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The impact of work and family roles on associate or baccalaureate degree completion among students in early adulthood

Hanniford, Barbara Ellen, Ph.D.
The Ohio State University, 1993
The Impact of Work and Family Roles on
Associate or Baccalaureate Degree Completion Among Students
in Early Adulthood

Dissertation
Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy
in the Graduate School of The Ohio State University

by
Barbara E. Hanniford, B.A., M.Ed.

The Ohio State University
1993

Dissertation Committee:
Dr. Mary Ann D. Sagaria
Dr. Elizabeth C. Cooksey
Dr. David L. Boggs

Approved by:
Advisor
College of Education
To My Family
ACKNOWLEDGEMENTS

Writing a dissertation is a solitary activity, but it is never done in total isolation. My own dissertation would not have been completed without the support and assistance of faculty, friends, and family.

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My dissertation is better than it would otherwise have been, and I am a better person than I would otherwise have been, as a result of those who gave so freely of themselves. My gratitude is deep and sincere.
VITA

June 20, 1947 ....................................................... Born in Cleveland, Ohio

1969 .............................................................. B.A., Psychology,
Allegheny College,
Meadville, Pennsylvania

1972 .............................................................. M.Ed., Guidance and Counseling,
Phillips University,
Enid, Oklahoma

1979-1985 ...................................................... Staff Assistant and
Research Project Specialist,
Planning Studies in Continuing Education,
The Pennsylvania State University,
University Park, Pennsylvania

1985-1993 ...................................................... Research Associate and
Program Manager,
The Office of Continuing Education,
The Ohio State University,
Columbus, Ohio

1993 .............................................................. Assistant Dean for Lifelong Learning,
College of Continuing Studies,
Kent State University,
Kent, Ohio

PUBLICATIONS

Office of Continuing Education. Co-authored with Carol Ventresca.

of Continuing Education. Co-authored with Gigi Kent and Jack Henderson.


FIELDS OF STUDY

Major Field: Education

Studies in organization and administration of higher education and adult students in higher education

Cognate: Sociology

Studies in social stratification and gender roles
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ABSTRACT

This study examined the impact of work and family roles on progress toward degree completion among associate and baccalaureate degree students in early adulthood (approximately ages 25 to 32). It utilized a sample from the National Longitudinal Study of the High School Class of 1972. The final model conceptualized progress toward degree completion as a function of five background control variables (race, parental socioeconomic status, high school program, initial college attendance after high school, and degree plans in 1979) and six intervening variables (relationship pattern, childbirth, age of youngest child, employment pattern, number of jobs, and enrollment pattern). In terms of degree outcomes, students were categorized as being degree completers, active degree seekers, or inactive noncompletsers. Multinomial logistic regression analyses were conducted separately by gender and degree sought.

Results showed that the background variables affect degree progress outcomes, and intervening variables add significantly to the model’s fit. Degree progress outcomes have somewhat different explanations for each group.

Race effects are minimal for baccalaureate students. For associate degree students, being black is positively associated with degree completion for females but negatively associated for males. Parental SES is not especially important for most groups. When it has significant effects, however, students from lower SES families tend to be more successful than students from higher SES backgrounds. A student’s degree plans in 1979 are a critical indicator of later success. Those students with the highest expectations
experienced the most positive outcomes later. Attending college in the year following high school is less important than commonly thought, possibly because the present study only included adults who had already made the decision to return to college.

Major life changes such as getting married or divorced or having a baby do not significantly affect degree progress over the long term. Having a school-age child corresponds with delays but not necessarily halts in completing a degree. When preschool children have an impact, the influence tends to be in the direction of being an inactive noncompleter. Full-time employment is detrimental to degree completion for most groups, compared with the alternatives of not working at all or having had some other employment pattern. Students who attended college continuously are at an advantage compared with intermittent attenders.

The study yielded important insights about the "new majority" of students in American higher education. The lack of research on degree progress and completion among adult students allows the present study to make a substantial contribution to persistence and adult student literatures. Moreover, implications for policy, practice, and research may benefit adult students in the future.
CHAPTER I
INTRODUCTION

Social science research has only recently begun to focus on the multitude of life patterns that characterize the real lives of contemporary Americans. Adults complete their education, enter careers, change marital status, and begin families at varied ages and in a variety of combinations and sequences. The orderly progression of student, worker, and family roles that was once thought to characterize the life course has instead been shown to have considerable variation (Hogan, 1978; Marini, 1984; Rindfuss, Swicegood, & Rosenfeld, 1987). Compelling evidence documents these varied patterns, yet implicit assumptions of an orderly, linear life progression continue to dominate the research on the determinants and consequences of educational attainment.

The status attainment research tradition is especially striking in its assumption of a linear progression from school to work (Rindfuss et al., 1987). In depicting occupational attainment as a consequence of educational attainment, the status attainment model presumes a normative sequence and minimizes the interplay between work and education that has become increasingly common. Formal education is presumed to conclude prior to career entry. For example, Hogan (1978) noted that one national survey (Occupational Changes in a Generation) defined first full-time job as the one held after completing formal education. Much of the writing and research on college student persistence has a similar
bent; it either explicitly focuses on young traditional students, or it tacitly assumes the primacy of the student role.

These implicit assumptions of linearity and sequential life roles have been countered by research on life patterns. Only a portion of the patterns is characterized as following the presumed orderly profession of school, work, and then family. Using data from a national longitudinal study, Rindfuss et al. (1987), for instance, found that 60 percent of women and 49 percent of men had "disorderly" life patterns within eight years of high school graduation. Over 30 percent of these involved sequences in which formal education was interrupted for a period by a primary work or family role.

Assumptions of linearity are further called into question by the phenomenal growth in the enrollment of adult students (defined here as students age 25 or older) in higher education during the past two decades. Between 1970 and 1985, enrollment of students under age 25 increased 15 percent, but the comparable figure for students 25 or older was 114 percent (Snyder, 1987). The increase in returning women students accounted for much of this growth. In just four years (1970-1974), college enrollments of women ages 25 to 29 increased 108 percent. Their 30- to 34-year-old counterparts showed an 85 percent increase (Bernard, 1981). By 1987, students 25 or older represented 35.2 percent of all undergraduate enrollments and 41 percent of total higher education enrollments (National Center for Education Statistics, 1992). The most recent estimates from the National Center for Education Statistics (NCES) show that between 1980-81 and 1991-92, the student population age 25 or older grew by 37.4 percent, with much of this growth occurring in the group of students 35 or over (Hussar, 1993). However, NCES projections to 2002-2003 predict a slowdown in this dramatic growth. Although the student group age 35 and older is expected to increase by 26 percent, decreases of 7 and 8 percent are forecast for students
25 to 29 years old and 30 to 34 years old, respectively. Nevertheless, overall the adult student population is projected to increase by 7.1 percent between 1991-92 and 2002-2003, and is expected to account for 41.7 percent of all higher education enrollments.

A related trend to growing numbers of adult students is the increase in the proportion of students who are studying part time rather than full time. Between 1970 and 1989, part-time enrollments increased by 109 percent, versus 32 percent for full-time enrollments (National Center for Education Statistics, NCES 90-379, December 1989). Recent NCES projections (Hussar, 1993) show a slower growth of part-time enrollments between 1991-92 and 2002-2003 relative to full-time enrollments (10 and 15 percent, respectively). The adult student and part-time student groups largely overlap, due to the work and family responsibilities that necessitate part-time study for many adult students.

Early adulthood, when persons are in their twenties or early thirties, has traditionally been considered the time in which individuals complete their formal education and assume adult life roles. The college student role has been thought of as a transitional one between adolescence and full adulthood (Marini, 1984b). Yet, as the changing student population shows, an increasing number of adults in their twenties and thirties are continuing to pursue college educations. Many are simultaneously pursuing degrees, entering careers, and establishing personal relationships.

With adult students becoming the "new majority" at many colleges and universities and with increasing evidence of a mixture of role sequences and combinations in the life course, an improved understanding of older undergraduate students is essential. Studies dealing specifically with adult students tend to be limited in scope and methodological rigor, and somewhat isolated from more prominent college student research. The adult student population has been largely ignored in literature and research on educational
persistence and attainment. Among the areas neglected is degree completion among adult students. Despite the degree aspirations of numerous adult students, many do not persist to degree completion. Yet much of the research on persistence is based on models developed for younger students, which appear to be less relevant to student populations. For example, a study at the University of Tennessee found that a traditional model of academic success was applicable to younger students but was no better than chance in predicting the departure of older students (Kasworm, Pike, & Blinn, 1991). Very little research has examined the impact of work and family roles on degree attainment, although adults frequently cite these responsibilities as reasons for dropping out or stopping out of school (Brown & Robinson, 1988; Joseph, 1980; Kasworm et al., 1991; Levitz & Noel, 1980; Swift, 1987; Weidman, 1985). This study addresses this neglect by examining progress toward an associate or baccalaureate degree in light of competing family or work roles.

**Conceptual Framework**

The life course perspective provides the lens through which I approach this study. This perspective is less a theory than a body of research and writing that focuses on common events that make up the life cycle (Gee, 1990). Much of this literature has looked at the timing and order of major life events and has examined determinants and consequences of different life patterns. In early adulthood, those patterns typically involve some combination of formal education participation and completion, career entry, and relationship establishment.

The life course perspective has been absent in much of the literature on college student persistence. Many persistence studies are cross-sectional, looking at attrition over a very short period of time, such as one semester to another. Longitudinal studies, which could better capture life course progression, are much less common. In addition, a great
deal of persistence literature has dealt with traditional-aged students, who are just beginning
to undertake the activities that occupy adulthood. Only recently (Bean & Metzner, 1985;
Metzner & Bean, 1987; Nora, Castenada, & Cabrera, 1992) have factors external to the
student role such as number of children and hours of work been included in models of
student persistence.

For adult students, however, viewing college study in the context of their whole
lives is especially important. The life course perspective is helpful in this regard. Its
emphasis on life cycle activities informs this study's focus on the influence of work and
family. Moreover, it informs the way in which I develop variables dealing with work and
family. Rather than using a cross-sectional perspective, I look longitudinally at parenting
responsibilities, marital relationships, and employment involvements that can change over
time. Rindfuss, Bumpass, and St. John (1980) noted that much research on education and
fertility considers the "end products" of completed education and total number of children.
As they suggested, however, "... children come one at a time (usually), and education is
completed a year at a time, sometimes a course at a time" (p. 433). In this study, I adopt
this approach by considering the effects of adult roles and status changes over a period of
time.

While the life course perspective contributes heavily to my conceptual framework,
other bodies of literature are also essential to studying adult student progress toward degree
completion. The status attainment research tradition and literature on college student
 persistence are particularly important, although neither is sufficient in itself for
understanding educational attainment in adulthood.

The basic notion underlying status attainment research is that individual status
achievement can be estimated using causal models that include social origin variables as
well as intervening personal experiences or characteristics. Blau and Duncan first elaborated the status attainment model in 1967, but most of the original status attainment work was done at the University of Wisconsin, using longitudinal data researchers there collected from Wisconsin residents in the 1950s and 1960s. Sewell and Hauser's (1975) research sought to answer questions concerning the relative importance of background, ability, and experiences in explaining educational attainment, occupational attainment, and earnings. Using a model that included socioeconomic background, ability, academic performance in high school, and social psychological variables (aspirations and encouragement from others), the researchers explained more than half of the variation in educational attainment. They had similar success in explaining occupational attainment, but much less success in predicting earnings. Sewell and Hauser attributed this lack of success partly to the fact that respondents were still in the early career stage. Overall, the status attainment tradition has shown the central importance of education in later attainment and has also demonstrated that effects of family background (especially father's income) continue to affect later educational and occupational outcomes.

Within the higher education context, literature on persistence has focused on identifying models that explain student progress in college or degree achievement. Since the 1960s, a variety of theories or models, including the status attainment approach, have guided research on student persistence. Interactive approaches which emphasize congruence between student and college seem strongly supported by most researchers who are attempting to explain educational persistence. Other important concepts are student integration or involvement—the degree to which students are part of the academic and social life of the institution. Following the status attainment approach, most persistence research has also incorporated measures of student background.
The most widely-used model of student attrition has been Tinto's (1975) longitudinal, interactive approach. His causal model posits that students come to college with differing family backgrounds, individual attributes, and pre-college schooling. These differences affect students' initial commitments to specific educational goals and institutions. These commitments, in turn, influence later commitments as well as students' academic and social experiences in college, which affect academic and social integration. Student integration affects subsequent institutional and goal commitments, which finally affect persistence. Tinto's major premise is that students with higher academic and social integration are less likely to drop out of college than those less integrated. In Tinto's (1987) latest model, intentions were added, academic and social experiences reconceptualized, and external commitments included. He admitted, however, that his model is designed to explain persistence among traditional students and may not be as appropriate with adult students. Bean and Metzner (1985) were instrumental in influencing Tinto's addition of external commitments to his model through their development of a conceptual model of nontraditional student attrition. Their model includes environmental variables, which are conceptualized similarly to Tinto's external commitments. Astin (1975, 1977) used different terminology and measurements than did Tinto but offered some similar insights. He considered the concept of involvement as critical, and posited that students showing less involvement are least likely to demonstrate desirable college outcomes, including completion. Astin's involvement notion seems distinctly related to the social and academic integration ideas of Tinto, although the two authors have not appeared to make this connection in their writings.

Tinto, Bean, and Astin's approaches have guided numerous studies of persistence, a few of which have been conducted with adult student groups. Studies of adults have
regularly included information on external commitments such as marriage, parenthood, and employment, since these appear to play an important role in whether or not an adult student persists. Metzner and Bean (1987), in a study of nontraditional students, found that these factors (environmental variables, in their model) did not directly affect dropout, but affected it indirectly through a student’s intent to leave. Most studies of persistence with adult student groups have a narrow time frame, which eliminates the possibility of considering how competing life roles may have affected progress toward a degree over time.

In summary, the life course perspective provides the research orientation from which to learn more about the interplay between school, work, and family responsibilities for adult students. It suggests the importance of focusing on adult roles other than student (e.g., worker, parent, or spouse) and holding a longitudinal view when examining degree progress. Status attainment and educational persistence literatures are instrumental in providing a starting point for modeling the degree attainment process.

**Research Overview**

Millions of adults continue their formal education after interruptions that may launch them into employment, marriage, and parenthood. Given the multiple roles that adult students often juggle, I believe that an examination of the impact of these roles on degree completion is crucial. Although some researchers consider the end of formal education to be the transition to adult roles, others recognize that many adults combine work, school, and family activities. Even these researchers, however, do not focus precisely on persons whose formal educational paths have not followed the traditional timeline. In this study, I focus specifically on students enrolled in college during early adulthood, defined as the period between ages 25 to 32. I consider the effects of
competing roles on success in earning the associate or baccalaureate degree in early adulthood. The primary research question is:

Do the multiple roles of family and employment affect the probability of associate or baccalaureate degree completion among students in early adulthood?

I focus on two specific areas when considering family roles: parenting and marriage or marriage-like relationships. The employment focus is on pattern of labor force involvement (e.g., none, full-time, or other patterns) and on number of jobs held. These areas of focus were selected because the roles of worker, spouse, and parent become increasingly important to many adults in their twenties and thirties. These roles could potentially crowd out the student role; alternatively, they could provide support and encouragement for it. This study seeks to determine whether these competing responsibilities are more likely to serve as "push" or "pull" factors. That is, do they act as barriers or encouragers?

Also important to this study are the effects of gender and race on degree completion. In many realms of occupational and educational achievement, women and minorities have been shown to be at a disadvantage. Further, the effects have often been shown to be interactive. Thus, for instance, parenting may have no impact on the likelihood of degree completion for males but be detrimental for females. Previous studies have demonstrated that the degree completion process itself may actually vary by race and gender.

In this study, I use data from The National Longitudinal Study of the High School Class of 1972 (NLS-72) to explore these and related questions in depth. The base year study and its five follow-ups collected detailed educational, work, and family histories from
1972 through 1986 for over 12,000 young men and women. These data allow me to examine the effects of family and employment on degree attainment in early adulthood for NLS-72 participants who had not completed an associate or baccalaureate degree by 1979 (approximately age 25) but were pursuing a degree beyond then.

Because the study is longitudinal, it offers the advantage of capturing changes over time. I can thus consider students' life roles as they existed and changed throughout the period in which they pursued a degree. For example, an adult student could have worked full time during the period of enrollment or could have followed a varied pattern, such as a full-time/part-time combination. The ability to take such changes into account may be more effective in understanding adult student persistence than an approach that considers a person's status at a single point in time.

Research Significance

As the growth in the adult student population shows, an increasing number of adults are choosing to invest in a college education. Many are doing so for career-related reasons, with the expectation of an economic payoff. Higher education has long been considered to be an investment which yields a good economic return. This assumption underlies human capital theory and research (Becker, 1964). Although the value of a college degree has varied in recent decades, it has consistently provided a better return over time than a lower level of attainment (Froomkin, 1985; Jaffe & Froomkin, 1977; Murphy & Welch, 1989; Witmer, 1983). Indicators point to an even higher wage premium for a college degree in this decade, as the demand for college-educated employees continues to grow (Bishop & Carter, 1990; Murphy & Welch, 1989; Wegmann, 1985).

