be categorized as Adult Entry or Re-entry.

educated mothers increased chances one would go to post-secondary education immediately or soon after high school, but not that one would complete a degree.

Having siblings who had attended college or university did not differentiate degree-completers from non-completers. Sixteen persisters had had brothers or sisters attend post-secondary before they did and so did 11 non-persisters, but that is proportional to the overall ratio of degree-completers to non-completers among all respondents.

Hypothesis 3(a) is not supported by the data. There is a significant difference between Re-entry students and Adult Entry students in mother's level of education, but neither that variable nor higher education participation by siblings had any effect on persistence to degree-completion.

Likewise, degree aspiration was not a very useful predictor variable. Almost all respondents intended to complete degrees, and almost all of them intended to complete a Bachelor's degree only. A few students said they intended to stop short of a degree; many of these were taking a certificate course for bankers when they first enrolled, so perhaps they can be believed. (They were degree students by the fall of 1973 so were included in the survey.) A few more stated they had originally intended to complete graduate or professional degrees.

Degree aspiration made no difference in completion rates: slightly more than half, five of nine, who stated they had not originally intended to go as far as a Bachelor's degree, did, and slightly less than half, six of 13, who intended to go beyond did not get to the first degree. One interesting point is that 10 of the 13 who aspired to advanced degrees were Re-entry students. Adult Entry students, starting at an older age, appeared to be less likely to aspire beyond the Bachelor's degree initially.

It was not anticipated that so few students would express interest in advanced degrees, although perhaps it should not have been surprising that few adult students would have aspirations for graduate work. There is evidence that male students are not as inclined to pursue education, especially full-time education like most graduate and professional programs, after age 30, as they are in their twenties (Frost, 1980; Hopper and Osborn, 1975).

Hypothesis 3 is not supported by available evidence. Neither level of mother's education nor degree aspiration were associated with persistence in the mail survey. These are variables which have been found to affect persistence in research based on traditional-age post-secondary students. For adult students, perhaps traditional predictor variables do not have traditional effects.

Social Class/Mobility

The sociologically-based research on returned dropouts (Eckland, 1965), adult students (Hopper and Osborn, 1975), and part-time students (Humphreys and Porter, 1978) led to an expectation that downward mobility would be more associated with degree-completion than upward mobility. It was expected that a fair proportion of the Re-entry students would be downwardly mobile and, of course, it had been expected that Re-entry students would be more likely to complete degrees than Adult Entry.

H4:

There will be higher proportion of individuals downwardly mobile in social class among adults who persist to degrees than among non-persisters; and there will be a higher proportion of upwardly mobile individuals among non-persisting adults than persisters (mobility by comparison to family of origin).

Data for testing this hypothesis came from questions asking for father's occupation and for the main occupation the student had prior to becoming a student (Adult Entry) or prior to returning to being a student (Re-entry). Also of interest were questions asking for present occupation and occupational aspirations. (See Appendix C: Questions 6,7,9,11, and 20.) Occupations were coded using a six-level system rather than one of the more precise socioeconomic status or occupational prestige scales because of some uncertainty about the level of some occupations given in answers. When an occupation was difficult to code even using the simplified system--"banker" for example--a generous level was given, as much as anything because of the overall trend, with few respondents reporting higher-level occupations for their fathers.

There were not many opportunities for downward mobility in the sample. Only 6 of 101 who answered this question could be said to have fathers in upper or upper middle class occupations. The mean occupational level for fathers, based on the six-level system chosen, was 4.07.

The mean occupational level for respondents' main job prior to being a student or to re-entry was 3.76, indicating slight downward mobility. However, this must be interpreted cautiously because many respondents did not actually interpret this job as being part of their career.

Sixteen of 106 did not respond to this question; by comparison only 5 left out father's occupation and only 3 did not give their present occupation. There is a sense, especially from the Re-entry students, that any job mentioned was viewed as having nothing to do with their status; this would seem logical, especially for those who had definitely intended to return to higher education, who would probably have viewed their jobs during this time as temporary.

Table 19 reports the relationship between degree-completion and three categories of social mobility (between father's occupation and first job held for a year or more) for the full sample. The three categories of mobility are:

- (1) downward: change of 1 or more levels from father's occupation to first job (for example, 5 - 4);
- (2) no mobility: no change between father's occupation and first job; and
- (3) upward: first job 1 or more levels higher than father's occupation.

TABLE 19:
DEGREE COMPLETION AND SOCIAL MOBILITY

	Mobility:			Total
	Downward mobility	No mobility	Upward mobility	
Adult Entry:				
No Degree	5	3	4	12
Degree	13	9	7	29
	$\chi^2 = 0.39, \text{d.f.} = 2, \text{n.s.}$			
Re-entry:				
No Degree	12	3	10	25
Degree	11	5	4	20
	$\chi^2 = 2.50, \text{d.f.} = 2, \text{n.s.}$			
Full Sample:				
No Degree	17	6	14	37
Degree	24	14	11	49
	$\chi^2 = 3.09, \text{d.f.} = 2, \text{n.s.}$			

As can be seen, the results are not significant for the full sample, although more than half of the downwardly mobile adult students completed degrees while less than half of the upwardly mobile adult students did. Likewise, the results were not significant at the 0.05 level for the Adult Entry and Re-entry subsamples, although there was a slightly stronger tendency for the variable to have the expected effect with Re-entry students, among whom 47.8% of the downwardly mobile completed degrees compared to 28.6% of the upwardly mobile.

An alternative measure of social mobility, comparing father's occupation with job held by respondent at the time of the survey, had even less relationship to degree completion. By the time of the survey, only two of the respondents could be described as still being downwardly mobile from their family-of-origin-status.

Early-career mobility, change in occupational level from first job to job at the time of entry or re-entry to post-secondary education, was related to degree-completion among the Re-entry group. However, as Table 20 shows, there was no effect for Adult Entry students and the effect for the full sample was not significant. (There was no downward mobility of more than one level reported.)

TABLE 20:
DEGREE COMPLETION AND EARLY-CAREER MOBILITY

Degree:	Mobility:	
	No mobility	Upward mobility
Adult Entry		
No degree	6	6
Degree	18	14
$\chi^2 = 0.12$, d.f. = 1, n.s.		
Re-entry		
No degree	22	4
Degree	14	12
$\chi^2 = 5.76$, d.f. = 1, $p < .10$		
Full Sample		
No degree	28	10
Degree	32	26
(N=96) $\chi^2 = 2.41$, d.f.=1, n.s.		

Upward mobility between first job and job held before returning to higher education may be related to degree-completion by Re-entry students. Actually, Re-entry students who displayed no mobility in their early careers were more likely not to complete degrees than to complete, while mobile Re-entry and both mobile and non-mobile Adult Entry students were more likely to complete than not. This

lack of persistence by non-mobile Re-entry students may indicate giving-up, defeat, or lack of ambition.

Desire for further upward mobility was more strongly related to degree-completion than any measures based on respondents' histories. Respondents were asked what occupation they expected to be practicing in two or ten years; usually they expected only one change. A comparison of the job respondents expected to be doing in ten years compared to their first job was used as measure of level of aspiration. As Table 21 shows, this related quite strongly with degree completion: the more upward mobility indicated, the more likely one was to be a degree-completer.

The effect of low level of aspiration was especially strong for Re-entry students: 70% of those who aspired to downward or no mobility were non-completers while 78% of those who aspired to upward mobility completed. (For Adult Entry students, there was little difference: 71% of those with no upward mobility aspirations and 75% of those with aspirations completed degrees.)

There were six who expected to be downwardly mobile (according to the scale) over their careers, one degree-completer (Adult Entry) and five non-completers (one Adult Entry, four Re-entry). They usually stated a desire to become an artist or craftsman, something like a dropout motive, not an expectation of failure.

TABLE 21:
DEGREE COMPLETION AND LEVEL OF ASPIRATION

	Mobility:		
	Downward or no mobility	Upward mobility	Total:
Re-entry			
No degree	21	5	26
Degree	9	18	27
	$x^2 = 12.19, d.f. = 1, p < 0.01.$		
Adult Entry			
No degree	7	5	12
Degree	17	15	32
	$x^2 = 0.10, d.f. = 1, n.s.$		
Full sample			
No degree	28	10	38
Degree	26	33	59
	$x^2 = 8.10, d.f. = 10, p < 0.01$		

Level of aspiration could be considered an effect of degree-completion rather than a cause. Those who had not completed degrees might realistically expect less upward mobility. On the other hand, it could indicate a lack of goal orientation in the first place, which one would expect to relate negatively to degree-completion. However, level of aspiration prior to or during enrollment was not assessed; questions (actually, sub-questions) asking: "At that time, what was your vocational goal?" were deleted

partly because pre-test respondents were unable to answer the questions or felt they were irrelevant, and partly to save space.

All of the relationships reported in this section worked more strongly with Re-entry students than with Adult Entry students. Downwardly mobile Re-entry students were more likely to complete degrees than were upwardly mobile ones. Re-entry students who were not upwardly mobile in their early careers were more likely to be non-completers than degree-completers. And, Re-entry students who did not complete degrees were unlikely to aspire to further occupational mobility in their careers.

This closer association of persistence to degree-completion and social mobility factors with Re-entry students than with the Adult Entry students may result from an overall closer association between education and status with Re-entry students. As observed in the discussion of Hypothesis 3(a), Re-entry students were more likely to have mothers with high school completion and with some post-secondary education; they may have been more socialized to higher education and the association of education with career success. Re-entry students, who had been traditional-age students and may have many characteristics of traditional students, may be more inclined to use education to try to reverse downward mobility, and

conversely may be more inclined to lower their aspirations if they do not succeed educationally.

The lack of students from upper class and upper middle class social origins in the sample made it difficult to test the hypothesis, but Hypothesis 4 is partly supported. Social mobility and educational achievement are clearly related; the cause-effect direction of the relationship is less certain.

Summary: Background Characteristics

The initial hypothesis that Re-entry students would be more likely to complete degrees than Adult Entry was supported by the student records data. Lack of support in the survey data may have been partly due to sampling limitations: the fact that first-time registrants and, therefore, Adult Entry non-completers of degrees were underrepresented among the respondents.

The testing of Hypotheses 2 to 4 is summarized in Table 22, which is an expansion of Table 2 from Chapter 3. The table summarizes the relationships with degree-completion for several background variables. While the hypotheses were mainly not supported, the interpretation is conservative. There were relationships not indicated in the table, for example, differences between Adult Entry students and Re-entry students in motivation, and differences between persisters and non-persisters in some aspects of career mobility.

TABLE 22:
SUPPORT FOR PREDICTIONS FROM CHAPTER 3:
BACKGROUND CHARACTERISTICS AND DEGREE COMPLETION

Degree:		Support from from Data?
Completers	Non-completers	
Hypothesis 2:		
(a) early time of decision	mature time of decision	no
(b) stopouts-intended to return (Re-entry)	perceived selves as dropouts (Re-entry)	no
(c) long-time ambition fulfilled (Adult Entry)	recent idea to attend (Adult Entry)	no
Hypothesis 3:		
(a) tradition of higher education	no tradition of higher education in family	no
(b) advanced degree aspiration	no advanced degree aspiration	no
Hypothesis 4:		
downward social mobility	upward social mobility	yes-Re- entry no-Adult Entry

Vocational motives or motives such as desire for immediate application of learning were not as conducive to completing degrees as motives such as "to complete a degree" or enrolling for self-understanding. Vocational motives were more prevalent among Re-entry students; enrolling because of belief in the more intrinsic values of higher education was more prevalent among the Adult Entry group.

Conclusions about the influence of social mobility (Hypothesis 4) were impossible to make mainly because of restricted range in the sample: lack of students from upper-level families. However, there are statistically significant positive relationships between degree completion and within-career upward mobility (early-career mobility), and degree-completion and desire for further upward mobility (level of aspiration). Particularly with Re-entry students, those who were upwardly mobile in their early careers and those who aspired to further mobility at the time of the survey were more likely to complete degrees. These relationships, however, may be effects as much as causes of educational success.

To some extent, background factors had less effect on persistence than had been anticipated, and intervening (Participation) variables - discussed next in Chapter 6 - more importance than expected. Some of the reasons for this will be discussed further in Chapter 7.

CHAPTER 6
TESTING HYPOTHESES: PARTICIPATION
EFFECTS AND DEGREE COMPLETION

Introduction

This chapter continues the univariate and bivariate analyses of the hypotheses. The focus is on the effects of the student experience itself. Hypotheses 5 and 6 deal with the intervening variables in the model, the effects of satisfaction, support, and problems on persistence to degree completion (Figure 4, p. 43).

The first section, dealing with satisfaction, is quite extensive. Each of the sub-hypotheses of Hypothesis 5 is treated separately. In addition, while the hypothesis deals with differences between the Adult Entry and Re-entry categories, the effects of satisfaction on persistence are also reported. As noted in the section on Hypothesis 1 in the previous chapter, the relationship between the Entry variable and the dependent variable (degree-completion) is ambiguous.

Following the section on problems and support (Hypothesis 6), the summary includes an expansion of Table

3, Chapter 3, similar to Table 22 from Chapter 5. The logic involved in treating the variables from this chapter as cause, effect, or intervening variables is discussed.

Satisfaction

The students' previous experience with higher education was expected to affect response to the student role--expectations, level of satisfaction, perception of problems. These differences, expected to differentiate between Adult Entry and Re-Entry groups, were seen as possible mediating variables in persistence. Re-entry students, because of experience, were expected to be more satisfied with what they were getting and with the university environment, and these effects were expected to contribute to the greater persistence of this group as compared to Adult Entry, students who, by definition, had had no experience with higher education.

H5:

Adult Entry students will differ from Re-entry students in response to their educational experience, in that they will:

- (a) expect more immediate payoff from their courses such as immediate application of course content to work or other situations,
- (b) feel less comfortable with other students, and
- (c) experience less satisfaction with courses and instructors.

The data for this hypothesis were generated from a question on reasons for enrolling and a question asking about satisfaction with several aspects of their educational experience at Simon Fraser University.

Immediate Payoff

The question on motives for enrolling (see Appendix C., Question 8) allowed students to check off any of eleven possibilities, including "to learn something for a specific purpose (immediate application)." If respondents checked off the specific purpose category, it was assumed immediate application was important to them. Thirty-four of 106 (32.1%) checked the item.

It was predicted that both non-completers and Adult Entry students would be more likely to check this motive than degree-completers and Re-entry students; this was seen as one of the reasons why Adult Entry students would be less likely to succeed. Adult Entry students were more likely than Re-entry students to check off this item, and non-completers were more likely than degree-completers to do so. However, the interaction is not additive.

Table 23 reports the results for the question broken down by Entry status and degree completion, showing the percentage of each category which included immediate application as one of the motives for enrolling. As can be seen, emphasis on immediate application differentiates non-completers from completers more than it differentiates Adult Entry from Re-entry (difference of 16.4% to difference of 7.1%). The motive apparently made the most difference among Re-entry students: 12 of 26 Re-entry non-completers emphasized immediate application compared to 5 of 28 Re-entry degree-completers. The effect is significant at the 0.10 but not at the 0.05 level.

TABLE 23:
PERCENT CONSIDERING IMMEDIATE APPLICATION IMPORTANT
BY DEGREE COMPLETION AND ENTRY STATUS

Degree:	Status:		
	Adult Entry	Re-entry	Total
Completed	37.5%(32)	17.8%(28)	28.3%(60)
Not Completed	41.7%(12)	46.2%(26)	44.7%(38)
Total	38.6%(44)	31.5%(54)	

(N in parentheses).

X^2 (Adult Entry) = 0.41, d.f. = 2, n.s.

X^2 (Re-entry) = 4.96, d.f. = 2, n.s.

X^2 (Full Sample) = 4.4, d.f. = 2, n.s.

Hypothesis 5(a) was not supported. Although immediate application as a motive is negatively related to degree-completion, the effect is not that of a mediating variable.

Satisfaction with Social Life.

The data on satisfaction (for Hypotheses 5(b) and 5(c)) with various aspects of student life and experience come from a question asking students to say whether they were "very satisfied," "satisfied," or "not satisfied" with seven items--social life, quality of classes and courses, scheduling, class size, instructor contact, and counselling (Appendix C, Question. no. 13). Hypothesis (5b) is only partly dealt with by the question on satisfaction with social life (or "opportunities to mix with other students"), but "Problems with classmates" (Appendix C., Question 14(a)), the other indicator in the questionnaire, was not checked off by any respondent.

As stated before, these satisfaction items were intended to differentiate persisters and non-persisters and Adult Entry and Re-entry students, and in the same direction--more satisfaction would be reported by Re-entry students and by degree-completers. It was anticipated that satisfaction would act as a mediating variable which would contribute to a higher rate of degree-completion. However, given the results of testing Hypothesis 1 with the mail survey, differences between Adult Entry and Re-entry

students on satisfaction would not be anticipated, certainly not in the expected direction. In fact, on most items Adult Entry students reported greater satisfaction than Re-entry, which was not expected, but might have been predicted given the earlier results for Hypothesis 1 in the survey (Table 12, p. 94). As one might expect, degree-completers reported greater satisfaction than non-completers on all items.

In Table 24 the complete results for satisfaction with social life are reported. The result of a chi square test is significant for the whole sample and is close to significant for the Re-entry subsample. Very few respondents reported dissatisfaction with social life, and most of those graduated. Degree-completers were more likely than non-completers to report being very satisfied; this was especially the case with Re-entry students, who were overall less likely to report high satisfaction with social life.

Although there is an effect--a relationship with degree-completion--Hypothesis 5(b) is not supported. Satisfaction with social life is related to persistence. In Table 25, it can be seen that satisfaction with social life is one of the items which most strongly distinguishes degree-completers and non-completers (along with instructor contact and class size). It also distinguishes Adult Entry and Re-entry Students, although not in the expected direction.

TABLE 24
SATISFACTION WITH SOCIAL LIFE AND
DEGREE COMPLETION

Category:	Response:		
	Dissatisfied	Satisfied	Very satisfied
Adult Entry			
No degree	0	9	3
Degree	3	16	12
$\chi^2 = 2.45, \text{ d.f.} = 2, \text{ n.s.}$			
Re-entry			
No degree	1	21	2
Degree	1	15	9
$\chi^2 = 5.45, \text{ d.f.} = 2, \text{ n.s.}$			
Full Sample¹			
No degree	1	33	5
Degree	4	34	23
$\chi^2 = 8.98, \text{ d.f.} = 2, \text{ p} < 0.01.$			

¹(N=100), eight individuals included in full sample not categorized as Re-entry or Adult Entry.

The Satisfaction Variable

The satisfaction items, in general, contribute more to the difference between degree completers and non-completers than to the difference between the Adult Entry and Re-entry groups. The difference is greater, in fact, for all of the items except satisfaction with counselling (and trivial for satisfaction with quality of classes). In Table 25, the seven items are summarized, using both comparisons: Adult Entry vs. Re-entry, and degree completion vs. non-completion. Percentages of respondents "very satisfied" with aspects of their experience at Simon Fraser University are shown. Use of "very satisfied" was chosen because, in most cases, there were few "dissatisfied." For five of the items, the differences between Entry categories are 5.6% or less, with no difference greater than 13.3%. Differences between degree-completers and non-completers ranged from 7.2% to 27.0%.

The remaining items in Table 25, besides satisfaction with social life, which has been discussed, deal with Hypothesis 5(c). Several points can be made. It should be

TABLE 25:
 PERCENT VERY SATISFIED WITH ASPECTS
 OF SIMON FRASER EXPERIENCE BY ENTRY
 STATUS AND DEGREE COMPLETION

Satisfaction (with:	Status:		Persistence:	
	Adult Entry (N=43)	Re-Entry (N=51)	Degree (N=58)	No degree (N=36)
social life	34.9%	21.6%	36.2%	13.9%
quality of classes	23.2%	17.6%	24.1%	13.9%
content of courses	16.3%	15.7%	19.0%	11.1%
scheduling of classes	20.9%	23.5%	29.3%	11.1%
class size	23.3%	21.6%	35.3%	8.3%
contact with instructors	30.2%	25.5%	37.9%	11.1%
counselling	20.9%	9.8%	19.0%	8.3%

noted that the table deals with only those who made "very satisfied" responses. With all items, the largest number of respondents checked off the middle category--"satisfied." With all but one item--counselling--more "very satisfied" responses were recorded than "not satisfied." Perhaps at S.F.U., which has a tradition of attempting to accommodate part-time and adult students, any problems with being an institution primarily for youth were minimized. Further comments are in order on satisfaction with instructor contact and with counselling.

Instructor Contact. Table 26 reports the relationship between degree-completion and satisfaction with instructor contact, in detail. The results were nearly significant for both the Adult Entry and Re-entry groups ($p < 0.10$ but not < 0.05) and significant for the full sample. Satisfaction with opportunities for contact with instructors was definitely related to degree-completion. This is consistent with findings of research based on the Tinto model referred to in Chapter 3.

TABLE 26:
DEGREE COMPLETION AND SATISFACTION WITH
INSTRUCTOR CONTACT

Category:	Response:		
	Dissatisfied	Satisfied	Very satisfied
Adult Entry			
No degree	4	7	1
Degree	4	15	12
$\chi^2 = 4.77$, d.f. = 2, n.s.			
Re-entry			
No degree	6	15	3
Degree	2	15	10
$\chi^2 = 5.46$, d.f. = 2, n.s.			
Full Sample ¹			
No degree	10	24	4
Degree	6	34	23
$\chi^2 = 10.33$, d.f. = 2, $p < 0.005$.			

¹(N=101), seven respondents are included who were not categorized as Adult Entry or Re-entry..

Counselling. Level of satisfaction with counselling was notably low; for this question only, more respondents were "dissatisfied" than "very satisfied" (27 to 14; even among degree-completers, 15 were not satisfied to 11 who said they were very satisfied; see Table 27). There was no significant association between dissatisfaction with counselling and degree-completion, but the relatively high level of dissatisfaction is still of interest. Comments made by some respondents indicated that this was not so much dissatisfaction with the counselling that was received as it was a feeling that there was not enough of it. Some felt that counsellors should be attached to departments; some that counselling should be given to all at the start of their programs.

The Importance of Satisfaction

An analysis of variance was carried out to compare the effects of Entry status and satisfaction on degree-completion. The use of analysis of variance is simply to compare effects; it would be inappropriate to use such analysis to establish causation.

TABLE 27:
DEGREE COMPLETION AND SATISFACTION WITH
COUNSELLING

Category:	Response:		
	Dissatisfied	Satisfied	Very satisfied
Adult Entry			
No degree	4	7	1
Degree	8	14	8
$\chi^2 = 1.82, d.f. = 3, n.s.$			
Re-entry			
No degree	8	14	2
Degree	6	16	3
$\chi^2 = 0.59, d.f. = 3, n.s.$			
Full Sample ¹			
No degree	12	24	3
Degree	15	33	11
$\chi^2 = 2.39, d.f. = 3, n.s.$			

¹(N=98), seven respondents are included who were not categorized as Adult Entry or Re-entry.

The results of the analysis are indicative of the importance of the Satisfaction variable. It should be recalled, however, that this measure is based on retrospective expressions of satisfaction or dissatisfaction. The Satisfaction measure used here was an additive index of five of the items (except for social life and counselling) which had been found most useful in multivariate analysis. (It was a better predictor of degree completion than a composite score including all seven, or any other combination.) Table 28 shows that Satisfaction accounts for more of the explained variance in degree completion/non-completion results than Entry status. Satisfaction and Entry account for 14.9% of the variance in degree completion with Satisfaction by itself accounting for 9.7%. (Variance is the proportion of the total sum of squares accounted for by explained variance and satisfaction sums of squares, respectively.) The effect of Entry on degree completion is close to statistical significance ($p=0.064$) and the overall explained variance is statistically significant, but satisfaction is by far the more significant independent variable.

The respondents to the mailed survey were satisfied with their S.F.U. experience, and the lower satisfaction and occasional dissatisfaction expressed by non-persisters may be considered as at least partly rationalization. However, Satisfaction accounts for a statistically significant proportion of the variance in degree completion. (See Chapter 7.)

TABLE 28:
ANALYSIS OF VARIANCE FOR DEGREE COMPLETION
COMPARING EFFECTS OF SATISFACTION AND ENTRY STATUS.

Source of Variation	Sum of Squares	D.F.	Mean Square	F	Significance
Main effects:	3.162	3	1.054	4.907	0.003
Entry	0.756	1	0.756	3.521	0.064
Satisfaction	2.156	2	1.078	5.020	0.009
Interaction: Entry X Satisfaction	0.152	2	0.076	0.354	0.703
Explained Variance	3.314	5	0.663	3.086	0.013
Residual	18.899	88	0.215		
Total	22.213	93	0.239		

Hypothesis 5 was not supported by the data. Adult Entry students were not more inclined than Re-entry to emphasize immediate application, or to be less satisfied with their social life at university or any other part of their university experience. However, all these things had effect on degree-completion.

Satisfaction did not act, apparently, as an intervening variable. To discover how it works with other variables to affect degree-completion requires multivariate analysis, which is reported in the next chapter.

Support; Problems

Because of the differences between the groups in their own and in their families' experiences with higher education, Adult Entry students were expected to perceive, and have, more problems than Re-entry students with adjusting to being a student. Again, these differences were seen as having the effect of intervening variables, accounting for some of the reasons why Re-entry students would be more likely to complete degrees.

H6:

Adult Entry students will experience more problems with the student role than Re-entry students, in ways which will negatively affect their persistence to degree-completion. Specifically, they will:

- (a) perceive that they have less support for their educational efforts from family members and others close to them, and

- (b) more frequently have problems (such as financial difficulties, job pressures, or difficulties with studying) which affect their persistence to degree-completion.

Data on support and problems came from three questions (Appendix C: Questions 14, 15, and 16). The question on sources of support allowed individuals to check off as many categories of support as they wished--six family categories, friends, employers, teachers, classmates, others. Degree of support by any or all sources was not determined. The question on problems included items which could be categorized as family, financial, personal and job problems as well as study problems and was intended to be related to the support question. It was hypothesized that Adult Entry students would have or perceive more problems, particularly with family and job commitments, and that this would contribute to dropout. Similarly, it was expected that Adult Entry students would have more difficulty getting support for their educational endeavours, among other things because of less family experience with higher education, than Re-entry students.

Support

Most respondents reported support from family members -- 50 checked off one or more family categories. Next came friends (25), someone from the education system such as teachers or counsellors (14), and last of all, employers (10). (See Appendix C, Question 15.) Generally, it appears

these adults were pursuing higher education to change careers; many in fact felt they had not yet really embarked on careers. As a result, the employer category was not very important.

Support or lack of support did not differentiate Adult Entry and Re-entry students or affect degree-completion rates (See Table 29.) The total number of support categories checked off did not correlate with degree-completion (-0.014 , n.s.) or with Adult Entry status (-0.093 , n.s.). Twenty-seven respondents, when asked who supported their educational efforts, specifically answered "no one." Sixteen of these completed degrees; 11 did not--a 59% completion rate compared to 62% in the whole sample. Only 13 individuals reported that anyone close to them had opposed their education. (In 11 cases it was family members; twice it was employers.) Nine of the 13 had completed their degrees. Slightly more than half of the individuals who reported opposition (Appendix C, Question 16) were Adult Entry students, but there was no noticeable effect from such opposition for either Adult Entry or Re-entry students in their degree completion rates.