Beyond economic returns are other positive outcomes of higher education participation. For example, alumni survey data from American College Testing show that
alumni believe that their college education has helped them learn and work independently, persist at difficult tasks, and organize time effectively (Valiga, 1982). In a follow-up study of adult graduates (aged 25 or more at college entry) at the University of Wisconsin, Mishler (1983) found that large percentages reported positive job-related changes they attributed directly to degree attainment. Moreover, graduates cited notable personal gains, including development of intellectual curiosity and an understanding of their own abilities. Using longitudinal Cooperative Institutional Research Program data, Astin (1977) found increases in self-esteem, tolerance, and intellectual skill and competence. He also cited studies that show a tendency for college education to be associated with greater life satisfaction as well as better earnings. Conversely, dropping out of college often results in closed doors to challenging occupations and in a reduced likelihood of the positive changes noted above. As Astin further asserted, delayed completers may be slowed in their career progress.

Evidence suggests that the best benefits of degree completion occur for students who enter college immediately after high school and persist to graduation. However, this progression does not describe a substantial minority of students who either delay college entrance or have periods of stopout or dropout. By traditional sociological standards, these adult students have followed "disorderly" educational paths (terminology from Rindfuss, Swicegood, & Rosenfeld; 1987). They have not necessarily completed their formal education before entering career and family roles. Yet many are in college continuing to pursue associate or baccalaureate degrees. Much research exists on the educational attainment process for younger college students, but little research of this type exists for adults. No national-level study has been conducted, and as Metzner and Bean (1987) noted, "There are few multivariate studies of nontraditional students guided by theory"
Echoing this message were Kasworm, Pike, and Blinn (1991), whose study at the University of Tennessee compared academic success and persistence of younger and older undergraduates:

These findings suggest that American colleges and universities should consider development of new predictive models for academic success and persistence for the older adult undergraduate. Current models do not capture the key factors which influence older adult learner success in the academic setting or in supporting their persistence (retention) in undergraduate studies. (p. 23)

Many studies of persistence examine continuous enrollment in single institutions (e.g. Bean, 1980, 1982; Lenning, Beal, & Sauer, 1980; Metzner & Bean, 1987; Terenzini & Pascarella, 1977, 1978) rather than allowing for stopout and transfer, both of which may characterize adult enrollments. This study differs in that it focuses on degree attainment within the broader higher educational system, regardless of the number of institutions attended or pattern of attendance. My focus is intended to reflect adult students' college experience more closely by emphasizing progress toward degree completion rather than just semester-to-semester persistence.

In addition, much persistence literature emphasizes forms of integration or involvement that may be irrelevant for many adult students, who bring a complex set of life circumstances to college with them. Bean and Metzner (1985) and Nora, Castaneda, and Cabrera (1992) noted that many studies have a corresponding lack of focus on factors external to academic life that may impinge on the student role. The present study focuses on external factors that may be influential in adult student persistence and degree attainment. Because it examines family and work situations and incorporates changes that occurred during the period when adults were enrolled in college, it provides a more complex means to consider the impact of family and employment than has been employed.
in previous research. For examining work and family effects, the longitudinal, detailed nature of the NLS-72 data offers distinct advantages over cross-sectional information.

My inclusion of associate degree seekers is also significant. Often that degree is minimized, yet it may serve as an important credential in the work place and a springboard to further education. Moreover, research on persistence among two-year college students suggests differences in the persistence process for two-year and four-year students (Chapman & Pascarella, 1983; Pascarella & Chapman, 1983; Tinto, 1987; Voorhees, 1987). Conducting separate analyses for associate and baccalaureate degree seekers allows for comparison of the factors that affect adult students’ progress toward each degree and provides information on a wider scope of educational pursuits.

Given the importance of a college degree and the increased adult student population, a clear need exists to identify factors that are associated with adult students persisting to associate or baccalaureate completion. This study provides a starting point in meeting this need. Though the sample’s age range is limited (sample members were approximately ages 25 to 32 during the 1979-1986 period covered by the most recent survey round), in fact many adult undergraduate students are in their late twenties and early thirties. (In 1987, 57.9 percent of all adult undergraduate enrollees were between ages 25 and 34, according to National Center for Education Statistics cited in the 1992 Digest of Education Statistics.) Thus the study has the potential to expand our knowledge base on adult students considerably. And because the NLS-72 data set represents a national sample, results are more generalizable than has previously been the case for studies of adult students, although replication of the study with a more recent cohort would be desirable.

The study also yields implications for colleges and universities. Little systematic research has examined why some adults persist in college while others do not. Although
adult students often cite family and job responsibilities as reasons for stopout or dropout, no national-level evidence exists to validate the extent to which these competing roles influence persistence. Research such as this is needed to inform academic decision making and intervention strategies. Gaining a better understanding of the impact of employment and family may help college administrators identify potential problems and refine and target retention efforts more precisely. Study results are also relevant to the families and employers of adult students. Many employers, for instance, offer tuition assistance programs to encourage and support college attendance among employees. This research provides greater insight into the influence of employment on degree attainment and the conditions under which the student and worker roles are most compatible. Family situations most conducive to degree attainment are also illuminated, and adult students themselves stand to gain from knowledge of factors that are most likely to affect their degree progress.

**Assumptions**

Underlying my approach to this study are several basic assumptions:

1. **Situational factors can impinge on the student role for adult students.** This may slow progress toward a degree; alternatively, they may provide support and incentives to continue.

2. **Degree attainment is a significant accomplishment.** Although some college education is better than none, the credential that a degree represents goes beyond signaling merely more years spent in school. Because of this assumption, I do not combine degree completers and active degree seekers into one outcome category.
The associate degree has worth. For many students, particularly first-generation college students, an associate degree may be either the most attainable goal or the credential that will move them ahead in the job market most quickly.

A national data set such as NLS-72 has inherent advantages for a study such as this due to its scope, sample size, and generalizability. It has inherent disadvantages as well, as I discuss in the following section.

**Study Limitations**

The NLS-72 data set is the only current national study that includes details on adult undergraduate study as well as a wealth of other information on sample members, including work and family histories. Its sample includes both men and women and represents differing racial and ethnic backgrounds. It is thus well suited for this study's objectives.

Nevertheless, these data are not without limitations. Like other secondary data analyses, this study is restricted to analyses of the variables available, as they have been measured. Some potentially useful explanatory variables were not included or measured effectively or had too many missing cases. In particular, measures of the concepts of academic and social integration (Unto, 1975, 1987) and involvement in college (Astin, 1975) are weak and additionally are not applicable to all sample members in this study.

A second data limitation is related to cohort effect and the narrow age range covered by the NLS-72 data. Because this data set is limited to a single high school graduation year and follow-up time period, my study will be able to capture educational participation information only when sample members were between the ages of 25 and 32. Thus it cannot provide a more complete picture of associate or baccalaureate degree completion among adult students of all ages and across cohorts, including more recent ones.
However, as noted earlier, these data will allow me to look at an important segment of the adult student population, because a substantial proportion of the total adult student population is under 35 years of age. The study clearly represents a first step.

Another limitation of a longitudinal data set such as this is attrition. Participants who remain in longitudinal studies are typically better educated and from a higher socioeconomic strata than are those who drop out. Due to attrition, we cannot say with confidence that the remaining sample is representative of the national population as a whole. (However, unlike other longitudinal studies, NLS-72 did not drop sample members if they missed a wave of data collection.) Further, students who dropped out of high school prior to their senior year (estimated at about 9 percent) were not represented in the base year or subsequent studies (Bogne, 1985; Bureau of the Census, 1990).

Problems of recall and data reliability pose other possible biases. Adelman (1991, 1992) points to discrepancies between self-reports of educational attainment and transcript data obtained for sample members in a Postsecondary Education Transcript Study. It is difficult to estimate the extent to which the 1986 follow-up study might be flawed by inaccurate information. Participants were asked a number of very detailed questions concerning employment, education, relationships, and families. Precise dates were requested. Because the follow-up study covered a seven-year period, it is very conceivable that some participants tired of the task or were unable to remember dates accurately, although dates of certain marker events such as marriages or births are less likely to be forgotten.

The study is not intended to model all relevant factors that may contribute to degree attainment. My primary interest and thus focus is on the impact of work and family involvements on degree completion among adult students. Other selected explanatory
variables will be included, but of necessity this list will not be exhaustive. The study's final sample size as well as availability of specific variables limited the comprehensiveness of my model. It is my hope that the variables included in the study minimize any spurious relationships despite my inability to develop a comprehensive model.

Summary and Organization of the Study

The growth in the adult student population in colleges and universities points to a need for research tailored to this group. Of relevance to this study is research on adult students' progress toward degree completion. A great deal of educational attainment and college student persistence literature has been based on assumptions of an orderly life course and has used models developed primarily for traditional-aged students. Researchers have largely ignored factors external to the student role, yet these might play a crucial part in the persistence of adult students. This study addresses these limitations by focusing on the impact of work and family roles on degree completion in early adulthood. It utilizes data drawn from the National Longitudinal Study of the High School Class of 1972 (NLS-72) and examines baccalaureate and associate degree seekers who were between the ages of 25 and 32.

In the following chapters, I develop the plan for this study, present and discuss results, draw conclusions, and suggest implications for higher education policy and practice and for future research. Chapter II contains an expanded review of the literature relevant to this study. In Chapter III, I present the study's methodology, including a description of the data, the models used, and the plan of analysis. The results presented in Chapter IV focus on the determinants of degree completion for associate and baccalaureate degree seekers as well as make comparisons between these two groups. Chapter V contains a discussion of the results, conclusions, and implications.
CHAPTER II
REVIEW OF RELEVANT LITERATURE

In this chapter, I review literature relevant to this study. Several literatures provide useful theoretical and empirical perspectives. Research and writing on the life course offer helpful background regarding the determinants and consequences of the timing and sequence of major life events. Because I am particularly interested in adults with extended participation in undergraduate study, life course literature that examines different schooling, work, and family sequences is of special use. Writings on adult students in higher education and adults’ life stages are also useful in providing insights about the population this study considers. To gain a perspective on the associate and baccalaureate degree completion process, I consulted educational attainment literature that draws from the status attainment tradition. Theories and research on college student persistence are the most central to this study’s empirical approach. The following sections overview these various literatures.

Life Course Perspective

The life course perspective contributes to my understanding by providing the framework from which I consider the adult student role in light of other tasks of early adulthood. Despite wishing for a neat, orderly progression of marker events, researchers must deal with life as it is actually lived (Rindfuss et al., 1987). This view guides my
approach to this study as I examine the interplay between higher education and other life activities for the study sample.

As mentioned earlier, the life course perspective defines a field of inquiry rather than serves as a theory per se. Elder (1985) wrote, "... perspectives on the life course and its dynamics represent a theoretical orientation that defines a context for empirical inquiry. They identify relevant problems and variables, and they structure the generation of evidence and hypotheses" (p. 27).

One thrust of the life course literature has been to examine age expectations or preferred timing for specific events. In a classic article, Neugarten, Moore, and Lowe (1965) used the terminology of "on time" and "off time" to discuss age-appropriate timing for major life events. Such marker events as completion of formal schooling, entry into first full-time job, marriage, and childbirth had expected completion times, the authors asserted. They presented results from previous research which supported this position. For example, the vast majority of respondents in a middle-class, middle-aged sample of 93 adults believed that 20 to 22 was the best age for most people to finish school and begin working. Marker events could be completed on time or off time, but off-time events were negatively sanctioned. The researchers posited the existence of age norms and age expectations, saying that they are a form of social control. Their own research showed that older adults are more likely to voice age expectations than are younger ones. Neugarten and colleagues concluded that age norms are indeed operative and that as adults age, they are socialized to have increasingly crystallized expectations. Persons exhibiting behaviors that are "off time" can incur negative judgments by others, the researchers claimed.
Neugarten et al.'s research has had continuing influence, despite the sample's limited generalizability and the fact that it was conducted 30 years ago.

Following a similar line of inquiry, Gee (1990) studied a sample of 1,583 Canadian women regarding preferred timing of life events. She found that social timetables existed for some family events such as getting married and having a first child. However, Gee found much less agreement regarding the "right age" to finish school. Only around 40 percent of all respondents believed that a right age existed, and among more highly educated women, only 23 percent provided an appropriate age. She credited increased acceptance of lifelong learning with producing these results. Although Gee’s study gathered more recent views on marker event timing than did Neugarten et al.’s (1965), its sample was limited to women in two British Columbian cities, and college-educated women were over-represented. Thus its generalizability to a broader population is uncertain.

In addition to the timing of marker events, event order or sequence has also been considered important (Elder, 1974; Hogan, 1978; Modell, 1980; Rindfuss et al., 1987). For instance, Modell demonstrated that the public believes that economic self-sufficiency should precede marriage. Hogan (1978) claimed that the completion of formal education often marks the entry into adulthood. According to Elder (1974), an acceptable order of life events corresponds with "on time" and "off time" notions. If there are, in fact, preferred times at which role transitions should occur, a normative event ordering is implied. Elder suggested that researchers examine deviant sequences to determine causes and outcomes.

Why are life course timing and order important? Hogan (1981) and Elder (1974) discussed the importance in terms of life or career contingencies. Educational attainment, for example, mediates occupational attainment and other life outcomes. However, Hogan
pointed out that the timing of education has an effect that is separate from the level of attainment itself. Thus it is important to consider when formal education occurs in relation to other life activities.

Several researchers have followed Elder’s (1974) suggestion and examined the order of life events and the consequences of various patterns. Hogan (1978), using Occupational Changes in a Generation survey data, studied determinants and consequences of life event ordering in men aged 20 through 65. He used a theoretical framework in which a normative transition to adulthood involved school completion, financial independence through employment, and finally marriage. Nonnormative sequences resulted from a combination of cohort effects (including random, external influences such as wars) and family background. Such background variables as social class, community size, and paternal ethnic ancestry affected one’s transition. Thus, men from lower classes were more likely to begin working before completing school; conversely, men from higher classes tended to follow normative patterns. Similar patterns held for black and Hispanic men compared to white men. Hogan also found a definite cohort effect for men who were entering early adulthood during World War II; they were much more likely to marry prior to completing their education and entering a full-time job. Overall, Hogan found an increased chance of separation or divorce among men who did not follow a normative ordering of life events. Looking at trends, Hogan noted an increase in the median age of men’s transition from school to work and in obtaining a first job. He also identified a decrease in orderly transitions because more recent birth cohorts were moving from adolescence to adulthood in a shorter period. Although labeling certain life course patterns

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1 The 1973 Occupational Changes in a Generation survey (OCG-II) surveyed 33,500 men aged 20-65 in the civilian noninstitutional population.
as "nonnormative" casts them in a negative light, Hogan is still to be commended for his in-depth study of school, work, and marriage patterns. Because his study deals with men only (due to the nature of the data set), his findings may not speak to women's life experiences. Moreover, Hogan was interested in overall population patterns for men, whereas I look specifically at the group Hogan would consider nonnormative.

Other researchers have documented the wide variety of life patterns. For example, using NLS-72 data, Holsinger and Fernandez (1987) identified 701 unique activity profiles over a four-year period. Patterns were derived from respondents' primary activity states each year; ten such states were possible, including full-time work, military service, full-time homemaker, and college student. Rindfuss et al. (1987) also used NLS-72 data to study entry into parenthood. They used much broader categories to categorize life patterns during an eight-year period, but determined that a great deal of deviation from "consistent" patterns existed. (Consistent patterns involved completing school before beginning work.) As noted earlier, only 50 percent of males and 40 percent of females had followed consistent patterns within the eight-year period following high school. In examining the transition to parenthood, these researchers found that a simple order/disorder distinction was not a sufficient explanation. Life course disorder had heterogeneous effects on parenthood transition, depending upon the nature of the sequences. The authors thus successfully demonstrated the need to avoid oversimplifying complex life sequences for the sake of analytical parsimony.

Upchurch and McCarthy (1990) combined the life course and status attainment perspectives to study the timing of early first birth and high school completion using
National Longitudinal Study of Youth² data. After controlling for relevant socioeconomic characteristics, they found that young mothers and non-mothers who remained in school had similar chances of graduating. They also found that young mothers were no more likely to leave school than were non-mothers. However, among high school dropouts, young mothers were less likely to eventually graduate than childless young women. Thus it is the interaction of first birth and remaining in school as well as one's family background that affects high school completion. Upchurch and McCarthy's research is significant in that they recognized the importance of considering the impact of fertility on other life course events for women. By controlling for relevant variables, they also successfully teased out the complex relationship between early childbirth, family circumstances, school participation, and eventual high school graduation.

Hanson (1983) demonstrated the importance of family life-cycle variables in studying socioeconomic attainment for working women. Traditional status attainment and human capital approaches fail to take such variables into consideration. Hanson used longitudinal data collected in Pennsylvania between 1947 and 1971 to study a sample of female respondents who were married once, living with their spouses in 1971, and working in 1957 (N=803) and/or 1971 (N=453). Socioeconomic achievement and earnings in 1971 were the dependent variables. Hanson's study incorporated indicators of family composition (number of young and older children at home in 1957 and 1971, age of oldest child at those points, and total fertility as of 1971) and timing of family events (age at

² The National Longitudinal Survey of Youth (NLSY) consists of a national sample of over 12,000 U.S. men and women ages 14 through 21, when initially interviewed in 1979. Respondents have been reinterviewed annually. Upchurch and McCarthy's study used data through 1986, when respondents were 21 through 29. Fertility history, academic information, and background characteristics are included in the data set.
marriage and at first birth). Drawing on the status attainment tradition, Hanson included indicators of mother's and father's education and father's occupation, and from the human capital perspective, indicators of employment experience and continuity, employment status in 1971, and education. Results showed that the addition of family life cycle variables increased explained variance in 1957 and 1971 occupational status and in 1971 earnings very significantly (to 60, 44, and 52 percent respectively). Indicators of family timing were the most cogent family life cycle variables in predicting later attainment. Hanson concluded that the effects of early family experiences are long lasting and in fact increase over time. The study underscores the significance of a life course perspective in studying occupational attainment, at least for women. However, its data are dated enough to raise questions about whether these effects would be seen with more recent cohorts. Also, because the analysis was limited to women, its applicability to men is uncertain. Finally, Hanson modeled education as the amount of education completed before first job, which ignores the possibility of educational participation in adulthood. Although this may have been appropriate for the particular cohort, the increase in adult students over the past two decades would make this neglect problematic in comparable studies using more recent data.

Marini (1984a, 1984b, 1985, 1987) has also studied the order of events leading to adulthood and noted that the assumed linear progression is not descriptive of the early adulthood of many. As educational attainment increases, she posited, the likelihood of entering other adult roles before completely leaving the student role increases. She cited research showing that educational attainment is a function of socioeconomic background, number of siblings, intelligence, grades, dating behavior, and educational and occupational expectations; thus, these factors have indirect effects on the role sequences and
combinations. Other influences on the order of transition events include age-grade retardation/acceleration, extent to which schooling is continuous and full time, military service, opportunity to enter adult role, and orientation to adult role. Using longitudinal data from 6,498 Illinois high school students born in the 1940s, Marini delineated 15 common sequencing patterns for transitions from school and to work, marriage, and parenthood. A full 30 percent of the males and 22 percent of the females entered the civilian labor force prior to last leaving full-time education. One male/female difference was the relationship between educational attainment and the assumption of familial roles: Women pursuing higher levels of education were less likely to enter marriage and parenthood than their male counterparts. Marini also noted that traditional gender differences were seen in role sequencing; men were more likely than women to continue their education after entering adult family roles. Women were much more likely to leave school at earlier ages than men. Overall, Marini found that the order of role changes was influenced by factors that affected the timing of exit from school and military service as well as the timing of entry into employment, marriage, and parenthood. Marini's inclusion of women in her study is significant, and her detailed focus on the process of role changes and gender differences is noteworthy. However, because her sample is both dated and restricted to Illinois, further research is needed with other samples of more recent birth cohorts.

In her work, Marini (1984a) also critiqued the concept of age and sequencing norms that was promoted by Neugarten et al. (1965) and Elder (1974). She asserted that the negative sanctions that accompany norms do not exist. Instead, she suggested, researchers have confused modality with normativeness and have measured expectations
rather than true norms. A range of behavior may actually be acceptable, particularly when
sub-groups are examined. Marini believed that research using a normative model of the life
course over-emphasizes the role of norms and neglects examination of differing life
patterns.

Although evidence exists that age expectations continue to operate, Neugarten's
belief 20 years after her classic 1965 article was that lives are much more fluid than they
once were (Neugarten & Neugarten, 1986). Speaking about changes affecting the early
adulthood period, the authors stated:

The line between adolescence and adulthood is also becoming obscured. The role
transitions that traditionally marked entry into adulthood and the social
competencies they implied--full-time jobs, marriage, and parenthood--are
disappearing as markers of social age. For some men and women, the entry into an
occupation or profession is being delayed to age thirty as education is being
extended. For others, entry into the labor force occurs at ages sixteen and
seventeen. And not only are there more teenage pregnancies; there are more
teenage women who are mothering their children. All this adds up to what has
been aptly called 'the fluid life cycle.' (p. 34)

In contrast to the linear view of adult role progression that the status attainment
research tradition implicitly assumes, the life course perspective suggests different images.
Elder (1985) spoke of viewing the social life course "... from a multidimensional concept
of interdependent careers or trajectories--work life, marriage, and parenthood" (p. 30).
These trajectories are embedded with transition points as persons move from one phase to
another. Trajectories also interlock, creating the multiple roles and accompanying role
strain that is familiar to many adults. Even Elder, however, noted that different trajectories
have socially expected timing and sequencing and that enduring results may come from off-
timed events or disorderly sequences. Another useful way of conceptualizing the
interrelated roles of adult lives comes from Juhasz (1989), who proposed a different frame.
of reference for thinking about adult development. Rather than classifying life events as "on time" or "off time," Juhasz set out an approach she termed the triple-helix model. The model includes three interwoven strands, representing work role, individual role, and family role. Education is encompassed under the work role strand. The model recognizes the complexity of adults’ lives by being able to accommodate a multitude of activities. The strands interweave longitudinally and may be balanced or unbalanced, with one strand assuming primacy while the other two are on hold. All three strands are driven by a basic self-esteem need, according to Juhasz. The interlocking trajectories described by Elder and Juhasz’s triple-helix model both present powerful images for considering the context in which adult students function, and they have guided my approach to this study.

**Adult Students in Higher Education**

Literature on adult students in higher education (generally those age 25 or over) helps relate this study’s sample and focus to a broader picture. As noted earlier, the growth in the adult student population has been enormous during the past two decades. Factors fueling this growth include changing social norms for women, economic climate changes, increased recognition of the need for lifelong learning, and rising employment credentials (Ross, 1989). Adult students are now a significant feature in the landscape of American higher education. Is there a profile of a "typical" adult student? What motivates adults to return to college? What issues and concerns might they face?

Recent literature on these questions is relatively sparse in comparison to a decade or more ago. When the reentry student movement became prominent in the 1960s and 1970s, literature on adult students grew correspondingly. Studies focusing on returning women students were particularly evident (Tittle & Denker, 1980). In tracing the history of
programs for returning women, Tittle and Denker noted that early programs were often
developed to serve mid-life women whose children were adolescents or older. Often
participants were middle class and held college degrees. Special continuing education
programs for this type of returning student were generally noncredit. However, the authors
pointed to a second broad category of adult women students that has become more
prevalent in recent years. This second group consisted of women in their late twenties or
early thirties; most were currently married (though some were divorced), and many had
preschool or school-age children. Adult students within the NLS-72 data set are more
similar to this latter group than the former. Comparing women students in four- and two-
year institutions, Tittle and Denker found that students in two-year colleges were more
likely to be employed and attending part time.

In describing characteristics of reentry women students, Lewis (1988) also
countered the notion of a single profile. The image of the returning student as an empty-
est housewife seeking to escape boredom or prepare for a career describes only a portion
of reentry students. The adult student population (both male and female) is heterogeneous
in its characteristics and motivations.

Kuh and Ardaiolo (1979) compared characteristics of 217 traditional-age students
and 143 adult students in a study conducted at a public institution with both commuter and
residential campuses. The adult student group was divided into students attending the
commuter campus and those enrolled at the residential campus. (This study defined adult
students as persons age 23 or older.) Distinct differences existed between older and
younger students; the adult students attending the commuter campus were most distinct. As
a group, the adult students were significantly more likely than their younger counterparts to
have poor high school records, work more hours weekly, come from lower SES backgrounds, and aspire to a lower degree. Relative to the other adult students and the younger students, the vast majority of adult commuter students were enrolled to prepare for a better job. Students' campus involvements differed significantly as well. At least 90 percent of all adult commuter students said they never attended social, cultural, or athletic activities. Over 75 percent had never attended an academic activity such as a special lecture, study group, or academic organizational meeting. Participation among traditional-age freshmen was considerably higher. Adult students at the residential campus attended cultural events at about the same rate as traditional students, but for other types of activities their participation rate was much lower. Kuh and Ardiolo’s study demonstrated effectively the diversity that adult students may bring to a campus. Moreover, it illustrated the difficulty in achieving academic and social integration among adult students whose lives often revolve around alternative roles. The study points to the need for higher education faculty, administrators, and researchers to recognize the complexity of adult lives when considering retention efforts for the adult student population.

A shortcoming of most research on adult students in higher education is its limited scope. Many studies are confined to a single institution and, in addition, lack ties to existing literature and theory. An exception in terms of its scope is a national study on adult credit students (age 25 or over) conducted by the College Board (Aslanian & Brickell, 1988). Study results provide a recent comprehensive look at adult students and the ways in which they study for college credit. It examines adult credit students with differing ages, reasons for enrollment, and institutional affiliations. Conducted via telephone interviews with a random sample of 1000 adult students (out of 10,808 households), the study found
that about 4.3 percent of adults had studied for college credit within a year’s period. The
majority of adult students in the sample were relatively young; 33 percent were ages 25 to
29, and 23 percent were between 30 and 34. Younger students were much more likely than
students over 40 to be enrolled in a degree program. Bachelor’s degree programs attracted
the largest proportion of degree students (41 percent), with associate degree programs
enrolling about 26 percent. Regarding race/ethnicity, the study showed no surprises: White
students were overrepresented relative to their proportion of the population. Among white,
black, and Hispanic students, 91 percent were white compared to 85 percent in the nation
overall. College Board findings regarding life roles showed that 71 percent of the adult
students worked full time, and an additional 12 percent worked part time. Six percent were
full-time homemakers. (Not surprisingly, women were less likely to be working full time
and more likely to be homemakers.) More than 60 percent of all students were married.
While only about 6 percent considered themselves full-time students, 25 percent of all
students carried a full credit load. This discrepancy means that many students combined
heavy course demands with other life roles. Aslanian and Brickell noted that employment,
while adding to role strain, also helped to support college attendance, since about 40
percent of all employed students received tuition assistance from their employers. The
study was not designed to learn about adult student persistence and asked no questions
about attendance patterns over time. Neither did it include details on parenting
responsibilities. However, its descriptive material, national sample, and rigorous
methodology make it a valuable benchmark study of the 1980s.

Literature on participation in adult education offers insights into why adult students
return to college and what barriers might prevent their return. Relatively few studies look
specifically at adult students in higher education. One approach involves examining reasons why adults do or do not participate. A second looks at typologies to see if particular groups of learners can be delineated. A third direction—the one most relevant to this study—includes models and theories that attempt to explain participation and may also relate to student persistence.

Aslanian and Brickell (1980) popularized the notion of transitions and triggers in explaining adult learning, broadly defined as formal and informal learning activities undertaken. Their national study on adult learning involved telephone and personal interviews with 2,000 Americans age 25 or older. They concluded that life transitions provide reasons for learning and life events act as triggers. For example, a person contemplating retirement might want to learn more about gardening, but the actual retirement might provide the trigger to join a gardening club. Transitions did not occur evenly throughout life or throughout various life spheres. Career and family triggering events were the most common. The authors’ finding that occupational reasons very frequently motivated adult learning confirms other researchers’ observations (e.g., Apps, 1981). Aslanian and Brickell’s study was instrumental in opening up a new line of thinking about the interaction between life stages, marker events, and adult learning. They provided evidence that learning is often a coping response to change. Because they defined adult learning very broadly, however, the applicability of their findings to formal higher education is less certain.

In a study of reentry women, Ross (1988) did not find the same emphasis on critical life events as triggers and suggested that perhaps the triggering notion had been over-emphasized. She speculated that women interpreted major life events in their total life
context, and that concerns for family, significant others, dissatisfaction with career, and economic factors entered into the decision to return. Ross also found that the return to school was often linked with the process of life reassessment that could occur at any age. Because her study involved in-depth interviews with just 16 women at a single university, Ross considered her findings tentative without further investigation. Their applicability to male students can also be questioned. Like Ross, Mohney and Anderson (1988) found that life events could be major barriers for women, who were often influenced by the ethics of care and responsibility identified by Gilligan (1982). The authors’ study examined the decision-making process for 38 women who enrolled in a small liberal arts college. The study identified predisposing factors (with a sense of timing and career needs being most important), barriers to earlier attendance (role demands were cited most often), and more recent enablers (lessening role demands, funding availability, and support from others). Mohney and Anderson’s and Ross’s studies both successfully illustrated the complexity of women’s lives and the factors that enter into a decision about college attendance. The small samples for each limits generalizability, however.

Sewall’s 1984 study of 906 adult undergraduates at the University of Wisconsin named work and family responsibilities as the most important barriers to returning to school. The most important triggers were job dissatisfaction, encouragement from others, and funds. Barriers and triggering events were often related. Sewall’s study used a mail questionnaire which was intended primarily to provide a description of adult students’ reasons for enrolling; thus, the depth of its content was limited and its analyses basic.

Cross (1981) was among the first to articulate a model of participation in adult education. Drawing from literature as diverse as force field analysis, expectancy-valence
theory, reference group theory, and interactionist approaches, Cross developed the "chain-of-response" model. She posited that adult education participation results from a chain of events that begins with self-evaluation and attitudes toward education. Positive self-evaluation and attitudes can lead to developing a goal involving further education. Like Aslanian and Brickell (1980), Cross believed that life transitions provide an opportunity for identifying new goals. If an individual believes that adult education will help in achieving the goal, participation is more likely. At the next stage, interested individuals encounter both opportunities and barriers which influence the likelihood of actually participating.

Cross's barriers hold special relevance for this study. Although they have been identified as barriers to participation, they may be barriers to persistence as well. Cross named three categories of barriers: institutional, dispositional, and situational. The latter category includes family and work responsibilities that place constraints on participation. Situational and institutional barriers are cited frequently as reasons for lack of participation, but Cross noted that this may be in part because they are considered socially acceptable. Many adult students find it difficult to admit to anxiety about school or fear of failure.

When adults do overcome barriers and return to school, they usually bring with them the advantages of life experience and strong motivation (Apps, 1981). However, they may face challenging adjustments, especially in the form of juggling multiple roles. Role strain or conflict is common (Kasworm, 1990; Lewis, 1988; Tittle & Denker, 1980). In reviewing studies of adult undergraduates, Kasworm found that reentry women experienced role conflict more frequently than did men. Women in their late twenties and early thirties, such as the women in this study, often have young children. Tittle and Denker commented that these women's parenting, household, and possibly employment responsibilities may
well overwhelm the adult student role. Time demands as well as possible guilt over neglecting home or work responsibilities may negatively affect the reentry woman’s progress. Schlossberg, Lynch, and Chickering (1989) echoed these thoughts, noting that gender issues and the "politics of housework" can impact what they call the "moving through" stage. For mothers with young children, having quality child care arrangements may also make a difference between staying in college or leaving (Lewis, Tittle & Denker). Family responsibilities may actually have mixed effects on persistence. They may lessen the chances of persisting in college; alternatively, spouses and other family members may also provide the support and encouragement needed to continue (Tinto, 1987; Tittle & Denker).

Role conflict, strain, or overload clearly describes many adult students’ lives, but its effect is not so clear. Gerson (1985) found that women who returned to school at midlife had much greater positive outcomes from their multiple roles than did a comparison group of homemakers who held relatively less complicated roles. Students were more likely to experience role strain, however, which moderated some of the positive outcomes of school. Nevertheless, their net gratification was greater than the nonstudent comparison group’s. Gerson concluded that the consequences of multiple roles were less straightforward and ubiquitous than has been assumed. In another examination of the effects of multiple roles, Kirk and Dorfman (1983) tested a model predicting satisfaction and role strain among 141 reentry women (age 35 or older) at a major university. Predictor variables were conceptualized as psychological supports (spouse, children, and friends), behavioral supports (housework contributions of spouse and children, child care contributions by spouse, family, and friends), and institutional supports (professors, scheduling, counseling,
and financial aid). Educational, family background factors, and motivational factors were also included. A zero-order correlation analysis showed that role strain was significantly impacted by number of years out of school, helpfulness of financial aid, dissatisfaction with job, and age of youngest child. However, a multiple regression analysis with these four variables produced no significant results. (Possibly a regression analysis that included all independent variables would have found different effects.) Significant correlates with satisfaction were the level of psychological support from children and friends, helpfulness of counseling and professors' attitudes, and housework contributions by children. A multiple regression analysis with these variables showed that only friends' support and professors' helpfulness were significant. Although the research was not successful in identifying factors contributing to strain, comments by respondents cited lack of time and multiple roles as problematic. On the positive side was the satisfaction of learning new things, achieving a positive self-image, and experiencing achievement. As with Gerson's study, Kirk and Dorfman's results showed that the consequences of multiple roles are not straightforward. This may be partly due to one's coping mechanisms. In a study of role balance during the transition to parenthood, Myers-Walls (1984) studied the effects of four coping strategies in her interviews with new mothers. Strategies included a positive view of the situation, development of a salient role, compartmentalization, and compromising standards. Myers-Walls found that women who could management overlapping roles through employing these strategies adjusted to parenthood better and had greater marital satisfaction than did other new mothers. Although this study did not focus on adult students, its findings regarding the effects of coping strategies may hold implications for successfully adjusting to college as an adult.
McClusky (as cited by Hiemstra, 1981) contributed insights to the discussion about role strain and coping with his theory of margin which he developed in the 1960s and early 1970s. He defined margin as a function of load to power; load was viewed as internal and external demands, including tasks of living and personal goals, and power consisted of external and internal resources such as wealth and coping skills. McClusky theorized that an excess of power relative to load gave persons the margin needed to adapt to changing life circumstances or emergencies. Margin could be increased by increasing power and/or decreasing load. These insights are useful in the present study's context when thinking about the multiple responsibilities many adult students face. To the extent that higher education can assist students in maintaining an adequate margin, the chances for success may be increased.