TABLE 29
DEGREE COMPLETION AND NUMBER OF SOURCES OF SUPPORT

Category	Number of sources of support checked		
	No one	1 source	2 or more sources
No degree	11	10	18
Degree	16	21	26

(N=102), $\chi^2 = 0.71$, d.f. = 2, n.s.

Hypothesis 6(a) was not supported by the data. Considerations of support or-opposition of family members and others was simply not important to many of the adult males in the mail survey. It may be that this variable, stressed in other research, is not that important in long-term persistence. It may also be that it is not as important with adult males as with females. However, as stated, the quality of the support from specific individuals was not determined.

Problems

Respondents were allowed to check as many problems as applied to them: there were two categories which could be coded as personal problems, four as family problems, two as financial, three as study-related, and two as job-related or work problems. (See Appendix, Question 14.) There were no significant differences between degree-completers and non-completers or between Adult Entry and Re-entry in number of problems or in four of the five problem categories--personal, family, financial, and study-related. (There were some differences in categories emphasized; this is reported later.) Results were significant only for job or work-related problems, mainly because of the effect with the Adult Entry group. (See Table 30.)

So, those who had had work-related problems were somewhat less likely to complete a degree. Nine of eleven Adult Entry non-completers who responded to the problems question reported job problems conflicting with their university work. The result is statistically significant even though there were very few non-completers.

TABLE 30:
DEGREE COMPLETION AND WORK-RELATED PROBLEMS

Category:	No problems Reported	Problems Reported
Adult Entry		
No degree	2	9
Degree	22	10
$x^2 = 8.32, d.f. = 1, p < 0.01$		
Re-entry		
No degree	13	11
Degree	16	10
$x^2 = 0.27, d.f. = 1, n.s.$		
Full Sample ¹		
No degree	15	21
Degree	43	20
$x^2 = 6.69, d.f.=1, p < 0.01.$		

¹(N=99). Six respondents are included who were not categorized as Adult Entry or Re-entry.

In addition, there were some (slight) differences between the categories in types of problems emphasized. Table 31 gives the categories of major problems reported by Adult Entry and Re-entry broken down in degree completion/non-completion sub categories.

Respondents were asked to indicate their main problem during their time as a student. This was an open-ended question but it was fairly easy to group the responses; in fact, most often one of the suggestions from the checklist was given. Differences between degree-completers and non-completers were slight and statistically non-significant, the greatest difference being that non-completers were more likely to emphasize personal deficiencies (lack of energy--"laziness"--or lack of self-confidence); these problems were reported by 31.5% of 35 non-completers and 19.0% of 58 completers. Differences between Adult Entry and Re-entry students emphasized not external pressures like finances, or family or job pressures, but the student role itself. Study problems were reported by 40.5% of 42 Adult Entry students compared to 19.6% of 51 Re-entry students. Financial problems were reported as the main problem by 21.6% of Re-entry compared to 11.9% of Adult Entry students, and apparently had no effect on persistence by the

TABLE 31:
 TYPE OF PROBLEM REPORTED AS MAIN ONE DURING TIME
 AS STUDENT, BY DEGREE/ENTRY CATEGORY

Main problem	Category:			
	Re-entry		Adult Entry	
	No degree	Degree	No degree	Degree
None ¹	1	3	0	0
Personal	8	5	3	6
Job	4	4	2	2
Family	2	3	2	5
Financial	5	6	0	5
Study	4	6	4	13
Totals (N=93)	24	27	11	31

¹"None" or "no problem" specifically stated.

Adult Entry respondents, all five of those who reported financial problems completing degrees.

Except for the finding that work-related problems were related to dropout by Adult Entry students, Hypothesis 6(b) was not supported. There were differences (but not statistically significant differences) between the Re-entry and Adult Entry groups in types of problems most often reported, but there was little relationship between having or not having problems and persistence.

Adult Entry students apparently were not particularly affected by family and other problems except for work-related problems. Support or lack of support was not a major consideration for them; they stressed instead problems with being a student, lack of skills for doing the work and difficulties studying. These things did not have much effect on degree completion; having problems related to work, coping with the combined work and student roles, did.

Re-entry students were more likely to attribute personal problems and deficiencies to themselves, with these and financial problems apparently having some effect on degree-completion for them.

Hypothesis 6 in total is not supported by the data. Support has little or no discernible effect. While problems did have some effect, especially work- or job-related problems for Adult Entry students, problems with family and other people were not often mentioned and had little effect.

The variables in Hypothesis 6 did seem to have some effect on persistence but not in differentiating Adult Entry from Re-entry students. Thus, viewing them as mediating variables does not make much sense. To determine how these variables work with others to affect persistence requires multivariate analysis, which is reported in the next chapter.

Summary

Table 32 is an expansion of part of Table 3 (p. 57). The hypothesized relationships discussed in this Chapter are examined for support from available data. While differences were found between persisters and non-persisters, fewer were found between the Adult Entry and Re-entry categories of students, and the hypotheses relating these categories and degree-completion could not be supported. Satisfaction, support, and problems did not perform as mediating variables between Adult Entry and Re-entry status and degree completion. These Participation variables would seem, obviously, to be intervening or mediating variables--at least in an "historical" sense--but the results of the study do not support the conjecture that they mediate between Adult Entry/Re-entry and degree-completion.

TABLE 32:
SUPPORT FOR PREDICTIONS FROM
CHAPTER 3: PARTICIPATION FACTORS AND ENTRY STATUS

Category:		Support from Data?
Re-entry	Adult Entry	
Hypothesis 5:		
delayed application (credential emphasis)	immediate application (content/skill) emphasis	no*
comfortable with other students, scholastic environment	problems with other students, scholastic environment	no**
high satisfaction	low satisfaction	no**
Hypothesis 6:		
perceive higher level of support from family and others	perceive lower level of support from family and others	no
fewer financial and other problems	more financial and other problems	no*

* indicates possible relationship with degree-completion

** indicates definite relationship with degree-completion

If the categories in the table had been degree-completer and non-completer, the results would have been different. The asterisks in Table 32 indicate probable relationships with degree completion, with the hypothesized differences between Re-entry and Adult Entry instead existing between degree-completers and non-completers. Double asterisks indicate stronger, more certain relationships.

Satisfaction with various aspects of the student experience was related to degree-completion, including satisfaction with social life and instructor contact. However, most respondents were satisfied with their university time; only with counselling did more students express dissatisfaction than state they were very satisfied.

Problems affected persistence mainly because work-related problems were so strongly related to non-completion by Adult Entry students. Although Adult Entry and Re-entry students reported different kinds of problems these differences did not affect degree-completion. Adult Entry students emphasized problems with studying or coping with the new student role; Re-entry students emphasized personal deficiencies and financial problems. (This was contrary to expectation.) Number of persons expressing support or opposition was not a useful predictor of completion.

In Chapter 7, multivariate techniques are used to analyze the relative importance of these variables and those

examined in Chapter 5, and how they work in combination to affect degree completion.

CHAPTER 7:
PREDICTING DEGREE-COMPLETION:
USE OF MULTIPLE REGRESSION
AND DISCRIMINANT ANALYSIS

Introduction

In Chapters 5 and 6 on hypothesis-testing, moderate relationships between background and participation variables and degree-completion were documented. However, the findings are still inadequate to serve as a practical basis for predicting which individuals will persist to degrees. In order to make predictions systematically, it is necessary to understand two things: which variables have the greatest predictive power individually and how they interact.

Multivariate techniques deal with combinations and interactions of variables. The techniques used in this chapter are multiple regression and discriminant analysis. Multiple regression is the first multivariate technique used, partly because discriminant analysis is based on multiple regression. Multiple regression indicates the amount of variance which can be accounted for using the variables under study, and what combination best predicts

degree completion (Norusis, 1985). Discriminant analysis is emphasized because it deals with the variables which can be used to distinguish between degree-completers and non-completers (Cooley and Lohnes, 1981; Kerlinger and Pedhazur, 1973).

These analyses are carried out with three groups: the full mail survey sample, and the Adult Entry and Re-entry groups. The Adult Entry and Re-entry groups of the sample were treated separately for two reasons: first, because the entry variable did not have the expected effect with the full sample; second, because of the finding of opposite effects of the entry variable with the survey and records data.

Before the extensive treatment of the multiple regression and discriminant analyses, the simple Pearson correlations with degree completion in the three groups (the full sample, and the Re-entry and Adult Entry subsamples) are examined, with the results for Adult Entry and Re-entry compared after the correlations for the full sample are reported.

After the section on correlation, there are two major parts of the chapter, one for multiple regression and one for discriminant analysis. Each part has an introduction to the technique, then two sections: one on the analysis of the full sample, and one comparing analyses of the Adult Entry and Re-entry groups.

The chapter summary deals mainly with the relative contribution of the different variables to an understanding of degree completion, as indicated in the analysis of the different groups in this chapter. Also, there is a discussion of predicting degree completion, to the extent that the data available here allow.

Correlations with Degree Completion

Before going on to the regression and discriminant analyses it is worthwhile to examine the simple Pearson correlations between the various independent variables and degree completion, the dependent variable in this research. Many of the relationships--those which were contained in the hypotheses in Chapter 3--have already been discussed in the previous two chapters. The simple correlations will be compared with the contributions the variables make to the regression equations and discriminant functions later in the chapter. (The complete correlation matrices for all the variables involved in the multivariate analyses are reported in Appendix D.)

Table 33 gives the correlations with degree completion for the sample. While the relationship with degree completion achieves significance for eight of the variables for the sample, none of the correlations is larger than

TABLE 33:
CORRELATIONS OF BACKGROUND AND PARTICIPATION
VARIABLES WITH DEGREE COMPLETION, FULL SAMPLE.

Independent Variable	Correlation
Entry	-0.229*
Time of Decision	0.074
Social Mobility	0.145
Early-career Mobility	0.239*
Level of Aspiration	0.325*
Desire for Change	0.186*
Satisfaction	0.333*
Work-related Problems	-0.225*
Time since Enrollment	-0.161*
Grade Point Average	0.195*
Mother's Education	0.078

* - significant at $p < .05$ level

0.333. The justification for multivariate analysis is to attempt to increase the predictive power by considering the combined effects of two or more variables simultaneously.

Two of the variables have clearly the strongest relationships with degree completion: satisfaction and level of aspiration. They are also the only variables to have significant effects with both the Adult Entry and Re-entry groups.

Table 34 compares the Adult Entry and Re-entry groups of the mail survey with correlations listed in descending order of absolute magnitude for each group. Three are significant for Adult Entry, five for Re-entry students. That fewer correlations are significant with the groups than with the entire mail survey sample is due to sample size. All of the correlations of significance with either the Re-entry or Adult Entry group are significant at the 0.05 level with the full sample.

TABLE 34:
CORRELATIONS OF BACKGROUND AND PARTICIPATION VARIABLES
WITH DEGREE COMPLETION, ADULT ENTRY AND RE-ENTRY COMPARED

CORRELATIONS

Adult Entry		Re-entry	
Work-related Problems	-0.421*	Grade Point Average	0.395*
Satisfaction	0.329*	Satisfaction	0.320*
Level of Aspiration	0.306*	Level of Aspiration	0.311*
Desire for Change	0.182	Early-career Mobility	0.306*
Grade Point Average	-0.120	Time since Enrollment	0.252*
Social Mobility	0.096	Time of Decision	-0.200
Early-career Mobility	0.092	Desire for Change	0.187
Time since Enrollment	0.086	Social Mobility	0.183
Mother's Education	0.059	Mother's Education	0.133
Time of Decision	-0.017	Work-related Problems	-0.032

* - significant at $p < 0.05$ level

Satisfaction and level of aspiration (which have the largest correlations with degree completion in the full sample) appear in both lists, but the variables with the largest correlations in each are different. Work-related problems, which has a nonsignificant correlation of 0.032 with degree-completion in the Re-entry group, correlates -0.421 with degree-completion in Adult Entry, up from -0.225 with full sample. The importance of Work-related Problems for the Adult Entry group is discussed in Chapter 6. G.P.A. correlates 0.395 in the Re-entry group but only 0.195 with the full sample and -0.120 with Adult Entry. (G.P.A. was cumulative G.P.A., based on all undergraduate courses taken by respondents at S.F.U. Thus, courses taken as traditional-age students are included for Re-entry students, which makes comparison with Adult Entry a problem. Nonetheless, the importance of the cumulative G.P.A. with Re-entry students is still relevant. The effect of G.P.A. on persistence of Adult Entry students is discussed later in this Chapter.) Two other variables, early-career mobility and time since enrollment, have significant correlations for Re-entry but do not for Adult Entry students. Desire for change retains approximately the same correlation as with the full sample, but is not statistically significant because of the smaller sample size. Early time of decision comes close to significance with degree completion for Re-

entry but is almost uncorrelated with degree completion for Adult Entry.

It is noteworthy that the correlations which are significant or close to significant for the Re-entry students but not for the Adult Entry students could be interpreted as correlations with educational or traditional variables. On the other hand, work-related problems, which has the strongest correlation with Adult Entry students, might be seen as a non-educational (external or environmental) variable. Re-entry students had a longer connection with the educational system and were less involved externally; Adult Entry students may have been more involved in their careers and other external commitments.

The correlations from Tables 33 and 34, and others from the correlation matrices in Appendix D will be referred to during the discussion of the regression and discriminant analyses.