Completion of a college degree may ultimately be affected by various aspects of student adjustment. Malin, Bray, Dougherty, and Skinner (1980) studied factors affecting performance, satisfaction, and affective changes of 348 adult students enrolled in University of Houston undergraduate or postbaccalaureate programs. The authors contended that studying external influences on college adjustment was particularly important in the case of adult students due to the possibility of role conflicts between work, home, and school obligations. Factors included in the study were family reactions to the student role and responsibilities; family approval; time emphasis (hours studying, working, and at home); achievement of job goals and intellectual goals; and satisfaction with procedures, advising/counseling, performance, curriculum, instruction/scheduling/financial aid, and child care. Dependent variables were reported GPA, college satisfaction (on 1-5 scale), and affective changes, as measured by type and degree of change in self-confidence, anxiety,
guilt, and sense of well-being. Analyses were conducted for the full sample since preliminary analyses did not indicate significant differences by gender or marital status. Of primary interest to the present study are findings related to external life variables. They were major predictors of college satisfaction and, in addition, added significantly to the variance of satisfaction and affective changes. Satisfaction with the amount of time available was particularly important; it was the only external variable that significantly predicted college grades. Family reactions to the student role were more important than family approval of college education in general. The research did not find that women had a more difficult time coping with college demands than men did, despite general impressions and literature to the contrary. Men were actually less successfully adjusted and appeared to experience more role conflict. The authors speculated that men might have been less likely to seek help than women. They further suggested that their sample was younger than the typical re-entry woman whose children were grown and that this age difference might have affected the results. Although Malin et al.'s research did not examine educational attainment or persistence directly, its look at factors which might impact adult students' degree progress makes it especially pertinent to the present study.

Also relevant to studying adult students in higher education is literature on adult development. Of primary interest to this study is research that examines the life cycle and developmental tasks of early adulthood. As previously noted, the role of adult student clearly must be viewed in the context of other activities and priorities that characterize the lives of adults in their twenties and early thirties. Finishing college may be one of several competing priorities.
Studying men's development through interviews with 40 men, Levinson (1978) wrote about developmental periods, each of which represents phases in the life cycle. As such, they are time-ordered and thus different from stages of ego development. Two life-span phases of Levinson's are applicable to the time frame encompassed in the NLS-72 Fifth Follow-up period: "Entering the Adult World" (ages 22-28) and "Age Thirty Transition" (28-33). During the earlier period, persons are beginning to form what Levinson termed an adult life structure. He considered this to be a period of relative stability, when various life components such as occupation, family, and mentoring relationships are developed. He suggested that the process of forming an occupation may take most of early adulthood, to age 33. Men are often exploring alternatives and testing provisional choices at this stage. Concurrently, early adulthood is often a time of entry into marriage and parenthood, though Levinson found that most men place a higher priority on work than on family. This period's developmental tasks are in conflict at times, as persons are exploring and expanding their options at the same time they are seeking stability and continuity. Levinson did not discuss the role of formal education during this period, nor did his work directly apply to women. However, given what we know about this life phase, it seems likely that the adult student role can prolong or complicate the developmental tasks of early adulthood, and vice versa. During the "age thirty transition" period, reevaluation of the earlier adult life structure occurs, and adults make new commitments or life modifications or reaffirm old choices. Again, Levinson did not speak of formal education, but it is possible that during this transition period, some adults may decide to return to college.
Sheehy's (1974) popular book, *Passages*, is based on interviews she conducted with 115 couples, but also drew from research results of Levinson, Mead, Gould, and other adult development theorists. Sheehy depicted life stages similarly to Levinson, with the "trying twenties" focusing on shaping a dream, finding a mentor, gaining intimacy, and preparing for life's work. The "catch-30" transition involves reassessing earlier choices. Because Sheehy interviewed both men and women, she found greater divergence in early adulthood than did Levinson. For instance, she noted that in the "catch-30" phase, women who had been at home with young children might be ready to assume new roles. Unlike Levinson, Sheehy also described types of life patterns for men and women. I suspect these patterns could affect one's participation and persistence in formal education as an adult. For instance, women in the "caregiver" pattern marry early and stay at home; they may be likely to complete college later but perhaps not during the period covered by the NLS-72 data. College might be seen as an expensive luxury at this point, when their husbands are still at the early career stage, with lower wages, and when family expenses may be high. Both time and money may curtail their participation. Sheehy observed that "integrators," who attempt to balance career, family, and community involvement, face an almost-impossible task in their twenties. This observation may have implications for predicting who might complete a degree during this life phase. Adults who are working full time and raising children find their time at a premium: What effect do these activities have on their progress toward degree completion?

Gilligan's (1982) study of women's development substantiated gender differences which could have an impact on degree completion. Although her work deals primarily with moral development, her insights pertain to life stage changes as well. The importance
women place on relationships and connectedness is critical to Gilligan's thinking. Men
tend to form a sense of self prior to developing intimacy and generativity, whereas
women's sense of self may develop along with (and perhaps as a result of) intimacy and
generativity. But because our society values individuation rather than relationships and
caretaking of others, it devalues the developmental path many women take. Gilligan's
work has been instrumental in advancing our thinking about developmental differences in
men and women. If women are more likely than men to evidence an ethic of care and
responsibility, relationship issues or concerns could well take primacy over their student
role in adulthood.

Literature on adult students is much scarcer as it pertains to student persistence. A
later section on persistence in this chapter examines several studies of adult students. In
sum, results indicate that the factors that affect persistence may differ for adult and
traditional-age students. Whereas social involvement and fit are important for younger
students, they are much less relevant for adults. External commitments such as work and
family responsibilities may have more substantial effects on adult students' persistence than
for their younger counterparts. However, the importance of academic adjustment or
integration generally pertains across age groups.

Colleges and universities have responded to increased numbers of adult students in
a variety of ways. Spanard (1990) categorizes options as "either/or" and "and also." The
first option refers to programs that force students to choose between being a full-time
student or hold alternative life roles. The second refers to more accommodating options
such as evening or weekend classes, independent study, and external degree programs. In
addition to offering varied program options, higher education institutions have also offered
services specifically designed to attract and retain adult learners. Examples include reentry workshops such as time management and study skills, special academic advising, simplified registration procedures, child care arrangements, adult student groups, and adult student lounges. Steltenpohl and Shipton (1986) described an entry course offered by Empire State College (an external degree program) for adult students. The eight-week transition course is aimed at familiarizing students with the academic world and encouraging a higher level of abstract thinking among students. The authors found the course has helped students take responsibility for their own learning and set individual educational goals. About 15 percent of the students did not complete the course, and often this led to continued inactivity in school. Analysis of these nonpersisters led Steltenpohl and Shipton to conclude that many of them faced very real personal circumstances that prevented continuation. However, a sizable number had limited prior college experience and struggled to complete assignments and succeed in the transition course. The authors felt that the course helped them better identify high-risk students and intervene earlier and more directly in those cases.

Writing on higher education environments for adults, Schlossberg, Lynch, and Chickering (1989) discussed ways in which institutions can support adult students during the "moving through" phase. They assumed that adult students are a heterogeneous group, with role involvements that range from simple to complex. They also assumed that, despite this diversity, all students undergo a transition process that leads them into an institution, through it, and out. The way in which adults experience these transitions varies, however, primarily related to the extent to which their other life roles have changed. Successful transitions result from four resources for coping: situation, self, supports, and strategies. Students who encounter rigid institutional structures and a lack of support and appreciation
may make a less successful transition than those in institutions that support adult learners through their services, policies, and structures. The authors did not advocate separate parallel programs to serve adults, but did suggest that institutions needed to acknowledge the differences between adult and other students. Overall, Schlossberg et al. believed that a person-environment fit explanation describes adult student persistence most effectively.

**Educational Attainment**

When one moves to the empirical, explanatory level in discussing adult progress in college, literature on educational attainment is an important starting point. The status attainment research tradition first elaborated by Blau and Duncan in 1967 drives much of this literature. As noted earlier, status attainment models focus on explaining adult achievements such as educational attainment, occupation, and earnings. The models typically include explanatory variables such as family socioeconomic status, ability, high school grades, and social psychological factors. While status attainment models have been relatively successful in predicting educational attainment, they have had less success explaining variance in earnings, particularly in early career (Sewell & Hauser, 1975).

Partly for this reason, the status attainment approach has been criticized for emphasizing individual factors to the exclusion of structural ones (e.g., Beck, Horan, & Tolbert, 1978). Beginning in the mid-1970s, sociologists began to focus much more heavily on structural factors that might mediate individual-level variables. "New structuralism," as the approach is called, has been particularly important in research on determinants of income. Such structural factors as characteristics of occupations (e.g., work complexity) and employers (e.g., firm size) have been found to affect earnings. Inasmuch as "new structuralism" focuses on occupational status and earnings, it has not been as
influential in sociological research dealing with educational attainment. However, some studies include institutional characteristics. For example, Anderson (1988) included four such characteristics in her study of college impacts: quality/selectivity, academic vs. vocational orientation, commuter/part-time vs. residential/full-time, and student social status. Also, Vellez (1985) is one of a stream of researchers who have examined the effects of college type (two-year vs. four-year) on baccalaureate completion. The status attainment tradition, with the addition of a variety of structural characteristics, continues to be the theoretical framework that forms the basis of many educational attainment studies.

Wilson and Allen (1987) drew from the status attainment tradition and new structuralism to examine educational attainment of sample members in the National Survey of Young Black Adults\(^3\). They added factors often excluded from prior research, including family structure, family influence, and school influence. Other predictor variables were family socioeconomic status, educational background, personal efficacy, gender, parental status, and employment level within the state. They were able to explain almost 40 percent of the variance in educational attainment (measured as years of schooling). High school curriculum, parental status, age, and counselor helpfulness were the most important predictors of attainment. Mother’s education and father’s encouragement were also important. On average, young adults who were parents achieved the lowest levels of education, on average. Some variables expected to be important were not, including teacher effects, gender, high school racial composition, and family size. The authors

\(^3\) The National Survey of Young Black Adults interviewed 201 black men and women in 1983, when they were between the ages of 19 and 28. The sample was originally interviewed in 1979-80 as part of the Three Generational Family Study, a follow-up to the initial study, the National Survey of Black Americans. Data in Wilson and Allen’s study came from all three data sets.
concluded that the status attainment emphasis on socialization is only a partial explanation for individual accomplishment and that societal allocation (Kerckhoff, 1976) plays an important role as well. One of this study’s strengths is its development of a model that is intended to be particularly relevant for the black population. However, the model succeeded in explaining less variation in educational attainment than did Sewell and Hauser (1975).

Also using a status attainment perspective with structural factors included, Bourque and Cosand (1989) studied the educational attainment of a sample of Los Angeles women. Data were originally collected as part of a fertility study conducted with women aged 16 to 22. An initial group of 255 women was interviewed in 1973, and 168 were located for follow-up interviews in 1975. Bourque and Cosand’s educational attainment study examined the relative importance of background characteristics, educational behaviors and aspirations, and heterosexual experience reported in 1973. Age, sexual behavior, and educational aspirations were significant direct predictors of years of education attained by 1975, and 50 percent of the variance in attainment was explained. As might be expected, sexual activity in 1973 was negatively related to 1975 attainment. Mother’s educational level and aspirations for the respondent had the most important indirect effects. The authors had hypothesized that communications with parents about education would add significantly to explained variance. Though this prediction was not borne out, the authors recommended continuing to examine communications, perhaps using a different measure. Because the sample was limited in age and location, and the study was conducted almost 20 years ago, its generalizability is uncertain. However, the study’s findings appear to
parallel results from other settings, according to the authors. The study confirmed the importance of family status and parents’ achievements.

The effects of marriage and parenthood on educational attainment have been incorporated into status attainment models by several researchers. Lowe and Witt (1984) developed an index of early marriage which they found to be better than simply using age at marriage to assess marriage timing effects. They looked closely at the impact of early marriages. Using General Social Survey data for men and women, the authors found that only five of 510 panel members who were married before age 18 later graduated from college. In general, early marriage led to lower educational attainment, causing the researchers to consider it a career contingency. Because women tend to marry earlier than men, the authors concluded that their educational attainment is more likely to be limited. Although a robust study, it is limited because neither academic achievement or aspirations were included in the model. A second study by Haggstrom, Kanouse, and Morrison (1986) utilized NLS-72 data to examine educational gaps of young mothers. They compared mean years of postsecondary education through 1976 for different groups within their overall sample. They found that preexisting differences accounted for much of the gap in educational attainment between young mothers and non-mothers. However, parenthood and marriage also had independent negative effects on educational attainment, with the effect of marriage being stronger than that of parenthood. A third study by Smith and Hooker (1989) compared a sample of 187 South Carolina men and women regarding the effects of

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4 The General Social Surveys survey a large national sample on a variety of topics. Data for this study came from the combined 1977, 1980, and 1982 surveys and included a sample of over 5,500 men and women. The sample was divided into four birth cohorts that ranged from pre-World War I to post-1945. Persons under age 22 were not included in Lowe and Witt’s study.
marriage and parenthood on years of education completed. Sample members were first surveyed as eighth graders in 1972 and contacted a second time in 1985. The timing of marriage and parenthood affected attainment for both groups, though these effects were much less important than parents' formal education and eighth grade expectations. Unlike other studies, this one found similar effects for both men and women. The authors speculated that this might be due to the study's relative recency. However, they confirmed in a separate analysis that because women tend to marry earlier than men, their educational attainment suffers. The sample's size, characteristics (mainly white, middle-class), and location suggest the need for similar investigations in other settings.

Overall, the results of all three studies demonstrated the importance of incorporating marriage and parenthood into a study of educational attainment, along with the various background characteristics commonly included. Further, the studies have shown that the effects of marriage and parenthood may be greater for women than men. At the very least, they show that women's educational attainment is likely to be lower than men's due to the probability that they will marry and become parents earlier. For subjects entering their thirties, as in my study, marital and parenting variables may be particularly important. Because studies of educational attainment typically use years of education completed as the dependent variable, they also differ from my focus on degree completion.

Few studies in the status attainment tradition have looked specifically at the educational attainment of persons who have delayed or interrupted their postsecondary education. Normally status attainment research considers total education attained rather than the timing of that education. One exception is a study by Featherman and Carter (1976) which examined discontinuities in schooling and their impact in the socioeconomic
life cycle for a sample of 340 Michigan males. The group came from a single county; panel members were first interviewed as high school students in 1957 and were reinterviewed in 1972. A finding especially relevant to the proposed research is that once the men entered college, interruptions were difficult to predict. In terms of duration of education, the research showed that men with better high school grades but poorer family backgrounds were the most likely to finish college on a slower timetable. The authors speculated that although the men’s financial resources necessitated a slower pace, they had the capability and motivation to persist. Featherman and Carter also found that socioeconomic achievement was negatively affected by schooling discontinuities. They believed that this finding illustrated the existence of societal costs for individuals who violate age-specific behavioral norms.

Using NLS-72 data, Robertshaw and Wolfle (1983) patterned a national study after Featherman and Carter’s. An acknowledged limitation was their use of projected educational attainment rather than actual. However, their results supported Featherman and Carter’s finding that delayed or interrupted schooling negatively affected later educational achievement. The influence of family background was mediated by intervening factors. Robertshaw and Wolfle extended the prior research by conducting separate analyses for white women and black men and women; results for white women were similar, but consequences of delaying entry or interrupting schooling were larger. Blacks, especially black males, experienced lingering negative effects of social background, unlike white men and women. Interruptions and delays did not disadvantage black women relative to black men as they did whites.
Two related studies examined college degree completion among students who persisted to graduation and those who delayed beginning or stopped out along the way. Temple and Polk (1986) drew on a tournament metaphor in their study of educational attainment among 245 males in a single Oregon county. Sample members were first surveyed as high school sophomores in 1964, again in 1967, and then at yearly intervals until 1977. Although Temple and Polk found that earlier academic failure strongly predicted later failure, there were exceptions, i.e., some students were more successful than earlier actions and plans would have indicated. Thus the single-elimination tournament was not an apt descriptor; once out, some students were still able to reenter formal education and eventually graduate from college. This finding suggests that the U.S. educational system is relatively fluid.

The second study (Kempner & Kinnick, 1990) used the "on time" and "off time" concepts to examine baccalaureate degree completion for Oregon students who did not begin college immediately after high school. The 1400 sample members were in a statewide survey of the high school class of 1975 and a follow-up study ten years later. Kempner and Kinnick concluded that there is indeed a "window of opportunity" that predicts likelihood of success. Altogether, only 26.8 percent of the whole sample had earned a bachelor's degree by 1985, although almost twice that number expected to do so. However, just 8 percent of the 270 who delayed college entrance for more than a year after high school had earned a baccalaureate degree within 10 years. This figure contrasted with 38 percent of the "on time" students. In addition to on-time entry, educational aspirations, gender, and, to a lesser extent, entering a four-year institution affected the likelihood of earning a baccalaureate. The authors disagreed with those, including Temple and Polk...
(1986), who suggest that timing of education is becoming less important. Delayed or interrupted education may be socially acceptable, they said, but may have negative effects on the probability of baccalaureate completion and on later occupational achievement. Thus their results confirm those of Featherman and Carter (1976) and Robertshaw and Wolfle (1983). All four studies provide evidence that delayed or interrupted schooling negatively affects the likelihood of completion. But what of those persons who have delayed or interrupted college? What differentiates those who succeed later from those who do not? This question remains unanswered in these studies.

Persistence

Focusing specifically on the college setting is research on persistence (i.e., progressing toward or achieving one's educational goal). Persistence in college is one of the most studied higher education topic; thus, a vast body of literature exists. Because of its importance to my model, I review the literature in some detail. I overview the literature's evolution by discussing major theorists and empirical studies.

As noted previously, Vincent Tinto (1975, 1987) has been instrumental in influencing the direction of most studies of persistence. Tinto has emphasized institutional persistence rather than persistence within higher education generally. Tinto's work grew out of Spady's earlier theoretical model of the dropout process (Spady, 1970). Both models draw upon Durkheim's theories on suicide. Tinto emphasized the fit between an individual and institution, but used student background characteristics as a starting point in his 1975 and 1987 models. His models and others stemming from them are grounded in the status attainment tradition, although they add a specific focus on college experiences. Much of Tinto's work has been conceptual rather than empirical; other researchers have
operationalized and tested the model. Tinto reformulated his model in 1987 to take into account other approaches and research results. The newest formulation added intentions to remain in college. It also reconceptualized institutional experiences somewhat. In the 1975 model, informal faculty-staff interactions were considered part of the social system; in the 1987 model, they were considered to be part of the academic system. Extracurricular activities were added to the social system. Also, external commitments were added in recognition of their bearing on subsequent goal and institutional commitments. Tinto's 1987 causal model, then, has these components: pre-entry attributes (family background, skills and abilities, prior schooling); initial goals and commitments (intentions, goal and institutional commitments); institutional experiences (formal academic—academic performance, informal academic—faculty/staff interactions, formal social—extracurricular activities, and informal social—peer-group interactions); personal/normative integration (academic and social integration); later goals and commitments (intentions, goal and institutional commitments, external commitments); and outcome (departure decision).

The concepts of academic and social integration are at the heart of Tinto's model. He considered college to be an interactive system that links formal and informal experiences in the academic and social arenas. Although Tonto did not suggest that full integration in all areas was essential, he believed that "... some degree of social and intellectual integration must exist as a condition for continued persistence." (1987, p. 119) He viewed the social and academic systems as distinct but mutually interdependent. Further, within each, integration into either the formal or informal component could reinforce integration into the other. For example, holding a student leadership position
(formal social integration) could increase one’s peer group interactions (informal social integration).

In addition to revising his causal model, Tinto (1987, 1988) expanded upon his theory of student departure by drawing from Dutch anthropologist Van Gennep’s work on rites of passage. Tinto stated that college students must successfully negotiate three stages of passage: separation, transition, and incorporation. Their failure to separate from the past and make effective transitions may lead to withdrawal. This stage theory adds possible explanations for withdrawal other than lack of integration (or may explain why integration does not occur).

**Empirical tests of Tinto’s model.** Over the past 15 years, Pascarella, Terenzini, and other collaborators have tested Tinto’s model in a variety of settings, beginning with a study of attrition among residential students at Syracuse University (Terenzini & Pascarella, 1977). These authors collaborated in subsequent studies at Syracuse (Pascarella & Terenzini, 1980, 1983; Terenzini & Pascarella, 1978). Pascarella expanded beyond studies of a single residential institution to study attrition in 11 institutions (Chapman & Pascarella, 1983; Pascarella & Chapman, 1983); an urban, non-residential setting (Pascarella, Duby, Miller, & Rasher, 1981); and commuter institutions (Pascarella, Duby, & Iverson, 1983). Pascarella was also involved in three studies utilizing Cooperative Institutional Research Project (CIRP) longitudinal data; one examined long-term persistence among two-year college students (Pascarella, Smart, & Ethington, 1986), a second studied long-term

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5 The American Council on Education Cooperative Institutional Research Program Survey (CIRP) is conducted annually. First-time freshmen at participating institutions across the country complete a survey that collects wide-ranging information on demographic characteristics, background experiences, educational aspirations, and opinions about current issues, personal values, and college expectations.
persistence among four-year college students (Stoecker, Pascarella, & Wolfle, 1988), and
the third focused on college race and status attainment of blacks (Pascarella, Smart, &
Stoecker, 1989).

In several early studies, persistence was defined as continuing beyond freshman
year as opposed to voluntarily withdrawing (Pascarella & Terenzini, 1980, 1983; Terenzini
& Pascarella, 1977, 1978). Transfer students were considered non-persisters. Samples of
several hundred freshmen at Syracuse University were used for each study. The authors
developed measures of students' academic and social experiences and commitment. In the
1977 study, Terenzini and Pascarella found general support for Tinto's model, although
cumulative grades and extracurricular activities were not particularly important. Informal
contacts with faculty members were critical. Moreover, students who remained had more
complex social lives than students who left. The 1978 study examined the effects on
attrition of precollege characteristics, college experiences, and interactions of sex, major,
and race/ethnic origin with freshman year experiences and perceptions. In this study,
precollege variables had only a small direct effect, whereas social and academic integration
variables (especially academic ones) had a stronger impact. The significance of several
interaction terms was one of the first pieces of evidence that the persistence process may
vary for different groups of students. In a subsequent study at Syracuse, Pascarella and
Terenzini (1980) used a scale to measure integration and commitment, and it controlled for
student background characteristics. Again, student-faculty interactions proved to be
important. Also, interactions between gender and peer-group interaction and institutional
and goal commitments were significant. In a further analysis of the 1980 data, Pascarella
and Terenzini (1983) found added support for the inclusion of academic and social
integration and commitment measures, consistent with Tinto's model. Background characteristics had no direct effect on persistence, although male and female differences existed. For women, initial goal commitment and social integration were more important; academic integration was more important for men. Another important finding was that academic and social integration were interactive; thus, stronger integration in one domain could compensate for weaker integration in the other. Taken together, these early studies were important in showing the general usefulness of Tinto's theory of attrition. They explained a modest amount of variance (around 20 percent) and successfully distinguished between unimportant and more important predictors of persistence for their samples. They were also instrumental in pointing to possible interaction effects. Because the studies were conducted with single cohorts at one institution, their generalizability was limited. Further, their definition of persistence was restricted to freshman-to-sophomore year continuation. Finally, their sample was largely composed of traditional-aged students, and they discounted the possible effect of factors external to the student role. Nevertheless, the authors' research marked an important first step in operationally defining and empirically testing Tinto's model.

Subsequent studies extended this initial work to other samples and definitions of persistence. Pascarella, Duby, Miller, and Rasher (1981) used basic CIRP data and other background information to study persistence among two cohorts of freshmen at the University of Illinois, Chicago Circle, a commuter institution. More than 1900 students were in the total sample. The authors classified students as persisters, freshman stopouts, or early freshman withdrawals, and conducted a discriminant analysis to differentiate groups. Age was one of nine significant variables, but in general, preenrollment
characteristics such as age were less important than experiences after enrolling. In particular, grade point average improved the classification significantly, especially for withdrawers and persisters. Unlike the studies described above, this one did not find interactions by race or gender. One weakness of this study was its inability to measure academic and social integration and institutional and goal commitment. Also, it was a single institution study, although the commuter student setting extended the test of some elements of Tinto's model. While adult students were part of the sample, and the researchers included age as an explanatory variable, they did not include any indicators of external commitments.

In a later study in a large urban commuter institution, Pascarella, Duby, and Iverson (1983) reconceptualized Tinto's theoretical model to include the notion of "intention to persist," as suggested by Bean (1980). (Bean had found student intentions to be an important mediating variable in the persistence process.) The authors used CIRP data from 269 incoming freshmen as well as a follow-up survey adapted from Pascarella and Terenzini (1980). Variables included background characteristics (precollege schooling, individual attributes, and family background), goal commitment, institutional commitment, academic and social integration, subsequent goal and institutional commitment, and likelihood of reenrolling sophomore year. With the addition of student intentions, explained variance increased from 19 to 28 percent. This study found that background characteristics contributed the largest increase in explained variance, a difference from other studies. Another difference was that social integration had a negative effect, possibly due to the lack of an active social life on campus. As a result of the research, the authors reconceptualized Tinto's model to include new links between persistence and background
characteristics, intention, and social integration. Academic integration, which had a direct, positive effect on persistence, was seen as a link between initial and later institutional commitment. The authors speculated that Tinto’s original model may not function as effectively in a commuter institution, and that precollege characteristics may be more important with a commuter population than a residential one. This study, while rigorous, shares similar limitations to those mentioned in the preceding paragraphs. Another limitation is its failure to examine possible interactions.

Chapman and Pascarella (1983) and Pascarella and Chapman (1983) studied the effectiveness of Tinto’s model in a multiinstitutional study that included four-year residential institutions and both two- and four-year commuter institutions. Data were collected from 2,410 incoming freshmen via a questionnaire designed to measure academic and social integration, institutional and goal commitment, and background characteristics (sex, age, secondary grades, major, socioeconomic status, and personality orientation). Persistence was defined as continuation in the sophomore year; attrition was voluntary withdrawal. Although results were consistent with Tinto’s model, only 12 percent of the variance was explained. Attending a two-year school had a direct negative effect on persistence. Analyses by institutional type showed differences. For example, social integration directly affected persistence only in the residential settings. Also, institutional commitment was more important than goal commitment in the four-year schools, but the converse was true in two-year institutions. In an analysis of the predictors of student integration, the authors found that college type and student characteristics made a difference in student participation patterns. Pascarella and Chapman suggested that as institutions begin serving more diverse populations, including adult students, the schools need to
consider alternative ways to develop academic and/or social connections. Although this study covered multiple institutions, its sample was not intended to be nationally representative and its response rate was quite low. Adult students were significantly underrepresented. In addition, as Pascarella and Chapman noted, the study’s definition of persistence did not allow for students stopping out. Thus its results may be considered more suggestive than definitive.

Pascarella, Smart, and Ethington (1986) looked specifically at students who began college in two-year institutions, using data drawn from the 1971-1980 CIRP surveys. Over 800 students who initially hoped to earn a bachelor’s degree were followed up in 1980, nine years after they began college. Although this research was based on Tinto’s 1975 model, the data set necessitated weak measures of academic and social integration and subsequent institutional commitment. No measure of subsequent goal commitment was available. Two dependent measures of persistence were used: degree persistence and degree completion. The persisters included those who had earned a baccalaureate degree as well as currently active students. Separate analyses for males and females were conducted. Explained variance ranged from 15-25 percent, with men’s degree completion having the highest amount of variance accounted for and women’s degree persistence the least. Only three variables had direct effects on persistence; academic and social integration were important to both men and women, while subsequent institutional commitment was significant only for men and socioeconomic status only for women. Similar results were obtained for degree completion, except that secondary school academic accomplishment was also important for men and secondary school social accomplishment was an added predictor for women. Several variables had indirect effects on degree persistence and
completion for men, but only one (secondary school academic achievement) was significant for women. Finally, students' age had no significant effect on persistence or completion, although the study does not indicate how many students were over 25 when they began college.

The authors concluded that Tinto's model functioned quite well in this setting and reiterated the importance of academic and social integration for both men and women. They also emphasized the differences in persistence explanations for men and women and recommended conducting separate analyses to avoid masking differences. Moreover, they recommended examining specific indicators of integration to see how their effects vary across different sub-groups. Despite the data set's limitations, this study offers a number of strengths. Among them are the national sample, focus on two-year college students, separate models by gender, and long-term view of persistence. Because the study only examined baccalaureate-seeking students, however, it failed to take into account those students whose initial aspirations were at the associate degree level. Further, external commitments were not included in the model.

In another longitudinal test of the Tinto model, Stoecker, Pascarella, and Wolfe (1988) used CIRP data from 1971 and 1980 to study degree attainment among 5,240 students who had only attended one four-year institution. The causal model also included elements that were not part of Tinto's model: institutional characteristics (selectivity, size, and racial composition) and college major (science or math, social sciences, or humanities). Interactions by race and gender influenced the researchers to conduct four separate regression analyses for white and black men and women. Across all four groups, family socioeconomic status, secondary school achievement, and college academic achievement
had significant total effects. For all but black males, initial degree aspiration and majoring in social sciences also had significant total effects. Further, for all but black females, interaction with faculty and social leadership activity had significant total effects. The variables explained a low of 13.9 percent of the variance (for black women) and a high of 18.5 percent (for black men). Results supported the authors’ contention that the degree attainment and persistence process is interactive by race and gender. In addition, results generally supported Tinto’s model, especially its emphasis on academic and social integration. Academic integration (including college academic achievement) had the strongest direct effect on degree attainment across all groups. Institutional characteristics other than prestige had mainly indirect effects, and only a college major of social sciences had direct effects on degree completion. Because the effect of college major was mainly indirect, through academic and social integration, Stoecker et al. suggested that academic departments could play a more active role in enhancing persistence in the junior and senior years. Overall, the study has both the advantages and disadvantages of using an existing data set. Indicators of academic and social integration were weak, and the authors hesitated to consider the lack of a degree as attrition. However, the use of CIRP data with a nine-year follow-up offered strengths in terms of sample size, national scope, and time span covered. Inclusion of institutional characteristics was also an important contribution. Although sample members were older than traditionally-aged students by the 1980 follow-up, the data did not include any focus on possible activity as adult students. Also, external roles or commitments were not included.

Also using CIRP data, combined with institutional data from the Higher Education General Information System (HEGIS), Pascarella, Smart, and Stoecker (1989) studied the
effect of college racial composition on early status attainment of black students. The national sample of 718 black students had attended a single four-year institution and had completed both the 1971 and 1980 CIRP surveys. Of most relevance to my study are findings on degree attainment, although the researchers also examined occupational status and income. Collegiate academic achievement and institutional selectivity had positive direct effects on degree completion for both men and women, and family socioeconomic status also had a direct effect for men. College racial composition did not have a direct effect for either group, but did indirectly affect degree completion for women. The importance of faculty-student interactions was again confirmed, although the effects appeared to be more important for black men than women. This study’s primary importance was in its explicit focus on college race and other institutional effects, which had not been considered extensively in the past. Study limitations were a function of available data and the model’s emphasis on traditional students.

Taken together, these studies represent an important addition to our knowledge of the college persistence process. Pascarella, Terenzini, and their colleagues successfully operationalized and tested Tinto’s model, and in the process developed a more complete understanding of aspects of academic and social integration. Academic integration includes college grades as well as informal and formal interactions with faculty, whereas social integration focuses more on extracurricular involvements and peer interactions. Further, the authors were able to identify conditional effects and thus achieved a clearer grasp of differential impacts of specific factors for various sub-groups. Their tests of Tinto’s model in different institutional settings also led to greater knowledge of the effects of college type. However, the fact that their studies emphasized Tinto’s model so heavily also represented a
weakness. For the most part, the research was confined to testing an existing theory rather than modifying it or questioning its assumptions. Because Tinto's model was designed for traditional students, these researchers failed to include influences that might have had greater relevance for adult students, such as commitments beyond the student role. Much of the research also took a short-term perspective, which is less helpful if one is interested in longer range outcomes, including degree completion. Despite these criticisms, this body of research has been extremely influential in its discoveries and subsequent effects on other persistence studies.