Regression

Multiple regression has traditionally been used in attempts to predict success in college. The first Statistical Package for the Social Sciences manual (Nie, Bent, and Hull, 1970) used, as an illustration of the multiple regression procedure, pre-college variables to predict freshmen G.P.A. Astin's (1975) study of dropouts used multiple regression. Four of the examples of uses of

the technique in Kerlinger and Pedhazur's (1973) textbook on multiple regression are attempts to predict college success (achievement or persistence) on the basis of some combination of measures.

It is almost as if educational researchers believed that admissions departments in post-secondary institutions should have equations in which to plug data about students and then use the results to make predictions on things like 1.37 times variable X_1 plus 0.82 times variable X_2 plus.... Such precision could only be temporary: the equation would have to be changed at least yearly with different samples. The precision is misleading--what is possible is comparing the relative importance of different variables.

In fact, some research indicates little improvement in prediction over what would be obtained from using the correlations with a major predictor like Grade Point Average (Kerlinger and Pedhazur, 1973) or College Board score (Nie, Bent, and Hull, 1970). However, the multiple regression procedure indicates when some variables should be emphasized or ignored, and when combinations of variables do add significantly to prediction. The ability to improve the strength of the prediction can be especially useful in situations such as the research reported here where several variables have correlations around 0.3 with the dependent variable.

In all the regression analyses that were carried out for this chapter, two methods of variable selection were used (Nie, 1986). First, all variables were included by the forced-entry (Enter) method, regardless of their contribution or significance. Then the Stepwise method was used, entering variables one at a time in order of their contribution to the multiple correlation and including additional variables only if they met the test of significance ($p < 0.05$) for additional variance. The Stepwise method always yielded a more economical solution (fewer variables), with close to the same multiple correlations (R) and variance (R^2) as the forced-entry method. In fact, Stepwise selection usually resulted in a higher Adjusted R^2 , which is the preferred measure of goodness of fit of the regression equation with the population from which the sample was selected.

Full Sample

Before comparing the Adult Entry and Re-entry subsamples, regression analysis was performed with the full sample of 106 respondents. Separate Stepwise analyses, both including and excluding Entry as a variable, were performed as well as the ten-variable regression. The results are shown in Table 35.

TABLE 35:
 MULTIPLE REGRESSION: BACKGROUND AND PARTICIPATION
 VARIABLES AND DEGREE COMPLETION (FULL SAMPLE)

Summary Table					
Variables (by order of entry	Multiple R	R Square	R Square Adjusted	F	Signi- ficance
ENTER (all variables)	0.574	0.329	0.267	5.24	0.000
STEPWISE					
Satisfaction	0.326	0.106	0.097	12.33	0.001
Level of Aspiration	0.445	0.198	0.183	12.72	0.000
Grade Point Average	0.487	0.237	0.214	10.55	0.000
Work-related Problems	0.522	0.272	0.243	9.44	0.000
.....					
Entry	0.554	0.307	0.272	8.85	0.000

As can be seen from Table 35, the results from forced-entry (Enter) and Stepwise procedures are very similar in multiple R, R^2 , and Adjusted R^2 . The results from both procedures are significant. Stepwise regression results in a five-variable equation accounting for 27% to 30% of the

variance ($R^2=0.307$, Adjusted $R^2=0.272$). The five variables are, in order of the contribution to the equation, satisfaction, level of aspiration, Grade Point Average, work-related problems, and entry category (Adult Entry vs. Re-entry). Because entry did not predict in the hypothesized direction with the mail survey, a second analysis excluding entry as a variable was carried out. This reduced the accounted variance by only about 3% ($R^2=0.272$, Adjusted $R^2=0.243$) and was still significant.

The resulting prediction equations vary slightly. The equations can be used to predict the likelihood of degree-completion (62% with the full sample). Y' stands for predicted value of Y : the closer that is to 1.00, the more likely the individual should be a degree-completer; the closer to 0.00, the more likely the individual will be a non-completer. With entry included, the equation is:

$$Y' = -0.612 + 0.077 \text{ (Satisfaction)} + 0.076 \text{ (Level of Aspiration)} \\ + 0.177 \text{ (G.P.A.)} - 0.158 \text{ (Work-related Problems)} \\ - 0.191 \text{ (Entry)}$$

(The coefficients can be simply multiplied by the individuals' raw scores for the particular variables; -0.612 is a constant for this equation.)

With entry left out, the equation is:

$$Y' = -0.778 + 0.077 \text{ (Satisfaction)} + 0.082 \text{ (Level of Aspiration)} \\ + 0.177 \text{ (G.P.A.)} - 0.156 \text{ (Work-related Problems)}$$

As can be seen, two of the coefficients (satisfaction and G.P.A.) are identical; the coefficients for level of aspiration and work-related problems change slightly because the effect of these variables differs for the two entry categories. The absolute value of the constant increases because there is one fewer variable.

As stated before, the utility of such equations is somewhat doubtful. They do help in understanding some of the factors in persistence/dropout; what is less clear is the appropriateness of their use in making policy decisions - especially if precision is imputed to them. They would be entirely inappropriate for use in admissions, for example, when at least two of the variables--Grade Point Average and satisfaction--are results of university attendance and would not be available until after the applicant had been admitted and had completed at least a semester of coursework. In addition, work-related problems is a subjective recall of the situation at the time of university attendance, although the fact that it is so frequently recalled as important by non-completers when they could have mentioned other kinds of problems indicates that it is important in some way. Level of aspiration, like satisfaction, can also be considered as a result, as well as a cause, of university success.

However, while the use of the regression equations for admissions is doubtful, the fact that four variables can account for a quarter of the variance indicates that they

should be taken seriously. As will be seen, two of the variables--G.P.A. and work-related problems--have an interaction with subsamples: G.P.A. with Re-entry, and work-related problems with Adult Entry; satisfaction with the university experience may be the first variable in the overall regression (accounting for approximately 10% of the variance by itself) simply because it has a similar effect with both Re-entry and Adult Entry. Level of aspiration is only included in the Adult Entry regression when the criteria for inclusion of variables are relaxed; it does not appear in the equation for Re-entry. Its presence in the overall equation must be due to some, however moderate, influence on degree-completion with both groups.

Adult Entry and Re-entry Compared

As was seen in Chapter 5, the hypothesis that Re-entry students were more likely to complete degrees than Adult Entry students would seem to be supported by the data from the Student Records. However, Adult Entry students were more likely to complete degrees than Re-entry students among the respondents to the mail survey. Testing regression models with separate groups is worthwhile in any case, especially when some of the independent variables are expected to behave differently with each of the groups. Given the difference between the records data and the mail survey in the effect of the entry variable, it was seen as

especially important to perform a regression analysis with each of the Re-entry and Adult Entry groups. The results confirmed the usefulness of the procedure as the separate regressions accounted for more of the variance than did the equation for the full sample. In addition, different variables were indicated as the most important predictors for the two groups, and a new variable was exposed as important, one which had opposite effects with the two groups.

While the Enter equations (all variables included) for both groups gave very similar results (see Table 36), the initial Stepwise analysis resulted in only a one-variable equation for Adult Entry with an R^2 value less than half that for the three-variable Re-entry equation. Because of the anomalous results for Adult Entry, other methods of variable selection were attempted (Nie, 1986). Forward selection, requiring variables meet the criterion for entry into the equation but not testing for removal, resulted in no change. Backward selection, however, not requiring that variables meet the criterion for inclusion but only that they meet the criterion for removal resulted in a four-variable equation.

TABLE 36:
 MULTIPLE REGRESSION: BACKGROUND AND
 PARTICIPATION VARIABLES AND DEGREE COMPLETION
 (ADULT ENTRY AND RE-ENTRY COMPARED)

Summary Table					
Variables (by order of entry)	Multiple R	R Square	R Square Adjusted	F	Signi- ficance
Adult Entry					
ENTER (10 variables)	0.638	0.407	0.275	3.08	0.009
STEPWISE					
Work-related Problems	0.406	0.165	0.146	8.50	0.006
(Level of Aspiration)	0.481	0.232	0.195	6.33	0.004
(Satisfaction)	0.559	0.313	0.263	6.22	0.001
(Early-career Mobility)	0.601	0.362	0.298	5.66	0.000
(last 3 variables with ₂ altered criterion for significance of change in R ² of 0.10 rather than 0.05)					
Re-entry					
ENTER (10 variables)	0.613	0.376	0.263	3.31	0.005
STEPWISE					
Grade Point Average	0.369	0.137	0.120	8.06	0.006
Satisfaction	0.478	0.228	0.198	7.40	0.002
Early-career Mobility	0.568	0.323	0.281	7.78	0.000
(no additional variables with altered criterion of entry)					

There is justification for using this procedure, as can be seen in Table 36. First, given the results of the forced entry equation (R^2 between 0.275 and 0.407), settling for an equation accounting for as little variance as the one-variable equation would be giving up too soon. Second, the reason there is only one variable using $p < 0.05$ for the significance in the change in R^2 is probably due simply to the overwhelming effect of work-related problems as a variable. It can be seen that there is a larger change in R^2 with the addition of satisfaction (0.081) than with the addition of level of aspiration (0.067) and, in fact, the change for the addition of satisfaction is significant at the 0.05 level ($p = 0.033$). So, satisfaction appears to be a significant variable for Adult Entry, although an equation including it can only be developed using relaxed criteria or Backward selection. So, for the Adult Entry group by far the most important factor contributing to degree completion is an absence of work-related problems. By itself, it accounts for between 14.5% and 16.5% of the variance, almost half of the total for the four variable equation. The other three variables, each making a moderate contribution, are satisfaction, level of aspiration and early-career downward mobility. The regression equation for Adult Entry is:

$$Y' = 0.202 - 0.256 (\text{Work-related Problems}) + 0.131 (\text{Level of Aspiration}) + 0.060 (\text{Satisfaction}) - 0.107 (\text{Early-career Mobility})$$

(The equation for the one-variable regression is $Y' = 0.887 - 0.314 [\text{Work-related Problems}]$.) The last variable in the Adult Entry regression is early-career mobility, movement from first occupation held for a year or more to occupation held at the time of registration or re-registration as a university student.

Adult Entry students were slightly more likely to complete degrees if they were downwardly mobile in their occupations before starting university than if they were upwardly mobile. (This is opposite to the situation for the Re-entry group, as will be seen.) One might suggest that work responsibilities would be greater for those who are successful in their careers, who would more likely be upwardly mobile. Also, success outside education could result in less motivation to pursue it inside. Thus, one might conclude from the variables included in the regression equation that career success has a negative effect on persistence to degrees by those who start in university as adults. Level of aspiration is likewise a career-related variable; only satisfaction is directly related to educational experience. In the sample for this research, over three-quarters of the Adult Entry group had completed

degrees; it appears that an important factor is that their careers did not interfere.

For the Re-entry group, Grade Point Average has a considerable impact, contributing almost as much variance as work-related problems does for Adult Entry (R^2 between 12.0% and 13.7%), but the other two variables, satisfaction and early-career mobility, contribute to the regression at the $p < 0.05$ level. (Use of Forward, Backward, and Stepwise selection at $p < 0.10$ did not change results.) Again, satisfaction makes a fairly small contribution, but in the same direction as for Adult Entry; its importance in the overall regression for the mailed survey is thus due to making a consistent contribution. So, for the Re-entry group G.P.A., an aspect of their educational experience, has the greatest impact.

Early-career Mobility is also part of the regression equation for Re-entry; the reason it is not included in the overall equation is that its effect for Re-entry is opposite to that for Adult Entry. The equation for Re-entry is:

$$Y' = -0.130 + 0.245 (\text{G.P.A.}) + 0.093 (\text{Satisfaction}) \\ + 0.116 (\text{Early-career Mobility})$$

Upward mobility in early career development has a slight positive correlation, rather than downward mobility as with Adult Entry students. Generally, one would expect Re-entry students to be less involved with their careers

than Adult Entry having spent more time in formal education. Some success might be an encouragement rather than a burden. Also, as mentioned before, the first job for Re-entry students was often not regarded by the students as a significant stage in their career.

The main difference between the two regressions is the difference in the primary variables. The effect for early-career mobility is opposite for the two groups of students, but it appears reasonable and the effect in both cases is small. The importance of G.P.A. for Re-entry students (and Re-entry students only, apparently) has been discussed before. The possibility that low G.P.A. from before initial stop-out or dropout represents a handicap for some has to be considered. Work-related problems is an important variable only with the Adult Entry subsample. While it is difficult to generalize about degree completion among Adult Entry students, with only 12 non-completers among the group, 9 of the 11 who responded to this question reported that work-related problems were interfering with their academic careers and only 8 of 29 responding degree-completers reported having any problems related to work.

From all this, two profiles emerge. For Adult Entry students, success or degree completion is based either on presence of a considerable burden of work-related problems or on ability to cope with work and student roles. In some cases, the situations may have been beyond the students'

control. For other students, perhaps having already experienced some career success, there may not be strong feelings of need to succeed in university, so if there are conflicts with work or if higher education does not meet expectations, the students may drop out.

For Re-entry students, success may be more related to ability to deal with one's educational history and the resulting handicaps. These are individuals already socialized to think of life success in educational terms so career success may spur rather than hinder completing a degree. The requirement for success may be being able to achieve academically or at least not being hindered by a low G.P.A.

These profiles are reinforced when discriminant analysis is applied to the data.

Discriminant Analysis

Discriminant analysis has two purposes (Norusis, 1985; Kerlinger and Pedhazur, 1973). One of these purposes is classification: how well does the discriminant function discriminate between groups? What proportion of the individuals are correctly placed according to the discriminant function? In addition, differences between groups in accuracy of classification may be of interest. Classifications are reported for three separate discriminant

analyses, with the full sample, and with the Re-entry and Adult Entry groups separately.