A more recent contributor to literature on persistence, Amaury Nora has based several studies on Tinto's model. He and other researchers have looked at retention of Chicano students in three community colleges (Nora, 1987), the effect of financial aid on retention of Hispanic students (Nora, 1990), qualitative indicators of precollege influences (Nora, Attinasi, & Matonak; 1990), and transfer behavior among community college students (Nora & Rendon, 1990).

Nora's 1987 study of 227 Chicano students enrolled in 1977 or 1978 in three Texas community colleges was based on Tinto's 1975 student attrition model. An important difference was in the definition of retention, which was a latent, construct based on total hours enrolled by 1981, satisfaction with present goal attainment, and graduation (credentials earned). The study included background variables (high school grades, parents' education, and encouragement by significant others), academic and social integration measures, and institutional/goal commitments. These variables accounted for 42 percent of the explained variance in retention. Institutional/goal commitment had by far the strongest effect, with academic integration and high school grades having the next most important
effects. Parents' education had a relatively strong direct effect on retention, although its
total effect was lower than commitment, academic integration, and grades. The total effect
of social integration was unexpectedly low, as was the encouragement of others. Nora
concluded that Tinto's model, with its emphasis on integration, functioned less effectively
in this context—Chicano students in a community college setting. Instead, the strength of
institutional and goal commitments called for greater efforts aimed at increasing students'
level of commitment. This study is commendable for its look at a different population and
its more complex definition of retention. A low response rate (23 percent) is potentially
problematic, however.

In a subsequent work, Nora (1990) studied the impact of financial aid on the
retention of a similar population. He used a sample of 170 Chicano students in one
community college in Texas, all of whom had received financial aid. Retention was again
a latent variable; it was composed of semesters enrolled, credit hours accrued, and
credentials earned between 1982 and 1985. Independent variables included noncampus-
based financial resources, high school grades, financial need, campus-based resources, and
academic performance. No measures of institutional or goal commitment or integration
were included. Together, the measures Nora included accounted for 76 percent of the
explained variance in retention. Pell Grants (noncampus-based resources) had the strongest
direct and total effect on persistence, but campus-based resources were also very important.
Thus, Nora demonstrated convincingly with this sample how critical financial aid can be to
Hispanic community college student retention and validated other research which had
shown the importance of Pell Grants. The study is significant for its examination of
Nora, Attinasi, and Matonak (1990) expanded upon Tinto's work by testing a model of retention that included variables identified as important in an earlier qualitative study. Added to Tinto's basic model was a measure of "getting ready" that was based on early expectations about going to college and prematriculation on-campus experiences. Encouragement by significant others was also included. Retention was mathematically defined on the basis of semester hours attempted and earned and total number of semesters enrolled, thus allowing for partial dropouts and stopouts. In this study, college freshmen enrolled in developmental education courses in a large multi-campus community college were followed over a three-year period. Although the response rate was low, a follow-up of a sample of nonrespondents revealed no important differences. Overall, the causal model fit the data. Academic integration proved to be an important predictor, as did precollege schooling. Social integration had a direct negative effect on retention, possibly due to the population and institutional type. The encouragement of others had minimal effect on retention. An unexpected finding, given the initial qualitative work and intuitive expectations, was that "getting ready" behavior negatively affected persistence in this academically disadvantaged population. The authors offered a possible interpretation, suggesting that those with higher levels of "getting ready" behaviors might actually be more drawn to a four-year institution. However, this explanation seemed weak, leaving a puzzling conclusion. Another puzzling finding in this and other studies by Nora is the relative unimportance of encouragement by others. This finding differs from the importance placed on support and approval in Bean and Vesper's (1992) student
dependency theory and in Metzner and Bean’s 1987 study of nontraditional student attrition. Possibly differences in populations studied or in variable definitions produced these results. Nonetheless, they do point to the need for further research.

This general line of inquiry regarding the impact of finances on student persistence continued in a study at a large public urban commuter institution (Cabrera, Nora, & Castaneda; 1992). The study incorporated all variables in Tinto’s student integration model and added indicators of financial aid received and satisfaction with financial aid. Persisters were students who reenrolled the year after their initial enrollment. The sample was confined to 466 full-time, new freshmen who were under 24, U.S. citizens, and not married. Overall, the model accounted for 47 percent of the variance in persistence, and all variables were found to be significant contributors. Intent to persist had the highest total effect on actual persistence, but financial aid received also had high total effects, although entirely through intervening variables. Financial attitudes had the least important (but significant) effects. This study adds to the evidence showing the importance influence financial aid can have on persistence and confirms the usefulness of existing models of student attrition, at least for a traditional-age population. Because the sample was under 25, the model’s effectiveness with older students was not tested.

Viewing persistence from a different perspective, Nora and Rendon (1990) studied factors influencing community college students to transfer into four-year institutions. They again used a model based on Tinto’s work, but defined the dependent variable in terms of predisposition to transfer. Also, their academic integration measure had indicators for academic perceptions, perceptions of transfer, transfer behavior counseling, and academic behavior. The sample was composed of 422 Hispanic and 147 white students at six
community colleges in the southwest. The variables accounted for 65 percent of the explained variance in predisposition to transfer, and in general, the model was supported. The most important factors affecting predisposition to transfer were academic and social integration, initial commitments, and parents' educational attainment. All had positive effects. Interestingly, ethnic origin did not have a significant effect, although the authors speculated that separate analyses might have showed differences in the persistence process. No interactions were included in the analyses conducted. Nora and Rendon's study makes an important contribution to the literature on persistence inasmuch as the transfer function of community colleges has been criticized heavily but researched little. Future research needs to examine actual transfer behavior rather than expectations and plans, however.

Tinto's model has motivated numerous other persistence studies. Anderson (1981, 1988) combined a status attainment perspective with Tinto's model and utilized NLS-72 data to study college attrition and educational attainment. Anderson's 1981 study modeled college persistence for two time periods. Persistence from the first to second year was hypothesized as a function of background variables (SES, sex, race, religion, ability, high school curriculum and grades, parental educational aspirations, peer plans, 1972 educational and occupational aspirations, academic self-concept, and college type), employment, college grades, and college integration. A sample of 5,309 was used for this analysis. Persistence from the second to third year added to this model the encouragement and discouragement of peers, residence, and 1973 occupational and educational aspirations (N=4,004). Anderson's primary interest was in the effects of college type, employment, and residence. Hours worked had a significant negative total effect on persistence between the first and second years, and college type had a significant total effect, with students who began in
four-year institutions being more likely to persist. Academic performance significantly affected both integration and persistence, and integration also directly affected persistence. Persistence between the second to third year continued to be affected by employment and college type. Residence also had a significant negative effect for students living off campus. Other important influences included peer discouragement of work and vocational schooling (which affects achievement goals), academic performance, integration, and educational and occupational goals. Among this study's strengths are its national sample, comprehensiveness, and consideration of higher education persistence rather than only institutional persistence. Its measure of academic integration is weak, however, and the study explained only a small amount of variance. Anderson recommended that additional institutional characteristics be studied to examine their impact on educational attainment, and her 1988 study took these factors into consideration.

Using NLS-72 data again, Anderson (1988) examined many of the same variables that were part of her 1981 study. In addition, the 1988 study integrated college-level data including degrees offered, vocationalism, social status, presence of low-income and minority students, ability composition, selectivity, expenditures, residentiality, and part-time attendance. As an alternative to academic and social integration, for which strong measures were not available, Anderson included information on nonstudent roles (hours employed, campus residence, and marital status). Educational attainment was operationally defined as level achieved seven years out of high school (1979). Separate analyses for men and women were conducted. Early goals were found to be the strongest background factor that predicted attainment, particularly for women, but SES also had a lasting effect. Nonstudent roles (e.g., spouse, employee) were found to be detrimental to attainment, especially for
women. In addition, the study confirmed other research findings (Tinto, 1987; Astin, 1975) that suggest the importance of opportunities for involvement. College context had significant direct effects for men but not for women, interestingly; rather, for women, the effects of college SES, quality, and integration were mediated through involvement. Like the 1981 study, Anderson's 1988 research is methodologically sound and comprehensive. Its thoroughness presents challenges in drawing conclusions and interpretations, however, because of the number of variables and structural equations included.

Also using NLS-72 data, Munro (1981) tested the Tinto model with a sample of full-time students who enrolled in four-year colleges in 1972 (N=6,018). She developed path models to predict institutional persistence as well as persistence in higher education. Academic integration had a more important impact on persistence than social integration, although Munro, like Anderson, had to use a weak measure of academic integration due to data availability. Goal commitment had the strongest total effects, however. The four variables directly affecting higher education persistence were institutional persistence, academic integration, goal commitment, and high school grades. Munro's results supported Tinto's contentions about the importance of goal commitment but did not support his hypothesized relationships between academic integration and goal commitment and between social integration and institutional commitment. In addition, Munro noted that only about 14 percent of the variance in persistence was explained despite including many variables considered important in the persistence process.

Williamsom and Creamer (1988) used High School and Beyond data to replicate Munro's 1981 study in another test of Tinto's model. An important difference from previous research was their operational definition of dropout; students had to be inactive for
20 months in order to be considered a nonpersister. Additionally, the researchers included both community college students and four-year college students. Results showed consistency with previous research but some differences from Munro’s study. Goal commitment was the single most important predictor of persistence for both two-year and four-year student groups. Social integration was not important for higher education persistence for two-year college students, although it did have a direct negative effect on institutional persistence for this group. Academic integration had direct positive effects on institutional persistence for both groups but did not have a direct effect on higher education persistence for four-year students. Contrary to Tinto’s model, Williamson and Creamer’s research did not find any significant effects of institutional commitment, possibly as a result of definition. Also, the researchers found more significant effects of background variables that persistence literature indicated. Williamson and Creamer speculated that differences between their study and other research were quite possibly due to the operationalization of persistence. In addition, they suggested that while Tinto’s model worked relatively well in explaining institutional persistence, it was less effective in predicting longer-term persistence within higher education.

Stage (1989) employed Tinto’s model to study institutional persistence among 313 students in a public institution. The research incorporated background variables, initial goal and institutional commitments, academic and social integration, and later commitments, and persistence was defined as following semester registration. Stage also included a measure of motivational orientation; students were categorized as being enrolled for certification, community service, or cognitive purposes. The persistence process varied by student motivation, Stage found. For example, for students in the certification sub-group, academic
integration and later institutional commitment were the most important predictors of persistence. Social integration had the biggest effect on those students enrolled for community service purposes. Only the results from the community service group came the closest to matching Tinto's model. Overall, Stage suggested that psychological characteristics such as motivation could be used to develop more homogeneous student samples in order to avoid the confounding effects that can occur with extremely heterogeneous groups. Stage's focus on student goals is an important contribution to the persistence literature. Her recommendations support this study's decision to take student goal (i.e., seeking an associate or baccalaureate degree) into account in sample selection.

**Other approaches and models.** Alexander Astin's (1975) approach differed from Tinto's, but his results were quite consistent. Drawing from a multi-institutional data base of Cooperative Institutional Research Program (CIRP) data, Astin studied dropout behavior of 1968 freshmen who aspired to earn a bachelor's degree. He found that academic background, particularly low high school grades, was significantly related to dropping out of college. Other important predictors of dropping out included low degree aspirations, having Protestant parents (in comparison to Jewish), concern about finances, poor study habits, and lower levels of parental educational attainment. Having a job on campus and living on campus had positive impacts on persistence. A match between the social background of a student and others within the institution was found to be important as well. Astin elaborated on the concept of involvement in later work (e.g., 1977, 1984), defining involvement as "... the amount of physical and psychological energy that the student devotes to the academic experience" (1984, p. 297). He considered involvement to be a multidimensional concept encompassing factors such as place of residence, involvement
with faculty, familiarity with professors, verbal aggressiveness, academic involvement, involvement in research, student government, and athletic participation. Astin posited that students showing less involvement are least likely to demonstrate desirable college outcomes, including completion. Astin's involvement notion is very comparable to the social and academic integration ideas of Tinto. An important question for the current study, however, is: How relevant is the concept of involvement for adult students? Because the CIRP data set includes only new, full-time freshmen students, it underrepresents adult students, many of whom return to school on a part-time basis with some previous college attendance in their backgrounds. Therefore the factors that are so important to students in the CIRP sample may have less relevance to adults.

One critique of Tinto's early model came from Bean (1980), who speculated that goal and institutional commitments should not occur twice in the model. He provided an alternative model that was instrumental in causing Tinto to add the concept of intentions to his 1987 revised model. In his own model, Bean drew upon a theory of employee turnover and suggested that a number of organizational factors influence attrition. These include routinization, development, practical value, distributive justice, communication, and centralization. The model also includes more frequently-used variables, including institutional quality, integration, grade point average, goal commitment, advisor helpfulness, informal faculty contacts, campus job, housing, and major. Background variables are included, as is an "opportunity" measure which assesses the existence of alternative life roles. Satisfaction and institutional commitment are considered intervening variables, and the dependent variable is whether or not the respondent dropped out. Bean tested this model with a sample of 1,171 college freshmen from a midwestern university. The sample
was restricted to traditional-age single white students to control for population homogeneity. Within this group, separate analyses for men and women were conducted. Significant direct effects for women were found for institutional commitment, institutional quality, and routinization. For men, institutional commitment, routinization, satisfaction, and communication were significant predictors. These differences in direct effects and others in indirect effects caused Bean to suggest that dropout had difference explanations for men and women. Explained variance of dropout for women was a relatively high 21 percent, but only 12 percent for men. Satisfaction was positively associated with dropout for men but negatively related for women. Finally, opportunity to transfer or engage in other roles significantly influenced institutional commitment for both men and women (indirectly influencing dropout). Bean recommended adding more intervening variables to the model. Also, he suggested using the model with different groups of students in varied settings in order to assess its generalizability. In a later version that incorporated intention to leave, Bean (1982) was able to explain 50 percent of the variance in dropout.

In 1985, Bean and Metzner developed a conceptual model of nontraditional student attrition. The model shares similarities with Bean's earlier models and with Tinto's models, but has important differences. Background and defining variables reflect less emphasis on parents' educational and socioeconomic levels. The model suggests that background variables affect academic and environmental variables, which in turn may affect each other as well as academic and psychological outcomes. Because of previous research that questioned the relevance of social integration (campus social involvement) for adults, it is omitted from their model. Dropout is the final dependent variable, with intent to leave as an intervening variable. Metzner and Bean tested a slight variation of this model in
1987, using a sample of 624 part-time, freshman commuter students at a midwestern university. About one third of the students were 25 or older. Overall, 29 percent of the variance was explained, and most of the predicted relationships between variables were significant, leading the authors to find the model credible. High school grades, intent to leave, and hours enrolled best predicted dropout. For this sample, external variables (family responsibilities and hours of work) did not significantly impact dropout, although encouragement from others affected dropout indirectly through intent to leave. To achieve consistency with other persistence research, Metzner and Bean included social integration variables in this test of the model, but they were not significant. This study, along with Bean and Metzner's earlier model, has influenced other studies of nontraditional students. However, the study's single institution sample and focus on semester-to-semester dropout rather than a longer-term measure such as degree completion are possible limitations. Also, although the sample was considered nontraditional in the sense that these were commuter students, only a minority were adult students (age 25 or over). While age had the seventh largest total effect on dropout, it was not examined interactively with any other variables, nor was the subset of adult students looked at separately. It is possible that such a sample or analysis strategy would have produced different results.

Bean's very recent work (Bean & Vesper, 1992) proposed a new theory of retention named "student dependency theory." In contrast to Tinto's (1987) use of stages of passage and separation from one's family, Bean and Vesper's theory suggests that students may be most likely to succeed if they have a continued dependence on family, friends, and mentors, and if those influential others encourage success in college. The theory's emphasis is on younger students; for example, parental encouragement and high school
teacher support are included in the model. Testing the model with a small sample (N=160) of full-time freshmen students, Bean and Vesper found significant effects for family and mentor approval and encouragement. This led them to conclude that much of the retention literature had over-emphasized academic and social integration and underemphasized the influence of parents and others on students' success. However, this model does include an academic integration measure (course satisfaction), which was found to be significant. Intent to leave is also included. The $R^2$ for student dropout is a substantial .70. Interestingly, parental socioeconomic status had no significant effects in this study.

Although Bean and Vesper's recent research is specifically aimed at traditional-age students, it appears to have implications for research with adult students. In fact, one of the significant variables included in Metzner and Bean's 1987 model of nontraditional student attrition is outside encouragement, which parallels the measures of parental and mentor support and approval in this student dependency theory. A translation of the theory for adult students would require fuller measures of "outside encouragement" than Metzner and Bean's model included. For example, indicators of the support and approval of family, friends, and employer might be included. Also, the theory's name, while possibly applicable for younger students, may be inappropriate for an older student population. Further, although the role of significant others appears to be important, it might not necessary to create a new theory (i.e., dependency theory) around this line of inquiry. An alternative is to include indicators of support and encouragement in a comprehensive model, as Bean himself (Metzner & Bean, 1987) and others (e.g., Nora, Castenada, & Castenada, 1992) have done.
Overall, Bean has been instrumental in suggesting new ways of thinking about attrition, although still within a path model framework similar to Tinto's. Important contributions are his addition of the "intent to leave" variable, use of employee turnover theories, development of a persistence model for nontraditional students, and more recent research into student dependency theory. However, Bean's reliance on single institution studies and his short-term measure of retention mean that further research is needed to test the generalizability of his findings and to determine his models' applicability to degree completion.