The second purpose of discriminant analysis is an examination of the nature of the differences between the groups. What is it that discriminates degree-completers from non-completers? The emphasis is on explanation rather than prediction. Being able to understand the differences between degree-completers and non-completers is more important in theory development than being able to predict chances of degree completion (Kerlinger and Pedhazur, 1973, p. 341).

Full Sample

The variance accounted for by discriminant analysis is almost always higher than that from multiple regression. (Compare the results reported below with Table 35.) Discriminant analysis is specifically designed for categorical variables and, therefore, may work more successfully with these data. The eleven-variable equation using the forced-entry (Direct) method accounts for 34.8% of the variance (Table 37). (Variance can be calculated either by using the square of the canonical correlation, or preferably $1-\lambda$, λ being an inverse measure.)

TABLE 37:

DISCRIMINANT ANALYSIS USING THE DIRECT METHOD:
SUMMARY STATISTICS FOR DEGREE COMPLETION (FULL SAMPLE)

Classification:

Actual Group:	Number of Cases	Predicted Group:	
		No degree	Degree
No degree	41	78.4% (32)	21.6% (9)
Degree	65	24.6% (16)	75.4% (49)
Correct classification:		76.4%	

Canonical Correlation	0.590
Wilks' Lambda	0.652
Significance	p = 0.001 ($\chi^2=30.586$, d.f.=11)

This is not quite as good as the six-variable Wilks method equation using entry as one of the variables but slightly better than the results with a four-variable equation from the Wilks method of selection when entry is excluded as a variable. (See Tables 38 and 39). The results using the Wilks method are, however, acceptable, and the discriminant equations have the advantage of greater parsimony.

In Tables 38 and 39 the two analyses using Wilks method are reported. Including entry results in accounting for 39% of the variance (Table 38); excluding it because its effect is opposite to the hypothesized direction results in a four-variable equation accounting for 30.4% (Table 39). Satisfaction is the first variable (results in the largest reduction in lambda) and level of aspiration is the second in both cases. Work-related problems and Grade Point Average are included in both equations. While they contribute slightly less reduction in lambda when entry is excluded as a variable, they contribute more to the discriminant function (higher coefficients) and have higher correlations with the function. This indicates that the simpler function may be more clearly defined. Time at university, which has a small effect when entry is included, is not included in the simpler equation. As may be noted, the variables selected by Wilks method are the ones with the greatest correlation with the discriminant function using the Direct method, except for early-career mobility which is not included.

So, based on the analysis of the full sample, satisfaction with the university experience, a high level of aspiration for further career mobility, high Grade Point Average, and absence of work-related problems distinguish

TABLE 38
 DISCRIMINANT ANALYSIS USING WILKS METHOD:
 BACKGROUND AND PARTICIPATION VARIABLES, INCLUDING ENTRY,
 AND DEGREE COMPLETION (FULL SAMPLE)

Independent Variable	Discrim. Function Coefficient	Correlation within Function	Wilks' Lambda	Significance
Satisfaction Level of	0.659	0.434	0.893	0.003
Aspiration	0.505	0.424	0.790	0.000
Entry	-0.570	-0.367	0.729	0.000
Work-related				
Problems	-0.474	-0.320	0.672	0.000
Grade Point Average	0.353	0.245	0.626	0.000
Time since Enrollment	0.276	0.190	0.610	0.000

Summary Statistics:

Canonical Correlation: 0.625
 Significance: $p=0.000$ ($\chi^2=36.099$, d.f.=6)

Classification:

Actual Group:	Number of Cases	Predicted Group:	
		No degree	Degree
No degree	41	80.5%(33)	19.5%(8)
Degree	65	26.2%(17)	73.8%(48)
Correct classification:		76.2%	

degree-completers from non-completers. If entry is included as a variable, Adult Entry status and a longer time since enrollment (not surprising, as dropouts would usually spend a shorter time) are added as discriminating variables. All of these variables, except for time since enrollment, are the same as those in the multiple regression (Table 36).

As will be seen, satisfaction is a variable in the discriminant functions for both Adult Entry and Re-entry sub-samples. Work-related problems contribute to the Adult Entry function only, Grade Point Average to Re-Entry--as with regression. Level of aspiration does not survive in the sub-group discriminants. This variable, which indicates desire for further upward social mobility, thus appears to differentiate degree-completers from non-completers when all adult students are considered, but is not useful when analyzing the separate Adult Entry and Re-entry categories. Other variables will be considered when the discriminants for Adult Entry and Re-entry are compared.

The classification results for the Direct method and both Wilks procedures (including and excluding entry as a variable) are in each case slightly different. The best overall result is for Wilks without entry, mainly because the results for degree-completers are more successful. This is another indication that the simpler equation is at least as useful as the others. However, all differences in classification are slight. The results, between 75% and 80%

in each case, are not particularly impressive. The discriminant functions are only moderately effective in classification.

It appears that a combination of educational experience, vocational history, and aspiration variables best discriminates between degree-completers and non-completers. Adult students are more likely to complete degrees if they are satisfied with their university experience, if they are able to integrate their work and educational lives, and if they have high vocational aspirations. Work and education are the relevant environments for adult male students and both must be considered when predicting educational persistence or dropout.

Adult Entry and Re-entry Compared

Because of the ambiguity of the effect of the entry variable, separate analyses were performed for Adult Entry and Re-entry students. The effects of work-related problems and Grade Point Average are better analyzed for their effects with the separate discriminants for the subsamples.

Table 40 reports the results for forced-entry (Direct) analyses for separate Adult Entry and Re-entry groups. While the reduction in lambda is greater, the canonical correlation is higher, and the classification is somewhat more successful for the Adult Entry group, the resulting discriminant function is not significant at the 0.05 level

TABLE 40
 DISCRIMINANT ANALYSIS USING DIRECT METHOD: SUMMARY
 STATISTICS FOR DEGREE COMPLETION
 (ADULT ENTRY AND RE-ENTRY COMPARED).

Adult Entry:

Canonical Correlation	0.669
Wilks' Lambda	0.552
Significance	p=0.082 ($\chi^2=16.655$, d.f.=10)
Correct classification	84.1%

Re-Entry:

Canonical Correlation	0.638
Wilks' Lambda	0.593
Significance	p=0.036 ($\chi^2=19.336$, d.f.=10)
Correct classification	79.2%

(p=0.082). This is partly because of too many variables and too few cases. For Re-entry, the results are at least significant by chi square, because there are more Re-entry students in the sample.

While Wilks selection results in comparable results to those with Direct for Re-entry (Table 42), for Adult Entry the results are in fact much better (Table 41). The fact that 10 variables account for less variance than three means not only that additional variables do not help but also that they detract from the effectiveness of the function.

As can be seen from Tables 41 and 42, the three-variable discriminant function for Adult Entry accounts for considerably more variance than the six-variable function for Re-entry. In fact, lambda is reduced more by one variable in the Adult Entry discriminant than by all the variables in the Re-entry case. Work-related problems reduces lambda to 0.595 with Adult Entry compared to 0.606 for six variables with Re-entry. This finding underscores the importance of work-related problems for the Adult Entry students, as discussed in the section on regression.

The other variables in the function for Adult Entry are satisfaction and, despite a low correlation with the function itself, social mobility. This is the first appearance for social mobility as a variable of significance for survey respondents (Table 41). However, its importance appears to be simply in contributing to the discriminant function, with no real relationship to degree-completion.

The classification results for the Wilks method and forced-entry are exactly the same for Adult Entry (see Table 40), so the more efficient three-variable function works at least as well, and is better on most statistical grounds.

For the Re-entry group, the same variables as in the regression, Grade Point Average, satisfaction, and early-career mobility make the greatest contribution to the discriminant function. In addition, three variables are

TABLE 41
 DISCRIMINANT ANALYSIS USING WILKS METHOD:
 BACKGROUND AND PARTICIPATION VARIABLES AND
 DEGREE COMPLETION (ADULT ENTRY).

Independent Variable	Discrim. Function Coefficient	Correlation within Function	Wilks' lambda	Significance
<u>Adult Entry:</u>				
Work-related Problems	-1.012	-0.733	0.595	0.000
Satisfaction	0.688	0.323	0.486	0.000
Social Mobility	0.432	0.085	0.441	0.000
<u>Summary Statistics:</u>				
Canonical Correlation:	0.748			
Significance:	p=0.000 (X ² 24.796, d.f.=3)			
<u>Classification:</u>				
Actual Group:	Number of Cases	Predicted Group:		
		No degree	Degree	
No degree	12	83.3% (10)	16.7% (2)	
Degree	32	15.8% (5)	84.4% (27)	
Adult Entry correctly classified:		84.1%		

added to those revealed as important by regression: time of decision, time since enrollment, and mother's education. Like Grade Point Average, these last three variables are education-related rather than career- or work-related variables. Mother's education and time of decision are frequently associated with success in university in research with traditional-age students but are at most trivially correlated with degree-completion in the overall sample. (The correlation with time since enrollment is, however, significant. See Table 34.) It is perhaps because the Re-entry group is somewhat more traditional, more like students on whom previous research has been reported, that these variables have some importance. Time since enrollment is perhaps a somewhat obvious variable, given that dropouts will often have a short stay. The Re-entry group, in general, seems to be more affected by educational variables than is the Adult Entry Group.

The classification for Re-entry is slightly less successful than with Adult Entry (Tables 41, 42). In general, the whole discriminant procedure works slightly less well with Re-entry; it seems simply more difficult to discriminate the causes of degree-completion/non-completion with the Re-entry group. More variables are required, and the amount of variance accounted for is less. But the difference seems to be mainly that there is no one variable

as significant for the Re-entry group as work-related problems is with the Adult Entry group.

Summary and Conclusion

The regression and discriminant equations use the same variables for the full mailed survey sample, except for time since enrollment which appears only in the six-variable discriminant when entry is included as a variable. The importance of each of the variables becomes clear when the subsample analyses (Adult Entry and Re-entry) are studied. Treating the groups or subsamples separately led to additional insight into the effects of some of the other variables. Within the separate groups, there was better prediction of degree completion than there was for the overall sample, with some different and some similar variables emphasized.

Satisfaction, which is the most important variable in both full sample equations, appears in all the subsample analyses but not as the first variable. Level of aspiration likewise appears in both the regression and the discriminant analyses for the full sample but only appears in one subsample analysis--the Adult Entry regression with a reduced criterion of variable entry. The importance of these two variables is that they have some, fairly consistent effect with both groups, in the case of level of aspiration so

moderate that it almost disappears in the subsample analyses.

One other variable which appears with both Adult Entry and Re-Entry equations is early-career mobility, which did not appear in the full sample analyses because it has opposite effects with the two groups. Upward mobility in early careers correlated with degree completion by Re-entry students; downward mobility correlated with degree completion with Adult Entry Students.

The major differences between the sub-samples are in the primary variables for each group. Work-related problems is the most important variable for Adult Entry, while Grade Point Average is the most highly associated variable with Re-entry. The importance of these variables with the full sample is due to the strength of their contribution to degree completion in one subsample in each case.

The other variables which contribute only to the discriminant for Re-entry--time of decision, time since enrollment, and mother's education--are, like G.P.A., educational variables. Re-entry students' persistence seems generally to be more affected by educational background variables, while Adult Entry students' persistence is more affected by the interaction of their work and educational environments (work-related problems, mobility considerations). In fact, the variable work-related problems had more effect with Adult Entry than any

other single predictor with either group: presence of work-related problems was likely to lead to non-completion of degrees.

Table 43 summarizes the findings in this chapter. The variables found significant in all the analyses are listed. None of the correlations in Tables 33 and 34 was obviously meaningful. (With the total sample none was higher than 0.333). The multivariate analysis was more useful in revealing the importance and effects of the variables in their relationship with degree-completion. The use of both methods--regression and discriminant--reinforced conclusions about the variables and their effects. The multiple regression analysis led to some understanding of the extent to which degree completion can be predicted using the variables under study. Discriminant analysis gave additional understanding of the relative contribution of different variables to degree-completion among the groups studied in this chapter.

TABLE 43:
 VARIABLES OF SIGNIFICANCE WITH THE FULL SAMPLE,
 AND ADULT ENTRY AND RE-ENTRY SUBSAMPLES FROM
 BOTH REGRESSION AND DISCRIMINANT ANALYSES.

Sample	Regression (Stepwise)	Discriminant (Wilks Method)
Full Sample	Satisfaction	Satisfaction
	Level of Aspiration	Level of Aspiration
	Grade Point Average	(Entry) ¹
	Work-related Problems	Work-related Problems
	(Entry) ¹	Grade Point Average (Time since Enrollment) ¹
Adult Entry	Work-related Problems	Work-related Problems
	(Level of Aspiration)	Satisfaction
	(Satisfaction)	Social Mobility
	(Early-career Mobility)	
Re-entry	Grade Point Average	Grade Point Average
	Satisfaction	Satisfaction
	Early-career Mobility	Time of Decision
		Time since Enrollment
		Mother's Education

(Variables are listed in order of contribution to regressions equation or discriminant function.)

1. Only significant when Entry is included as a variable.

CHAPTER 8

CONCLUSION: NEW AND RETURNING STUDENTS

Introduction

Two major bodies of research were pursued in this study: the literature on adult participation in educational programs, mainly from the field of adult education, and the literature on dropouts from college and university, mainly from the field of higher education. These research areas had generated a number of models which do not, however, apply specifically to the problem studied here. The literature from the two fields converges in the treatment of adults in post-secondary education.

The emphasis in this study on long-term persistence to degrees by adult students in universities requires a different focus from that in most adult education participation research and higher education attrition research, mainly in the use of a longer time period, although some dropout research in the 1960s used a ten-year time frame as did this study (for example, Eckland, 1964).