Two very recent studies attempt to build more comprehensive theories of student persistence. In the first, Cabrera, Castaneda, Nora, and Hengstler (1992) compared Tinto's and Bean's models of persistence. Both models examine behavior and attributes over time, include precollege characteristics, and emphasize individual-institutional fit. However, Bean's model includes a stronger focus on external factors and intent to persist than does Tinto's. The comparison study collected data at several times from 466 traditional freshmen at a large southwestern urban institution. Constructs included were intent to persist, family approval, institutional fit, courses, encouragement of friends, opportunity to transfer, academic integration, social integration, institutional commitment, and goal commitment. Students who were enrolled a year after initial entrance were considered persisters. Two different analyses were conducted, one for each model. The student attrition model (Bean's) accounted for 44 percent of the variance observed in persistence, compared to 38 percent for the student integration model (Tinto's). The inclusion of the external factors of parental encouragement, support from friends, and finances explained the first model's better fit. Cabrera et al. found these results consistent with their own previous
studies. They also believed that the models were complementary and somewhat overlapping and thus recommended combining elements of both theories in order to achieve a more comprehensive picture of institutional persistence. Although the research dealt with a traditional age population, the authors’ focus on an integrated model is notable. Their omission of background characteristics such as gender, race, and parents’ socioeconomic level or education is surprising, however. In addition, the low survey response rate (19 percent) resulted in some lack of representativeness.

Nora and colleagues moved closer toward establishing a comprehensive model of retention in a more recent study (Nora, Castaneda, & Cabrera, 1992). This study tested an integrated model that combined elements of Tinto’s and Bean’s theories and the authors’ previous studies, as suggested in the research described above. The model incorporated five exogenous variables: pre-college ability, encouragement, getting ready, hours worked, and family responsibilities. (The variable of hours worked was intended to indicate financial need as well as external demands.) Endogenous variables included academic achievement, academic integration, social integration, and institutional and goal commitment. Spring-to-fall reenrollment constituted persistence. The research was conducted at a large midwestern urban institution with a sample of 897 traditional freshmen students, as defined above. Results showed that the model accounted for 65 percent of the variance in the overall causal model and 52 percent of the observed variance in persistence, and goodness of fit measures provided support for the model. Hours worked had a relatively strong direct negative effect on persistence, although this effect was partly offset by a positive indirect effect. Academic achievement and institutional commitment had the strongest positive effects. Family responsibilities had a negative direct effect on
persistence, but these negative effects were eliminated by larger positive effects on intervening variables, which the authors viewed as encouraging news. Support from others significantly affected several intervening variables, although its total effect on persistence was insignificant. Overall, the authors believed they had demonstrated the value of an integrated framework that incorporated support from significant others and the environmental factors of work and family responsibilities. They suggested that an effective retention strategy should focus on interrelationships between different elements under control of the institution. Because this study, like the previous one, was directed at a traditional student population, the research bears replicating with adult populations to determine if the hypothesized relationships hold. One unexplained omission in this comprehensive model was "intent to leave," which the authors had included in previous research and which has been found by other researchers to be an important intervening variable (e.g., Bean, 1982).

These two studies, along with others by Nora and colleagues (described earlier), have made important contributions to the literature on student persistence. The examination of finances, inclusion of external influences, addition of "getting ready" behavior, and focus on Hispanic students have been useful. The most recent attempt to develop an integrated comprehensive theory of attrition is especially noteworthy. However, because the samples for several studies were limited to students under age 25, the applicability of their findings to adult students is uncertain. In addition, although Hispanic students comprised the focus population in two studies (Nora, 1987, 1990), the other studies did not even include race as a variable, making comparisons between different racial
and ethnic groups impossible. Gender effects were likewise not reported. These limitations are important.

Studies of adult student populations. Of special interest to this research project are persistence studies that have focused on adult students. In comparison to studies of traditional students, research about adult students is limited in quantity and methodological rigor. Research to date has shown that the persistence process for adult students may not have the same explanation as does persistence of younger students. For example, Staman (1979) compared factors influencing persistence for 1314 students in two age groups (17-21 and 22-45) in an urban, commuting institution. He found that Tinto’s congruency model positing the importance of individual-institutional fit was generally supported. However, he also found differences between groups in the specific variables that had significant effects. Job-related factors had a significant impact on the nontraditional students, leading Staman to recommend the incorporation of external influences in persistence studies conducted among adult student groups or in nontraditional college environments. Although they are not included often in models of persistence, factors external to one’s student role and institution may well affect persistence, particularly among adult students who commonly face multiple responsibilities. As noted earlier, Metzner and Bean (1987), in their study of nontraditional students, found that external factors affected persistence indirectly through a student’s intent to leave. Further, outside encouragement was the sixth most important predictor when total direct and indirect effects were considered.

Grosset (1991) also compared retention of younger and older students in a test of Tinto’s model in an urban community college setting. Measuring persistence as continuing in college between spring and fall semesters, Grosset used discriminant analysis to study
differences between persisters and non-persisters. (Sample members who said they had left school due to goal completion were eliminated.) She conducted separate analyses for older and younger students (N=182 and 263, respectively). Most academic and social integration measures had important effects on persistence for younger students. Self-assessment of study skills, personal progress, and cognitive progress were significant predictors of persistence for older students, but other academic and social integration measures were not. Surprisingly, both younger and older students who had dependents were more likely to be persisters than non-persisters. Other external commitments had mixed effects: Off-campus employment had a negative effect on persistence for younger students but no significant effect for older ones, and having friends in school positively affected persistence for older, but not younger, students. Grosset’s study is important for its community college setting as well as its comparison of younger and older students. This comparison demonstrated that research based on adult student samples is likely to find differences from previous research results that have focused so heavily on traditional-age students.

Swift (1987), in an overview of adult student retention, compared research findings regarding the effects of family and job responsibilities on persistence. Limited research has been done in this area. He cited research that suggested that parental influence and support may be important even for adult students. As expected, family/spouse support encouraged persistence, whereas resentment was detrimental. Adult students can provide an important role model for their spouses and children. Data combined from several studies did not reveal an impact of marital status on withdrawal. Regarding employment, Swift found from aggregated evidence across studies that employment could be a cause for withdrawal, although employers could also be a source of financial and moral support.
The broad concept of academic integration has been shown to affect persistence in most settings and student groups, including adult populations. Informal contacts between students and faculty members appear to be critical to traditional-age students (e.g., Pascarella & Terenzini, 1980, 1983; Terenzini & Pascarella, 1977, 1978). Metzner and Bean (1987) considered a somewhat different set of academic variables, looking at study hours, study skills, academic advising, absenteeism, major and job certainty, and course availability. For their nontraditional student sample described earlier, absenteeism and academic advising had relatively high direct and indirect effects on dropout, but other academic variables ranked lower in importance. Social integration has also been shown to have a fairly important effect on persistence for most groups of students, but for adult students, it may be a less meaningful concept. Metzner and Bean found that none of the social integration measures were useful in predicting persistence.

Brown and Robinson (1988), however, discovered that among older male students, those who continued exhibited more social integration. Because so many reentry students in the 1970s were women, little research about adult students explored men's experiences. Brown and Robinson's study was based on interviews with 321 men age 25 or older who completed a target semester at one of the University of Wisconsin's two-year commuter centers. The authors used Tinto's model but incorporated additional variables, including a measure of role conflict. No significant differences between continuers and dropouts existed in personal characteristics, including marital and employment statuses, income, attendance status, and type of degree sought. Discriminant analysis results showed that goal commitment distinguished the two groups most strongly. Other discriminating factors were grades, use of academic support services, informal and formal social integration, and
time committed to achieving goal. (Brown and Robinson cautioned that the number of students reporting formal social involvements was small and thus results showing the positive effects of this variable may be unstable.) Role conflict was a major cause of dropout, the authors stated. Dropouts were very likely to have employment-related interferences with school. Although Brown and Robinson's study was limited to a single institution, its focus on adult males and inclusion of non-student commitments are commendable.

Joseph (1980) examined the effects of socioeconomic factors and motivational orientations on persistence of 353 adult part-time students at North Carolina State University. His study confirmed the importance of professional advancement and cognitive interest in motivating attendance. The major factors students cited in discontinuing were work and family responsibilities and the press of time and cost. Graduate students were more likely to drop out than undergraduates, white-collar workers more likely than blue-collar, and black students more likely than white students. Because this study did not use any multivariate analysis, it is uncertain what effects would have held once other variables were controlled. This represents one weakness in the study.

Although most persistence research is quantitative, Starks (1987) used a qualitative approach to study retention of 17 adult women students in a community college. Another interesting facet of Starks' research was her focus on "exceptional cases." She interviewed students who defied the odds and persisted as well as students who should have persisted but did not. The persisters selected entered community college with low high school grades, SAT/ACT scores, and reading scores. In addition, they were minority students. Conversely, the system leavers had high grades and test scores; by conventional wisdom,
they should have persisted to graduation. Interview results showed that Tinto's concepts of academic and social integration were applicable, but that they had different meanings for this population. Persisters did not earn high grades, as academic integration implies, yet they adjusted their expectations to fit the role demands of their lives. Persisters also had more interactions with faculty members than did system leavers. The latter group earned better grades and had higher self-expectations than the persisters, surprisingly. Possibly they were setting standards for themselves that they found difficult to meet. Social integration appeared to differentiate persisters from leavers, but again, the definition varied from its meaning with younger students. For these adult women students, social integration referred to informal interactions with other students outside of the classroom rather than to participation in campus activities and events. System leavers were likely to avoid contact with peers between classes. Although Starks' results cannot be generalized to other settings without additional research, her findings, and the research approach, are important in bringing a deeper level of understanding to the complexity of adult student persistence. They help point to the limitations of quantitative research, which is much more oriented to the average student than to outliers.

Brenden (1985) used a different approach in her study of retention in a weekend college undergraduate program. She relied on admissions files and transcripts to compare profiles of 165 persisters and 132 nonpersisters. She found that high school class rank influenced persistence rate, with the highest-achieving students in high school persisting at the highest rate later. Cumulative college grades also predicted persistence. Although most students did not take leaves of absence, those who did were actually more likely to persist if they took more than one leave. The use of archival data is a strength of this study.
However, the study's usefulness is limited due to the small number of variables and the lack of any multivariate analysis.

Ashar and Skenes (1993) tested Tinto's model with 25 adult learner classes in management and business at metropolitan academic center. Of particular interest were academic and social integration scores of each class as they related to dropout rates. Classes were used as the unit of analysis. Academic integration indicators were self-reported "desire to learn" and further educational plans. The social integration measure was the proportion of mature managers in each class; the authors inferred that higher proportions of managers resulted in more social interactions, though this assumption was not investigated. The study also included measures of career plan similarities and class size. A multiple regression analysis revealed two significant influences on dropout rate: social integration and class size. Classes with higher proportions of mature managers and smaller sizes lost the fewest students. While this study purportedly tests Tinto's model, the measures of academic and social integration are questionable. For instance, do higher educational goals really reflect academic integration? Does a higher proportion of mature managers indicate higher social integration, or are there other characteristics that mature managers possess that lead to low dropout rates? Also, might differences between instructors have an effect? Better measures were not available, because the data were collected for other purposes initially. Some of these limitations were discussed in part; nevertheless, the authors concluded that the class social environment (as indicated by the presence of mature managers) is critical to student retention. I believe this conclusion was overstated, although it may well be correct. The study points to a neglected line of investigation in the persistence literature: class dropout. An improved understanding of
this phenomenon may enhance our understanding of the overall persistence process for both traditional-aged and adult students.

Results of these studies of adult students raise questions regarding the concept of involvement. How meaningful is it when applied to an adult student population? In a study of 174 adult commuter students at a major land-grant university, Copland-Wood (1986) conceptualized involvement to include attitudes about the institutional environment as well as participation in extracurricular activities and cultural/entertainment events. The author found that most students were not strongly involved in the academic or social life of the institution and did not wish to be, nor did the majority feel they were part of the student body. These students identified services and facilities which would help them feel more connected with the university, including lockers, a commuter student newsletter, and opportunities to interact with faculty/staff. But Copland-Wood’s findings also showed the possibility of a different sort of involvement, a psychological rather than physical one. She hypothesized that students who want to be involved but cannot due to time constraints may have similar persistence and college impact patterns as students who can study in the library, attend campus events, and in general, spend more time on campus. She emphasized the need for longitudinal research and comparative studies to determine whether different forms of involvement are more appropriate for studying adult student persistence. Although Copland-Wood’s study did not examine persistence patterns per se, it adds support to findings that point to differences between younger and older students in the factors that influence persistence.

Overall, the few studies of adult student persistence seem to support the general concepts of academic and social integration, although these terms may be defined
differently for adult learners. Research results have been mixed regarding the importance of external commitments and influences. It may be that these factors can have both positive and negative impacts, depending upon the situation. The effects of parenting responsibilities have been investigated less than employment and marital status. The literature on the adult student population is sparse, and, in addition, less rigorous than the body of research on traditional-aged students.

**Associate degree students.** The present study is unusual in its focus on degree completion for both associate degree and baccalaureate degree students. The primary thrust of the persistence literature has been on traditional students in four-year residential institutions. Most model development and testing has occurred in this setting, although researchers acknowledge that these models may be less effective with other populations (Tinto, 1987). Moreover, persistence studies that have been conducted in community college settings do not take student goals into consideration. More than other higher education institutions, community colleges attract students with varied purposes in attending (Adelman, 1992; Voorhees, 1987). Adelman’s analysis of NLS-72 data showed that of the students enrolled in community colleges between the ages of 30 and 32, 39 percent indicated they were considered special students and another 31 percent had no degree objectives. His examination of student transcripts confirmed the incidental use that students make of community colleges. Thus, studies that examine persistence among a cohort of community college students may portray a different (and probably a more negative) picture than they would if the sample were limited to degree-seeking students, as it is in the present study. Further, it should be noted that not all associate degree students are studying
in community colleges; some are enrolled in technical or proprietary schools, which implies that literature on community colleges may not be totally applicable.

Adelman (1992) compared the associate's degree to an over-the-counter stock average in terms of how little it is known, relative to a bachelor's degree. Although this may be true, the associate degree has been in existence since around 1900 (Parnell, 1985). Koltai (1984) reported that in 1970, about 18 percent of all degrees awarded were associate degrees, and that figure grew to 21 percent by 1980. He noted that the degree signifies a clear accomplishment for many students, particularly those who lack confidence in their academic abilities. While some students consider the associate degree to be terminal, others transfer immediately into baccalaureate programs upon graduation. The economic value of an associate degree is debatable. Koltai's study indicated that respondents from business organizations did not believe that the degree had strong monetary potential. Cohen and Brawer (1989) also supported this position. However, Adelman found that a higher percentage of NLS-72 sample members with associate degrees were in professional positions than persons who had attended four-year colleges but had not actually graduated.

Associate degree students typically present a different profile from baccalaureate students (assuming that students in community colleges are similar to students in other two-year settings). They tend to be older, and many are part-time students (Voorhees, 1987). Academic preparation may be weak. In addition, minority students are overrepresented, according to Wilson (1986). Whereas 33 percent of white students enroll in community colleges, 41 percent of all black students and a full 55 percent of all Hispanic students are in community colleges rather than in four-year institutions.
In terms of degree completion, minority students are at a disadvantage (Wilson, 1986). In 1980, white students comprised 75 percent of the community college student population but 85 percent of all associate degrees awarded. In contrast, figures for black students were 13 and 8 percent, respectively.

As described earlier in this chapter, Pascarella and Chapman (1983) and Chapman and Pascarella (1983) compared the persistence process for students in two- and four-year institutions. They found distinct differences, such as the lack of importance of social integration and institutional commitment in two-year settings. They also found that different college types had their own patterns of social and academic participation.

Using the American College Testing program’s Student Opinion Survey, Voorhees (1987) studied community college persistence for a sample of 369 students in a suburban institution. Logit models showed that gender, purpose for enrolling, and intention to return influenced persistence, which was defined as enrollment within the following two semesters. Minority status did not affect persistence, nor did academic integration (measured as grades, informal interactions with faculty, and weekly study hours). Voorhees commented that because his study examined a cross-section of students, other studies should consider more distinct sub-populations. The differences from results of persistence studies in four-year settings are notable and point to the importance of separate analyses and models for groups such as two-year students.