Research on adults in higher education, sometimes based on an interest in adults as a market, has tended to focus on

first-year students. It has more often emphasized women than men. This study was concerned with adult undergraduates at all levels, limited to males aged 25 to 34, for reasons explained in Chapter 4. Dealing with part-time and full-time students at all levels, with long-term persistence to degree completion as the dependent variable, represents a departure from previous research.

Most of the data for hypothesis-testing (Chapters 5 and 6) and multivariate analysis (Chapter 7) were obtained by a mail survey with some supplementary information about the respondents being obtained from student records.

The focus on a different population from previous research resulted in confirming some findings and emphases and questioning others. In this chapter, the findings reported in Chapters 5 to 7 are compared to the literature in Chapters 2 and 3. First, the findings are compared to those in the literature on adult participation. Second, the dropout literature is examined, noting in particular the differences which result when a longer time period is used. Then, the relative contributions of the Cross (from adult education) and Tinto (from higher education) models are discussed as to the extent they contribute to understanding this population, followed by a discussion of the long-range persistence model described in Chapter 3.

Next a modification of the Re-entry/Adult Entry categorization is suggested. With an emphasis on the

difference between new and experienced post-secondary students, some conclusions are presented. Relationships are suggested which may contribute new and different hypotheses from those in Chapter 3 and, possibly, be helpful in developing a model in the future.

Implications of these findings, particularly for administrators in higher education, are considered in the next section, followed by suggestions for future research. Then, after the section on limitations of the study, the conclusion stresses what was learned, in particular about the respondents in this study.

Summary of Findings

There are a number of findings from this research which could be useful to administrators and to future researchers. These are grouped in this section according to their applicability to adult participation research and research on higher education dropouts (outlined in Chapter 2), and to research based on the Cross and Tinto models (described in Chapter 3).

Adult Participation

Less than half of the students aged 25 and over at Simon Fraser University in the fall of 1973 had completed degrees at that university within the following ten years. Those who registered for the first time in the fall of 1973

were especially unlikely to complete degrees in ten years with less than 20% doing so. The large proportion of the adult students who were returnees, and the especially low rate of continuation by those who were new to higher education, give support to the decision to go beyond the study of first-time and first-year students (such as, for example, Solmon and Gordon, 1981) in studying pursuit of degrees by this group.

Degree-credit higher education is an area of ambiguity in the definition of adult education (Darkenwald and Merriam, 1982). Nonetheless, the initial hypothesis of this research, that those who had previously been students in higher education would more often persist to degrees than those new to postsecondary education, follows what is perhaps the most consistent finding in adult education participation research: greater participation in all education activities by adults with more education. The hypothesis was supported by student records data. In addition, the non-continuation rate of students who enrolled initially in the fall of 1973, probably comparatively inexperienced in educational pursuits, suggests that the education/participation connection, at least that adults with less educational experience are less likely to participate, holds for the population studied here as well.

The survey data contradict the hypothesis, partly because of the low response rate of new students--those who

registered initially in the fall of 1973. The hypothesis is restated in a new categorization presented in a later section of this chapter.

Along with education, social class and mobility are key variables in much adult education participation research. Most of the survey sample came from the middle class with neither the upper nor lower socioeconomic levels much represented in the sample. As a result, there was little opportunity for upward or downward mobility, so that the hypothesis (based on sociological research on participation reported in Chapter 2) that downward mobility would result in greater persistence could not be rigorously tested. Early-career occupational mobility had opposite effects with Re-entry and Adult Entry students. Upward mobility contributed to persistence by Re-entry students; downward mobility contributed to persistence by Adult Entry students. Upwardly mobile Adult Entry students may have had greater work burdens and may have felt less pressure to succeed educationally. Re-entry students may have been encouraged by some career success; generally they had had less career involvement than Adult Entry students, having spent some time in higher education in the years before they turned twenty-five.

Other variables sometimes used in participation research (for example, support) are considered in the next section on dropout.

For the younger males on which this study concentrated, the effects of some variables used extensively in participation research are not straightforward. The effect of educational experience is not linear, as will be discussed in the section on the modification of the Adult Entry/Re-entry categorization. The effect of social mobility, another key variable in some participation research, could not be vigorously tested owing to sample limitations; however, early-career mobility had opposite effects for each of the Re-entry and Adult Entry categories, as stated above.

Perhaps formal higher education, because it requires an extensive commitment, over a considerable time--at least if one intends to complete a degree--makes participation in this activity qualitatively different from participation in other kinds of educational activities. The longer time-frame may be the key to identifying the variables which determine on-going as opposed to occasional participation.

Higher Education Dropout

The hypotheses used in this research which were derived from higher education dropout research dealt with the effects of a number of variables: educational--time of decision, degree aspiration, mother's education, and Grade Point Average; and situational--support, problems, and satisfaction. The educational variables, especially G.P.A.,

affected the persistence of Re-entry students, but not Adult Entry students. G.P.A., in fact, was the variable which contributed the greatest amount of variance in explaining persistence by Re-entry students.

Some of the situational variables did not have much effect. The male students surveyed did not seem to be particularly affected by family or financial problems or support (presence or lack), considerations emphasized in other studies (Lenning, Beal, and Sauer, 1980; Cross, 1981), especially studies which concentrate on women (Lenz and Shaevitz, 1976; Rawlins, 1979). Support, especially, did not seem to have any particular effect on degree-completion: perhaps support is not a variable of importance in long-term persistence. There may be a difference between males and females, with males less concerned about considerations of support. Or it may be that those troubled by problems of support just do not become long-term participants. Students who had been part-time students in Ontario for a number of years (Levy-Coughlin, 1981) considered dropout a problem (whatever the cause) that applied to first-course or first-year students, but something they themselves had passed.

Work-related problems, however, had a significant effect on the persistence of Adult Entry students, contributing almost half of the variance in the regression equation for Adult Entry students. While this explanation could be rationalization on the part of the non-completers,

this was the only one of five problem categories which made a difference in degree completion for Adult Entry students. Generally, vocational (career-related) as opposed to educational (or self-improvement) reasons for participating were not associated with persistence, suggesting that at least career transitions (Aslanian and Brickell, 1980), while they may lead to short-term participation, do not lead to long-term investment in education. Other kinds of problems had little effect on long-term persistence by the adult males in the survey.

Satisfaction is frequently associated with persistence (Lenning, Beal, and Sauer, 1980), although not consistently so. In earlier research, Iffert (1958) found that persisters were more dissatisfied with at least some aspects of their college experience than dropouts. The findings here were that degree-completers were more satisfied than non-completers, and that satisfaction contributed to the persistence of both Re-entry and Adult Entry students in the survey. Nonetheless, as indicated in the question on counselling, persisters did sometimes express dissatisfaction. (Satisfaction with instructor contact is discussed in the next section on the Tinto model.)

In this study satisfaction, along with problems and support, were perceived as mediating variables. Because differences between Adult Entry and Re-entry students in satisfaction were slight, the effect could not be considered

mediating, leaving open the question whether satisfaction is an independent or dependent variable. However, the effect is significant and the variable makes a consistent contribution to the variance, using different methods of analysis. Recent research suggests that satisfaction has a greater effect on performance than vice versa (Bean and Bradley, 1986), so it is reasonable to conclude that satisfaction is a cause of persistence. It may be conceptualized as a mediating variable or it may be an independent variable, depending on the model one uses.

This study presents some further justification for the extension of the time-frame for studying dropout to ten years or more (Eckland, 1964; Pervin, 1966; Jex and Merrill, 1967). Some of the students in this study had registered initially as early as 1965. In some research, those who do not complete degrees in five years or less are considered dropouts. However, the completion rate increases considerably if one goes beyond four or five years (Eckland, 1964).

Generally, the research here supports the idea that more than just one or two variables should be used in dropout studies (Pantages and Creedon, 1978). However, as seen in Chapter 7, not many variables are needed (between three and six) to account for the significant variation in degree-completion. Lists of variables (for example, Astin, 1975; some of the examples in Lenning, Beal and Sauer, 1980)

are not necessarily useful. One of the useful functions of models is that they are supposed to reduce the numbers of variables that must be considered in explaining relationships.

The Cross and Tinto Models

When the models from the literature which were discussed in Chapter 3 are re-examined, Cross's model of adult participation and Tinto's model of dropout, it can be seen that Cross's model is more applicable to the situation here. It is perhaps logical that a model concerned with adult students should fit better in a study of adult students. There has been concern in dropout research about applying general models to the variety of types of institutions and students in higher education (Lenning, Beal, and Sauer, 1980; Bean and Metzner, 1985).

Some of the elements of the Tinto model (Figure 2, p. 32), like institutional commitment, do not apply very well with this population. Many dropout models, like the Tinto model (1975) and its predecessor, the Spady model (1971), are based on person-environment fit. Because of the kinds of institutions and students they are concerned with, the models often deal with things like residences and comparability of the community where the university is located with the home community of the student. Such variables are appropriate when dealing with full-time

traditional-age undergraduates for whom university may be the first move away from home (Lenning, Beal, and Sauer, 1980). Person-environment fit may also be a valid concern for adults, but the meaning of the environment for adult students is different from the meaning for traditional-age university students.

The university will often be less important than the work setting, even for full-time students, many of whom may be taking a leave from established careers and may know fairly clearly where they are going to be working after a period of study. With Adult Entry students, work-related problems was the most significant variable affecting degree completion. Among the Adult Entry students in the sample, having work-related problems was likely to result in non-completion of degrees. The effect of the external environment on persistence, particularly with working students, is emphasized in other discussions of adults in higher education (Bean and Metzner, 1985; Tinto, 1987). The type of work environment (Holland, 1973) might be useful in developing a future model of adult dropout using person-environment considerations. In any case, the model would incorporate different environmental emphases from the Tinto and similar models, particularly in the degree of emphasis on environment outside the university (for example, job situation).

Of the several measures of satisfaction used in this research, the greatest difference between degree-completers and non-completers was in satisfaction with instructor contact. The importance of instructor contact, as an aspect of academic integration in Tinto's model, is stressed elsewhere (Munro, 1981; Pascarella and Terenzini, 1980; Terenzini and Pascarella, 1980). These researchers surveyed their respondents while they were still enrolled and found that academic integration was more important than social integration in predicting which students would re-enroll. The data here (including satisfaction with social life) indicate that both aspects contribute to persistence. Certainly, the evidence indicates the practicality of paying attention to opportunities for instructor contact and interaction with other students in preventing dropout.

The Cross model (Figure 1, p. 33) fits the data here fairly well: at least there are no contradictions. Data were not collected about life transitions, information, and barriers (elements D, E, and F in the model), although the discussion of problems and satisfaction brings in alternative and somewhat parallel intervening variables. Changes in life situations and problems with support and/or finances might have less importance when considering long-term participation. Or, transitions and barriers may have to be operationalized in some way other than through asking

questions about problems, support and satisfaction to be properly investigated.

The data for this study clearly support the propositions that differences in attitudes to education and expectations about participation (elements B and C in the Cross model) contribute to persistence. In any case, most of the elements in the Cross model are applicable. It is impossible to conclude which elements are more or less important because the model was not tested directly. But the Cross model and the findings of this dissertation are not inconsistent.

The Cross model is concerned with who does and who does not participate, not who does and does not drop out. If more data had been collected about the adult students whose participation was very short--one term, especially--as opposed to the Adult Entry students in the sample who were all more or less veterans of higher education, it may have been possible to specify the adaptations needed to make an adult dropout model. Perhaps this would require more data about the work environment, as suggested in the discussion of the shortcomings of the Tinto and other dropout models in dealing with long-term persistence and adult students.

Model of Long-range Persistence by Re-entry and Adult Entry Adult Students

The model used in the study (Figure 4, p. 43) was specifically designed to deal with long-term persistence by adult students. It has some correspondence to the data, although not always as was hypothesized. The background characteristics in the model affected persistence to degree completion and so did some participation factors: what is less clear is how the background characteristics affected the participation factors. Entry status was used in the model as an intervening variable; it may be that there should be separate models for the two categories. Adult Entry and Re-entry students were affected differently by some of the variables.

Among the background characteristics, the educational variables (such as time of decision) affected the persistence of Re-entry students but not that of Adult Entry students. Similarly, Grade Point Average, which had the greatest effect of any single variable with Re-entry students, could be considered a background variable with this group; obviously it could not be a background variable with Adult Entry students. Social mobility may have some effect on persistence (Chapter 7) and may have shown more influence except for the restricted range of the sample (lack of students from upper-class and lower-class origins). Early-career mobility has apparently opposite effects with

the Re-entry and Adult Entry groups, with upward mobility contributing to persistence of Re-entry students and downward mobility positively affecting degree completion by Adult Entry students. Generally, it seems different sets of variables should be used as background characteristics with each group, perhaps in separate models.

Re-entry students and Adult Entry students had different pasts: the Re-entry students were more involved with education; the Adult Entry group were more involved with work and career. The differences may be based on differences in background characteristics. Re-entry students' mothers had significantly more education than Adult Entry students' mothers, so there may be a difference in family orientation to education which results in proceeding directly to post-secondary education or in entering full-time employment first. Beyond this, the variables may not be relevant to degree completion.

With the participation factors in the model, satisfaction and problems affected persistence, while support apparently had no effect. The effects of satisfaction were sufficiently important, and complex, as to indicate that different aspects should perhaps be treated as separate variables. The effect of work-related problems on the persistence of Adult Entry students may indicate a need to include environmental factors like job and career situation. The hypothesized differences between Adult Entry

and Re-entry students with participation factors, mainly that persistence of Adult Entry students would be more (and more adversely) affected by satisfaction and problems, were not found.

One of the functions of models is to simplify. Simplicity, generality, and accuracy may not be compatible. It may be that different populations require different models, selecting different elements to attach at different points. The differences between Adult Entry students and Re-entry students indicate that even within the category of adult university students, particularized models for separate populations may be necessary to adequately describe the behavior under study.

Whether or not models are used, the research for this dissertation still allows some predictions about which adult students will and will not drop out.

Quality and Quantity of Educational Experience

This study was based on a categorization of adult male students into dichotomous groups--Adult Entry and Re-entry--and the expectation that Re-entry students would be more likely to persist to degrees than Adult Entry. The results of the research are ambiguous about this expectation; however, the data confirm the idea that students who are completely new to higher education are at high risk to drop out. Adult Entry students, once they are experienced as

university students, may be no more likely to drop out than Re-entry (who are also experienced). A new categorization, in order of likelihood to complete degrees, might be:

1. Adult Entry (experienced students who have completed at least one term successfully in post-secondary education)
2. Re-entry students (started as traditional-age students) who had positive higher education experience, perhaps measured by G.P.A.
3. Re-entry students with negative previous higher education experience (low G.P.A.s).
4. New Students (initial term, never previously enrolled as post-secondary students)

This typology is obviously not "clean." The categories are mutually exclusive for only one time; new students who continue more than a term become returning students. However, predictions can still be made.

Some conclusions and some hypotheses can be made using this categorization. Unfortunately, too few new adult students (as described here) responded to the mail survey for any conclusions to be made about them. Extrapolating from those things which were related to success or lack of it for Adult Entry students, high proportions of individuals among the non-continuing new students might expect immediate payoff from taking courses. Perhaps many of them would have already achieved some upward mobility in their careers and

would consider their enrollment a tentative commitment, with no serious intention to persist if it got difficult. Much of what had been hypothesized about Adult Entry students in general would apply to this group.

Re-entry students could be split into either of two categories on the basis of their Grade Point Average. G.P.A. could be interpreted as one measure of the positive or negative quality of their educational experience. (There might be others, such as course failures or level of satisfaction with previous experience.) The hypotheses about the advantages of educational experience (limited to a dichotomous either/or categorization in this research) could then be qualified. Those with low G.P.A.s from previous post-secondary education or a low scale on some kind of experience index would be more likely to drop out. Those with higher G.P.A.s or a high scale score would be a relatively low risk group. There are other indications that Re-entry students are more affected by "traditional" variables related to persistence in dropout research (time of decision, mother's education) than other adult students. This finding, along with a sense of lack of involvement in their careers to date might indicate that many of the Re-entry students were, in a role sense, not really adults.

Experienced Adult Entry students, those who have survived their initial experience, are the most successful in completing degrees of the four categories in the proposed

typology. Unlike Re-entry students, they will not have had the experience of dropping- or stopping-out; they have had few or no negative experiences from higher education. Only those who experienced conflict between their work and student roles were likely to drop out. Their motives for participation are frequently pursuit of degrees for the sake of degrees, desire to fulfill a long time ambition, or desire for understanding of the world or themselves, rather than vocational motives or expectation that the education would pay off, especially in the short term.

The Adult Entry categories are not clearly delineated. Continuing Adult Entry students (category 4) are in a sense a sub-category of New students (category 1). Any differences found between the categories would indicate possibly greater real differences. Even division of Re-entry students into groups with high and low G.P.A.s could be arbitrary--although this is not necessary as G.P.A. is an ordinal variable, and categories 2 and 3 could be established empirically.

However, the new typology could be incorporated into a sequential model, possibly a person-environment model like Spady's and Tinto's. The difference between new students who are and those who are not likely to continue may be due to differences in the environments they come from as well as to differences in the ways they respond to their higher education experience.

Implications for Practitioners

The interest of universities in retention has generally focused on traditional-age students; their interest in adult students has generally focused on attracting them in the first place. Retention of adult students is also a useful goal for universities. The suggestions in this section should apply to any university interested in long-term persistence of adult students.

The major finding that Adult Entry students, once they are no longer new to higher education (Category 1 in the new typology), are very likely to be persistent, leads to one of the recommendations which could be suggested to administrators in higher education. Generally, it appears that students who have previously attended, provided that they do not have a low G.P.A., are much less likely to drop out than new students. Possibly, it is not worthwhile to expend extra resources on adult students until they have made an extra commitment to their university education (that is, come back for more) or that extra effort should be made to get students back at least once, to get them to make an extra commitment by taking additional courses.

Useful strategies include getting adults to pre-register for their next course while they are still attending their first and contacting students by telephone the first semester after they cease attendance (Coyle,

Pennipede, and Reilly, 1984-85). In addition, efforts should be made to make the first experience for new students as rewarding as possible by doing such things as increasing opportunities for informal contact with instructors outside of classes (as indicated in research on the Tinto model as well as here).

Some further comments can be made about marketing higher education to adults. Any recruiting appeals based on career advancement should be made with care. Either the universities should be ready to prove the connection to career success, or they should be prepared to provide counselling so as to make the connection better understood by students. Vocational motives for participation were not found to contribute to persistence. Apparently, promotion based on appeals to career motives may attract adult students but will not keep them. The payoff may be too distant. Marketing techniques applied without considerable care may create as many problems as they solve (Kotler, 1974; Loverock and Rothschild, 1980). Some product improvements, especially those which would improve an adult's initial experience in higher education--improved counselling, or improvements to specific courses--might help get adults back for more.

There is probably little, other than counselling, that could be done to help Adult Entry students cope with the main problem they claimed was interfering with their

persistence, pressures from work, although providing opportunities for directed study might help. In the case of employed students, it might be helpful to make sure employers are aware of their students' academic involvement. Employers could assist with work scheduling or might simply lend moral support.

Helping Re-entry students deal with their Grade Point Average problem may be easier. The cumulative G.P.A. could be de-emphasized. If, indeed, these individuals have matured during their absence from higher education, their capabilities as students should be judged on the basis of their work as mature students. High marks for one year or two years could be considered sufficient evidence for admission to Honours or graduate programs, along with aptitude or admission test results. Being discouraged about admission to graduate or professional programs may have affected persistence in some cases. Past records should not be a penalty. (Comments from some respondents suggested some bitterness about being penalized for their lack of achievement several years earlier.)

There was considerable dissatisfaction with counsellors but it is not clear what suggestions should be made because of this. Respondents were asked only whether they were satisfied or dissatisfied with counselling (along with other aspects of their university experience), but some volunteered suggestions for improvement. Most frequent

suggestions were laid-on counselling at the beginning of post-secondary participation and/or having counsellors attached to departments. Improved counselling may help with other problems. Counsellors could assist adults in making the career-education connection, perceiving distant payoffs more clearly, and coping with conflicts between their education and work or family life.

Suggestions for Further Research

As stated before, the existing models from adult education participation research and higher education dropout research do not apply completely. Adult education as a field of study has difficulty incorporating credit higher education (Darkenwald and Merriam, 1982). Most dropout research has been conducted using a short time focus. Nonetheless, the models were useful in helping identify variables in this research. Proceeding from a model is more productive than speculation or simply collecting descriptive data and making interpretations from that. Further research would require modifications to dropout models to deal with differences between short and long time-frames, and modifications to adult participation models to deal with differences between credit and non-credit, and course and program participation.

A study based on the new, four category typology identifying these students at the time of registration or

shortly after and following their performance for, say, two years would provide some indication whether what was learned here could be more widely applied. It would be useful to try this at two or more universities, or at least one different from S.F.U.

Use of multivariate techniques is justified, even when sample representativeness is problematic. As was shown in Chapters 5 and 6, univariate and bivariate analysis often results in the identification of a number of moderate relationships, none accounting for more than ten percent of the variance. Multivariate techniques such as multiple regression and discriminant analysis, in addition to accounting for much more of the variance, help deal with the problem of relative importance of variables. In any case, the use of a variety of techniques with the same data is a logical procedure for examining relationships among variables.

There are some specific areas for further research, indicated by findings of this research. Students who expected immediate payoffs from their courses and who stressed vocational motives for pursuing education were more likely to drop out. This finding leads to the questions of the importance of payoff, perception of benefits, and the connection between education and career. The education-career connection has been researched in the social mobility

area, for example, but not much is known about how these things work with adult students, except anecdotally.

Limitations of the Study

Conclusions from this research must be tentative. As stated in Chapter 4, the mail survey did not adequately represent first-time students (those who registered for the first time in the fall of 1973), and had only a small number of Adult Entry students who did not complete degrees (which category included most of the first-time students).

This research was carried out with a sample from one university. However, Simon Fraser University was one that, compared at least to other British Columbia universities, has been concerned with and attractive to adult students (Taylor and Weldon, 1982).

The survey was conducted over ten years after the population had been at S.F.U. for the term which was used to identify them as the population for study. In addition, the survey was focused on adult male students younger than 35. While their experience may be similar to that of adults at other universities at other times, the population is not necessarily representative of all adults in higher education.

Conclusion: Experience and Expectations

The final comments are about adults in higher education, particularly the respondents to this survey. It was found that some of the variables frequently used in research on dropouts--call them traditional variables--did not apply here, especially not to Adult Entry students. In addition, the successful Adult Entry students said they were not troubled by support or lack of support, or financial problems; they were more likely motivated by educational than vocational objectives; they were concerned with being good students, although having problems with studying affected their persistence very little. In short, they were a very independent group, and one gets the sense they would succeed somehow or other, provided the obstacles they faced were not enormous.

When Adult Entry students were not persisters they were likely to be those who had expectations of immediate payoff or who had vocational objectives for their educational efforts. Those who were most successful did not expect any immediate extrinsic rewards for their efforts; they reported being attracted to higher education for its intrinsic value.

The persistence of Re-entry students was strongly associated with their previous educational experience, for example their Grade Point Average. Similarly, the generally less successful Re-entry group seemed to be more influenced

by vocational motives, like the non-persisting Adult Entry students. These findings lead to the conclusion that lack of experience in post-secondary education is not necessarily a problem, while unsuccessful previous experience is a handicap. The influence depends on the quality of the experience.

Some adults may be merely testing the waters; there maybe very little commitment; they are not that likely to persist (like the New Students in the categorization on p. 199). Some adults, however, are quite committed to their education; their education is often perceived as an end in itself; they are very likely to persist. Not that many resources need to be expended to assist them.

If they make a commitment (indicated by coming back for more), adult students will work very hard to make it to their goal.

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APPENDICES

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A. STUDENT RECORDS

1.	File Description.....	222
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1. FILE DESCRIPTION

Field Description	Starting Position	Length	Type	Picture
STUDENT SURNAME	1	20	CHAR	A _____ A
STUDENT FIRST NAME & INITIAL	21	22	"	"
SEX	43	1	"	M/F
BIRTHDATE	44	22	"	MMDDYY
ADDRESS LINE	150	20	"	A _____ A
ADDRESS LINE	272	6	"	"
POSTAL CODE	92	3	"	A-A
DEGREE AWARDED	98	3	"	MMDDYY
DATE DEGREE CONFERRED	98	6	"	YYSS
FIRST SEMESTER ATTENDED	107	3	"	XXX
CUMULATIVE CREDIT HOURS PASSED	110	3	"	X.XX
CUMULATIVE GRADE POINT AVERAGE	113	4	"	X.XX
*REGISTRATION VECTOR	117	30	"	A _____ A
		146		

*REGISTRATION VECTOR consists of 30 character positions where each position represents a semester. The first position on the left represents Fall 1973 (73-3) and the last position on the right represents Summer 1983 (83-2). (83-2). If the character is an N the student was not registered in that semester. If the character is an Y the student was registered in that semester.

File Characteristics

Data Set Name: RG.A6403.JMCLAREN
Label: No Label
Tape Density: 6250 BPI

2. DATA DESCRIPTION

Total Number of Records	1561
Graduate Students in Fall, 1973	61
No Records, possible Non-starts	<u>65</u>
Usable Records	1435
Cumulative G.P.A. based on Graduate Study after 1973	<u>155</u>
Usable Grade Point Average and Credit Hours	1280
1. DEGREE (n=1435)	
Simon Fraser Degree	648
No Simon Fraser Degree	787
2. SEX (n=1435)	
Male	891
Female	544
3. AGE (n=1435)	
Born prior to 1939	240
Born between Jan. 1, 1939 and Dec. 1, 1948	1195
4. GRADE POINT AVERAGE (n=1280)	
0 - 1.99	115
2 - 2.99	543
3.00 - 4.00	622

B. MAIL SURVEY

1.	Cover letters -.....	225
2.	Data Known About Sample from Student Records -.	228
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2. DATA KNOWN ABOUT SAMPLE FROM STUDENT RECORDS.

1. Degree

Simon Fraser degree	61
No degree	45
(From survey) Degree obtained elsewhere	4
2. Grade Point Average
(see Chapter 4, Table 1)
3. Time at Simon Fraser
(see Chapter 4, Table 1)

Sex and Age not relevant because of sample restriction.

3. QUESTIONNAIRE WITH FREQUENCIES

1. When did you first decide that you would be a student in post-secondary education (take University or College courses for credit)?

19(a) Before high school
44(b) During high school
15(c) In the first 3 years after leaving school
28(d) More than 3 years after leaving high school

2. How old were you when you first attended a university or college course?

16 - 1	22 - 4	28 - 6
17 - 8	23 - 1	29 - 3
18 - 27	24 - 4	30 - 3
19 - 18	25 - 2	31 - 2
20 - 5	26 - 5	32 - 0
21 - 8	27 - 8	33 - 1

3. (a) Did you intend to pursue your education to a degree or diploma at that time?

Yes 96 No 10

- (b) If yes, what was your educational goal?

5 complete certificate program.
4 Complete diploma program.
77 Bachelor's degree.
5 Master's degree
8 Doctorate, or professional qualification

- (c) What is the highest educational level you aspire to (most advanced degree)?

8 less than Bachelor's degree
21 Bachelor's degree
46 Master's degree
17 Doctorate, or professional qualification

4. (Students who have not completed a degree.) If you are planning to complete your degree, when do you next plan to enroll in a course?

83 not applicable
8 not planning to enroll again
4 enrolled at the present time
11 planning to enroll again

5. How many semesters (after this one) do you expect to take to reach your present educational goal?

76 not applicable (goal already achieved),
or 4 - 1 year
12 - 2 years
6 - 3 years
8 - 9 years

RE-ENTRY STUDENTS (first enrolled in post-secondary education before age 25) ONLY:

6. (a) Between the time you first started taking post-secondary courses and the present, there has been at least one interruption of three semesters or more when you did not take courses or "stopped out." When you decided to return what was the reason?

21 (a) had always intended to return
16 (b) because of a change in occupational goal
2 (c) to satisfy a requirement of your job
7 (d) to qualify for advancement
1 (e) to do something with time available?
7 (f) other?--please specify:

- (b) What were you doing at the time of this decision (that is, were you unemployed, working as a housewife, or did you have some other occupation?) Please specify:

(occupation)

- see below

ADULT ENTRY STUDENTS (25 or over years old when first enrolled in post-secondary education) ONLY:

7. (a) When you first entered college or university, what was the reason?

- 21 (a) to obtain a degree(s)
- 2 (b) to obtain pre-professional qualifications
- 10 (c) to fulfill a long-time ambition
- 4 (d) because of a change in occupational goal
- 2 (e) to satisfy a requirement of your job
- 2 (f) to qualify for advancement
- 0 (g) to do something with time available
- 2 (h) other?--please specify:

(b) What are you doing at the time you decided to enter college or university? Please specify:

(occupation)

6 (b), 7 (b) totals:

- Occupational Category (Holland, 1973)

Realistic	(R)	38
Investigative	(I)	6
Artistic	(A)	2
Social	(S)	14
Enterprising	(E)	15
Conventional	(C)	15

- Occupational Level (G.E.D., parallels Social Class)

1	0
2	10
3	23
4	36
5	21
6	0

8. Which of the following reasons would you consider as being very important to you in deciding to enroll in a post-secondary program at the present time (Check any or all.)

- J = Job-related reason; U = self/understanding reason

- To qualify for a job
- For personal interest
- To improve existing job skills
- To decide on a career
- To study until a job becomes available
- To complete training required as a condition of my employment
- To meet people (6 = number checking item)

- U To learn for self-understanding
U To learn in order to better understand the world
J To learn something for a specific purpose
(immediate application)
39 To complete a degree (39 = number checking item)

J - Job-related reasons: (number of items checked
by individual respondents):

0 26
1 27
2 25
3-6 22

U - Self/understanding reasons: (number of items checked
by respondents):

0 34
1 39
2-3 27

9. What is your present or most recent job or occupation?

-Occupational Category (Holland category; see p. 230):

R 12
I 7
A 3
S 47
E 20
C 15

- Occupational Level (G.E.D. level; see p. 230):

1 0
2 0
3 3
4 12
5 79
6 2

10. (a) What occupation do you expect to follow in the next two years?

Same as 9. (check)
Or: (14 changes) (Specify.)

- Occupational category (Holland category)

R 9
I 6
A 4
S 46
E 18
C 15

- Occupational level (G.E.D. level; see p. 230):

1 0
2 0
3 1
4 6
5 76
6 16

11. (a) What type of work would you like to be doing in 10 years' time, if everything worked out?

Same as 10. (check)

Or: (42 changes) (Specify)

- Occupational category (Holland category; see p. 233):

R 8
I 5
A 5
S 39
E 28
C 10

- Occupational level (G.E.D. level):

1 0
2 0
3 0
4 5
5 65
6 25

- Change of occupation (10,11)

No changes 51
1 change 48
2 changes 4

12. What is the primary source of money for your education?

- 92 Own employment 3 Spouse's employment
- 2 Parent's employment 1 Other relatives
- 0 Social Assistance 2 Government training allowance
- 3 Loan
- 0 Other? (please specify):

13. How satisfied are you with the following aspects of your educational experience? (Place mark in appropriate box.)

	Very Satisfied	Satisfied	Dis-satisfied
(a) quality of classes	19	67	7
(b) usefulness of course content . .	18	69	15
(c) scheduling of classes . . .	21	73	8
(d) amount of contact with instructors .	27	59	16
(g) size of classes . .	21	62	9
(h) opportunities to mix with other students	28	67	5
(i) availability of academic advice and counselling . .	14	50	26

14. (a) Which, if any, problems related to being a student have you encountered? (Check as many as apply.)

(P = Personal problem; J = Job-related problem; F = family problem; M = financial problem; A = study-related problem)

- P lack of energy
- J conflict with job responsibilities
- F family obligations
- F non-supportive family attitudes
- M transportation problems
- F problems with child care
- M financial problems
- P lack of self-confidence
- F guilt about neglect of family
- J guilt about neglect of job
- A lack of specific skills and abilities
- A rusty study skills
- A problems with classmates//other? (please specify):

17. (a) Had any of your brothers or sisters had some post-secondary education before you did?

27 Yes 65 No 11 Not Applicable

(b) Have any brothers or sisters begun post-secondary education since you have started?

35 Yes 56 No 12 Not Applicable

DEMOGRAPHIC DATA:

18. What is your marital status?

14 Never married

6 Separated

13 Divorced

0 Widowed

70 Still married

19. (a) How many dependent children do you have?

70 respondents had children (number)

Number of children

0 33

1 17

2 36

3 or more 17

(b) What is the age of the youngest dependent child?

mean 7.3 (age in years)

median 7

20. (a) What was your father's occupation? (What job did he have for the longest time while you were still living with your family?)

- Holland category:

Realistic 47

Investigative 5

Artistic 1

Social 8

Enterprising 26

Conventional 14

- Occupational level (G.E.D. level; see p. 230):

1	0
2	5
3	22
4	41
5	27
6	6

21. What was the highest level of education completed by your mother? (Check one.)

- 10 elementary school, grade 8 or less
- 27 secondary school, 1-2 years
- 39 secondary school, 3-4 years
- 10 some post-secondary (trade, vocational, technical, college or university)
- 10 completed Bachelor's degree
- 3 some graduate study
- 2 completed post-graduate degree
- 5 do not know

22. Final Question:

What might you recommend to Simon Fraser to help it assist students like you?

No suggestion to make 66 (check)

Or: 40 made comments
77 subjects were commented on

Category:	Number
<hr/>	
Complaints, suggestions:	
Program	
--changes (majors offered, etc.)	11
--more correspondence courses	8
--more night classes (or specific ones)	6
--changes in marking, assignments	<u>3</u>
	28
Support services:	
--counselling	9
--admissions	4
--financial aid	6
--family housing	2
--more services (parking, recreation, etc.)	<u>4</u>
	25
Environment:	
--"prejudice" against mature or part-time students	4
Miscellaneous:	4
Total complaints, suggestions:	61
Compliments:	
--for mature student program	5
--general	11
Total compliments:	16
 Total	 77

C. TELEPHONE SURVEY

1. Protocol and Response rate..... 239
2. Questionnaire and Frequencies..... 239

1. Protocol and response rate.

All numbers called at least three times (2 different evenings and 1 daytime call - at least).

Numbers called for 24 interviews73

Introduction - identified researcher, stated purpose of survey, why and how respondent selected.

1. Did you receive the questionnaire?

Yes	17
No	7

("Not sure" response recoded after probing.)

2. If you did, why didn't you complete it?

too busy	10
lost it	4
did not want to	3

3. Would you be willing to answer a few questions at this time?

Yes	24
Complete questionnaire	3
Reduced questionnaire	21
No	4

Reduced Questionnaire

1. When did you first decide that you would be a student in post-secondary education (take University or College courses for credit)?

- 2(a) Before high school
- 8(b) During high school
- 2(c) In the first 3 years after leaving school
- 12(d) More than 3 years after leaving high school

6. (a) Between the time you first started taking post-secondary courses and the present, there has been at least one interruption of three semesters or more when you did not take courses or "stopped out." When you decided to return what was the reason?

- 4 (a) had always intended to return
 2 (b) because of a change in occupational goal
2 (c) to satisfy a requirement of your job
 3 (d) to qualify for advancement
 (e) to do something with time available?
 (f) other? --please specify:
- (b) What were you doing at the time of this decision (that is, were you unemployed, working as a housewife, or did you have some other occupation?) Please specify:

ADULT ENTRY STUDENTS (over 21 years old when first enrolled in post-secondary education) ONLY:

7. (a) When you first entered college or university, what was the reason?
- 2 (a) to obtain a degree(s)
2 (b) to obtain pre-professional qualifications
 (c) to fulfill a long-time ambition
 5 (d) because of a change in occupational goal
2 (e) to satisfy a requirement of your job
 (f) to qualify for advancement
 (g) to do something with time available
 (h) other? --please specify:
- (b) What were you doing at the time you decided to enter college or university? Please specify:

Summary of 6 (b), 7 (b):

- Occupational category (Holland category; see p. 230):

Realistic	11
Investigative	4
Enterprising	3
Conventional	4

- Occupational Level (G.E.D. level; see p. 230):

1	0
2	2
3	7
4	9
5	4
6	0

9. What is your present or most recent job or occupation?

- Occupational Category (Holland category; see p. 230):

R	1
I	2
A	3
S	1
E	12
C	5

- Occupational Category (G.E.D. level; see p. 230):

1,3	0
4	4
5	17
6	3

10. (a) What occupation do you expect to follow in the next two years?

Same as 9. 19 (check)
Or: (5 changes) (Specify.)

- Occupational Category (Holland)

Realistic	2
Artistic	4
Social	1
Enterprising	12
Conventional	5

- Occupational Level (G.E.D.)

1-3	0
4	1
5	17
6	6

11. (a) What type of work would you like to be doing in 10 years' time, if everything worked out?

Same as 10. 18 (check)
Or: (6 changes) (Specify.)

- Occupational Category (Holland):

Artistic	4
Social	2
Enterprising	11
Conventional	7

- Occupational Category (G.E.D.):

1,4	0
5	15
6	9

Adapted 13. How satisfied were you with your experience at Simon Fraser?

some dissatisfaction expressed	8
generally satisfied	8
very satisfied	8

Adapted 14. Did you have any particular problems during your time as a student which affected your work or studies?

none	11
some problems	13

(b) Which of the above would you say has been your greatest difficulty?

personal	7	financial	2
job-related	2	study-related	0
family	2		

20. (a) What was your father's occupation? (What job did he have for the longest time while you were still living at home with your family?)

- Occupational Category (Holland):

Realistic	13
Investigative	3
Conventional	7

- Occupational Level (G.E.D.):

1	0
2	1
3	6
4	12
5	2
6	2

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Mail Full Survey

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Degree	1.000	-.229*	.075	.145	-.240*	-.325*	-.186*	-.333*	-.225	-.161	-.078	.196*
2. Entry		1.000	-.586*	-.009	-.141	-.115	-.045	-.007	-.007	-.106	-.099	-.003
3. Time of Decision			1.000	-.091	-.030	-.142	-.190	-.077	-.070	-.094	-.154	-.012
4. Social Mobility				1.000	-.645*	-.408*	-.150	-.146	-.125	-.135	-.103	-.124
5. Early - career Mobility					1.000	-.644*	-.093	-.123	-.170	-.041	-.026	-.199*
6. Level of Aspiration						1.000	-.312*	-.026	-.062	-.038	-.077	-.017
7. Desire for Change							1.000	-.088	-.007	-.118	-.079	.163
8. Satisfaction								1.000	-.039	-.108	-.012	.023
9. Work-related Problems									1.000	-.015	-.011	.005
10. Mother's Education										1.000	-.050	-.292*
11. Grade Point Average												1.000

*significant at 0.05 level

Mail Survey, Adult Entry

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Degree	1.000	.017	-.096	-.092	-.306*	-.183	-.329*	-.421*	-.086	-.059	-.120
2. Time of Decision		1.000	-.249*	-.270	-.299	-.207	-.167	-.004	-.008	-.046	-.260
3. Social Mobility			1.000	-.677	-.438*	-.022	-.092	-.126	-.043	-.042	-.294*
4. Early - career Mobility				1.000	-.739*	-.128	-.058	-.135	-.045	-.161	-.284*
5. Level of Aspiration					1.000	-.356*	-.079	-.124	-.038	-.096	-.387*
6. Desire for Change						1.000	-.094	-.125	-.056	-.331*	-.058
7. Satisfaction							1.000	-.188	-.274	-.172	-.104
8. Work-related Problems								1.000	-.167	-.047	-.098
9. Time at University									1.000	-.127	-.271
10. Mother's Education										1.000	-.117
11. Grade Point Average											1.000

Mail Survey, Re-entry

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Degree	1.000	.200	-.183	-.306*	-.311	-.187	-.320	-.032	-.252*	-.133	-.395*
2. Time of Decision		1.000	-.013	-.004	-.220	-.350*	-.060	-.152	-.104	-.355	-.151
3. Social Mobility			1.000	-.654	-.361*	-.262*	-.190	-.292*	-.209	-.046	-.111
4. Early - career Mobility				1.000	-.557*	-.054	-.187	-.205	-.061	-.276*	-.197*
5. Level of Aspiration					1.000	-.270*	-.120	-.015	-.061	-.305	-.170
6. Desire for Change						1.000	-.094	-.111	-.163	-.184	-.260*
7. Satisfaction							1.000	-.128	-.018	-.143	-.022
8. Work-related Problems								1.000	-.096	-.121	-.018
9. Time at University									1.000	-.178	-.334
10. Mother's Education										1.000	-.095
11. Grade Point Average											1.000

*significant at 0.05 level