Okun, Ruehlman, and Karoly (1991) applied investment theory to persistence in community college students. They focused on the psychological factors of satisfaction, alternative value, and investment (stake in the organization). They expected these predictor variables to have direct effects on intent to continue and indirect effects on actual
persistence. The sample of 421 students was drawn from a community college and was limited to students who attended part-time and also worked. Control variables included age, gender, ethnicity, credit load, hours working, responsibility for children, finances, encouragement from others, opportunity to transfer, academic advisement, positive affect toward college, and semester grade point average. Discriminant analysis was used to test the model. With intent to continue included, the analysis showed that intent to stay, semester grades, and investment defined the discriminant function. Interestingly, life situation variables such as age, number of children, and hours worked had minimal ability to distinguish persisters from nonpersisters. Although the discriminant function analysis and variables included make comparison to other studies difficult, Okun et al.'s study is notable for examining the effect of psychological factors and for its focus on community college students.

Overall, few persistence studies have specifically examined community college populations, and virtually none have limited the studies to adults pursuing associate degrees. The present study stands apart from much of the persistence literature in this regard.

**General comments.** One difficulty in studying persistence is its operational definition. Early studies tended to define persistence simply as freshman-to-sophomore retention. Lenning et al. (1980) refined the measurement of persistence to include four distinct groups of students: persisters (including graduates), stopouts, dropouts, and goal attainers. The latter designation recognizes that students may drop out of school due to goal attainment. Another group of students who present questions of categorization are transfers. From an institutional perspective, students transferring elsewhere may be
considered dropouts. However, from a system-wide perspective, which is the one I use, transfer students who continue their education are considered persisters. Most studies have examined institutional persistence, and this is the approach Tinto (1987) and Astin (1975) emphasized. Another issue when dealing with adult students is the "stopout" phenomenon; using a retention measure that allows for intermittent enrollment is important.

Tinto (1987) noted that many researchers study the persistence of degree-seeking students between first and second semester or between years because such a definition is more clear-cut. However, several studies have measured retention differently. In a study of adult male students, Brown and Robinson (1988) considered persisters to be men who were continuing or had completed their education two years after the initial target semester. Munro (1981) defined two types of persistence: institutional and higher education. The latter group included those students who completed a four-year college program or were still enrolled. Anderson (1981) used a similar definition, considering persistence as enrollment in an academic program in an institution two consecutive years. Continuous enrollment was not necessary, nor was enrollment at the same institution. Williamson and Creamer (1988) attempted to capture stopout behavior in their definition. Students had to have been out of higher education for at least 20 months before they were considered dropouts. Clearly, the dependent variable measure affects the research results.

A similar situation exists with independent variables. Explanatory variables can be grouped into broad categories that include student characteristics, initial plans or commitment, financial factors, educational experiences, organizational characteristics, external factors, outcome variables, and later commitments and intentions. The literature on persistence shows great variation in which categories and individual variables are included.
and how they are defined and measured. Several studies that involved secondary data analyses used whatever measures were available in the original data. For instance, Munro (1981) defined academic integration as a function of grade point average and overall satisfaction with intellectual development. The quality of the measure can obviously have an important effect on the results obtained.

In general, research results have supported Tinto's model, with its emphases on commitments and college experiences and on person-environment interaction. Bean's inclusion of an "intention" measure has also received support, as has Astin's involvement concept. Nora et al.'s 1992 attempt to develop a comprehensive model demonstrated the importance of these researchers' findings. Pre-college characteristics appear to have more indirect than direct effects on persistence via commitments, integration, and intentions. This finding might be expected, given the timing of events in the life course. Perhaps most important, empirical work has shown that the persistence process differs for distinct groups of students or for differing institutional types.

Despite the massive literature on college student persistence, unanswered questions remain and criticism of current theories and research continues to trigger new approaches. For example, Bean and Vesper (1992) developed their student dependency theory as a critique to Tinto's 1987 discussion of stages of departure and the need for separation. Recently, Tierney (1992) argued that the underlying assumptions governing much persistence research (i.e., that integration is an important goal) miss the point. He suggested "... moving away from a model of integration and assimilation and toward a framework of emancipation and empowerment. (p. 616)" Pascarella and Terenzini (1990), reviewing twenty years of research on how college affects students, pointed to the need for
future research to include more qualitative studies, to focus more heavily on nontraditional students and two-year institutions, and to pay more attention to indirect and conditional effects. My emphasis on adult students and both associate and baccalaureate degrees speaks to some of the authors' recommendations.

Critique of Literature

The literature reviewed for this study illustrates the evolution of educational attainment and, particularly, persistence research. Through almost three decades of research, we have a much clearer picture of the factors that affect attainment and persistence. As studies have been done in a variety of settings and with a variety of populations, the accumulated results allow us to speak with more confidence about the educational attainment process. Nevertheless, research to date can be critiqued on several grounds.

One problem lies in the assumptions that have often been made in the status attainment and life course traditions. In both bodies of literature, a normative progression from adolescence into early adulthood has been assumed by most researchers. Formal education is often presumed to be completed prior to occupational entry and family establishment, although evidence suggests that in reality, a variety of life patterns exist.

An increasing number of studies have illustrated the existence of differing life patterns. However, in general, the complexity of adult lives is still not recognized sufficiently. Often persons are characterized by "primary activity," which precludes the possibility of being both a homemaker and a student or a student and an employee. Role combinations typify most adult lives and if possible should be considered in studies of adult educational and occupational achievement.
The choice of dependent variable in studies of educational attainment might be reconsidered. Most often, years of completed education constitute the dependent variable. However, this choice fails to recognize the added value that an earned credential such as the associate or baccalaureate degree holds. Degree completion might be a more appropriate mark of attainment in some cases.

Educational attainment models that do not include institutional characteristics such as type of institution may be omitting an important set of explanatory variables. Just as the status attainment tradition has been criticized for over-emphasizing individual variables, some educational attainment research has neglected structural factors in the form of institutional characteristics that may affect student outcomes.

Like educational attainment research, persistence literature is very well developed. However, because much of the literature has dealt with younger students, most approaches have not effectively conceptualized and tested variables that are important to adult students. External factors are not particularly well delineated, and some concepts such as involvement and social integration appear less relevant to adults, at least as they have been traditionally operationalized.

One concern is the lack of national level, multi-institutional data on adult student persistence. Because so many studies are institution-specific, they limit the applicability of the findings for policy implications. In addition, they fail to capture persistence within the higher education system. This lack is particularly problematic for adult students, many of whom have attended more than one institution. Although they might have left an institution, they may be stopouts or transfers rather than dropouts.
This study addresses several of the limitations noted above. First, I make no assumptions of a linear, normatively ordered life progression. Second, the study not only allows for multiple roles, it brings these roles to the foreground. Further, the dependent variable speaks to the importance of degree completion but also provides for other possible outcomes (i.e., active and inactive student status). My focus on adult students is particularly important, given the lack of research on the factors affecting their degree progress. Also, conducting separate analyses for associate and baccalaureate degree seekers is an important contribution, as is tracing the effects of race and gender. Finally, the longitudinal approach and national scope made possible through use of the NLS-72 data overcome limitations present in other institution-specific research on adult students.

Summary

These literature streams all add to the perspectives and model used in the present study. The life course perspective focuses attention on the timing and order of important life events and the determinants and consequences of unusual life patterns. It also underscores the importance of the areas of work and family and the need for a longitudinal approach to research. Many of the adult students who are the subject of this study have such patterns. Literature on adult students in higher education places the present study within the context of a broader field of inquiry. College participation must be viewed in the context of other responsibilities that are commonly part of adults' lives in their late twenties and early thirties. Status attainment models are instrumental in delineating important influences on educational attainment. Even more critical in this regard is research in college student persistence, including studies that have focused on adult students or students enrolled in two-year colleges. I draw from these bodies of literature as I
examine factors that affect earning an associate or baccalaureate degree beyond the traditional age.

Chapter III draws from these literatures in modeling progress toward degree completion. It presents the data and methods used to explore the relationship between background variables, family and employment responsibilities, and adult student degree completion outcomes.
CHAPTER III
DATA AND METHODS

In this chapter I specify the empirical model used to study the relationship between family and employment responsibilities and progress toward associate and baccalaureate degree completion. Literature on educational attainment and college persistence in contributes heavily to this model, and the life course literature provides the perspective to consider the relationship between the student role and other adult roles. In the sections that follow, I discuss the data set and specific samples used in this study. I then describe the dependent variable and the model used for this study, including operational definitions of each independent variable. I conclude the chapter with a description of data analysis techniques.

Data Set and Sample

This study uses data from the National Longitudinal Study of the High School Class of 1972 (NLS-72), collected under the auspices of the National Center for Education Statistics. NLS-72 was designed to observe the educational and vocational activities, plans, aspirations, and attitudes of young people after they leave high school. It makes it possible for student experiences and characteristics to be matched with later outcomes. The base year survey sampled high school seniors in all public and private schools in the United States in the 1971-72 academic year, with some exclusions (e.g., schools for the mentally or physically handicapped and for the legally confined). A stratified, two-stage probability
sample was initially used, with schools and then students as the sampling units. The base year survey collected a wide range of information on such areas as ability, socioeconomic status, home background, community environment, significant others, school and work experiences, aspirations, plans, and opinions. The period during which NLS-72 sample members graduated from high school was marked by the ending of the Vietnam War, growth in the women's movement, and major change in higher education. Colleges were abandoning their "in loco parentis" policies and revising curricula, and community colleges were growing quickly.

The first follow-up study was conducted beginning in October 1973. Added to the base year sample were 4,450 persons from 257 additional schools that were unable to participate earlier; these persons were asked to provide information on a few key base year variables but did not complete an entire student questionnaire or take ability tests. With these additional sample members included, the total NLS-72 data base numbered 22,652. Subsequent follow-up surveys were conducted in 1974, 1976, 1979, and 1986. Response rates were in the 85-95 percent range for each follow-up study. Panel members were retained in the study even if they failed to respond to one or more previous rounds; thus, missing data problems occur from both item and survey nonresponse. Further details about the base year through fourth follow-up studies may be found in the manual, National Longitudinal Study: Base Year (1972) Through Fourth Follow-up (1979) Data File Users Manual (Riccoibono, Henderson, Burkheimer, Place, & Levinsohn, 1981). The fifth follow-up (1986) round is described in a separate manual, The National Longitudinal Study of the High School Class of 1972, Fifth Follow-up, Data File Users Manual (Tourangeau, Sebring, Campbell, Glusberg, Spencer, & Singleton, 1987).
Sample members in the fifth follow-up (1986) averaged 32 years of age and had been out of high school 14 years. This follow-up solicited the detailed educational, work, and family histories that I draw on heavily for the current study. Due to budget constraints, the 1986 study included only a subset of the original sample; a total of 14,489 participants were surveyed, and 12,841 actually responded. The sampling process retained some groups more fully because of special policy relevance: Hispanics; teachers (or potential teachers) who participated in the fourth follow-up; persons with at least a four- or five-year college degree; and persons who were divorced, widowed, or separated from their spouses, or never-married persons. A weighting process allows the data to be considered nationally representative.6

Two different samples were used for this study: associate degree seekers and baccalaureate degree seekers. Associate degree seekers had to meet each of the following conditions:

1. Had not earned a two-year academic or vocational degree or higher as of 1979.
2. Participated in Fifth Follow-up Study in 1986.
3. Enrolled in courses for academic credit between 1979 and 1986, the period covered by the Fifth Follow-up.

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6 In addition to these surveys, a 1984 Postsecondary Education Transcript Study (PETS) collected college transcripts from each postsecondary institution reported by sample members in the 1979 follow-up study. Adelman (1991, 1992) strongly recommends using the transcript study as the primary source of college attendance data. As he notes, "Transcripts may be difficult to interpret at times and are occasionally missing key pieces of data, but they neither exaggerate nor forget" (1992, p. 3). However, the transcript collection was based on just those institutions attended as of the 1979 follow up. Thus any new institution attended after 1979 is not included in the PETS data. Because many adult students enroll in institutions they had never previously attended, this was considered a serious limitation of the PETS data. Given the focus of this study, it is important to capture as complete a record of adult attendance as possible. Therefore the PETS data set was not used.
(4) Sought a two-year academic or vocational degree at the most recent or second most recent school attended since 1979.

(5) Were white, black, or Hispanic. 

The sample of baccalaureate degree seekers met these conditions:

(1) Had not earned a baccalaureate degree or higher as of 1979.

(2) Participated in the Fifth Follow-up Study in 1986.

(3) Enrolled in courses for academic credit between 1979 and 1986.

(4) Sought a baccalaureate degree at the most recent or second most recent school attended since 1979.

(5) Were white, black, or Hispanic.

Students could belong to both samples if they met each set of criteria, and about 75 students did so. Once each sample was defined, cases were checked for particular inconsistencies, and this process resulted in further modifications to each sample. (See Appendix A.) Final unweighted sample sizes were 526 associate degree seekers (221 males, 295 females) and 721 baccalaureate degree seekers (369 males, 352 females).

Dependent Variable

Previous literature on educational persistence and attainment has operationally defined the dependent variable to measure progress and achievement in several ways. Educational attainment studies (e.g., Anderson, 1988; Sewell & Hauser, 1975) tend to use measures of total years of education or levels of completion, ranging from high school to an advanced degree. As noted earlier, many persistence studies consider freshman-to-sophomore retention as the dependent variable. Those who continue at the same institution

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7 Native American and Asian American adult students were not included in the associate or baccalaureate student samples due to their low numbers. Including them would have made estimation of race effects impossible.
are persisters; those who do not are dropouts. This definition is useful in studying institutional persistence, but is less meaningful in examining overall persistence within higher education. In the latter case, transfer students must be considered persisters rather than dropouts.

Given this study's focus on adult students and its national data base, the dependent variable emphasizes degree progress or completion rather than institutional retention. Also, because adult students are more prone to stop out than their younger counterparts, it is important to allow for noncontinuous enrollment.

The dependent variable of progress toward degree completion by 1986 is operationalized as having three possible outcomes: degree completers, active degree-seekers, and inactive noncompleters. Students' 1986 degree progress was determined using two pieces of information. First, the NLS-72 Fifth Follow-up survey (in 1986) asked students if they had completed all the requirements for their degree. Second, the survey also included attendance dates for each episode of postsecondary schooling. Using this information, I categorized students into one of these outcome groups:

1. **Degree completers.** Students who indicated that they had completed all the requirements for an associate or baccalaureate degree by the 1986 follow-up study were coded as completers.

2. **Active degree-seekers.** Students were classified in this category if they said they had not yet completed all the requirements for the degree they were seeking and had been enrolled in college since January, 1985. (This date was at least one year prior to the 1986 follow-up survey, depending
upon when persons responded. The one-year figure was chosen to allow for intermittent attendance.)

(3) **Inactive noncompleters.** This outcome was applicable if students had not completed degree requirements and had not been enrolled in college since January, 1985 (at least one year). These students were not labeled "dropouts," due to the permanency which that term implies. Adult students' tendency to stop in and out argues against the use of the term "dropout."

As stated, separate analyses are undertaken for two groups of students--associate and baccalaureate degree seekers. I constructed the dependent variable in the same way for each group of students, although the degree goal differed. By restricting analyses to students seeking associate or baccalaureate degrees and constructing the dependent variable in terms of progress toward or accomplishment of the degree goal, the present study successfully takes into account students' goals in attending college. This distinction is critical because progress toward degree completion is a meaningless construct for persons taking college courses for other reasons such as personal development.

**Overview of Model**

Educational researchers have developed a number of comprehensive models of student persistence as a result of extensive studies throughout the past two decades. Most models have attempted to explain persistence for traditional-aged students who are new entrants within a single institution. However, in this study, the research focus and population of interest required a modified approach. The dependent variable, progress toward degree completion, differs from the short-term retention measure frequently used in
persistence studies. Further, my choice of independent variables is influenced both by my primary interest in family and employment responsibilities and by data availability. Moreover, the present study is not restricted to a single institution. Thus, although the final model used in this study resembles other persistence models, it has distinct differences as well. I begin with an overview of the model to be tested and follow this with a detailed discussion of the independent variables.

Educational attainment and persistence research has identified numerous influences on a student's progress in school and eventual level of completion. These factors may be grouped into several major categories: family background, individual demographic and psychological characteristics, pre-college schooling experiences and influences, goals and commitments, intentions, institutional characteristics, experiences in college, and factors external to the student role. "Push" and "pull" factors may combine to determine outcomes. For some students, the factors that pull them toward remaining in school outweigh those that push them away, whereas push overpowers pull for others. Factors connect in complicated ways that appear to differ by institution and student population.

The most well-developed persistence models attempt to comprehensively explain the causal process leading to a student's withdrawing from or remaining in college. This study's goal is not a comprehensive depiction of degree completion, however. Instead, its intent is to look more closely at the relationship of family and work roles and student outcomes. In addition, data availability shapes this study, just as it does any secondary data analysis.

Building on the tradition of status attainment and college student persistence research, this study conceptualizes progress toward degree completion as a function of
several background characteristics: race/ethnicity, parental socioeconomic status, high school program, college attendance prior to October 1973, and degree plans as of 1979. In my first round of analyses, the model includes only these five background variables, all of which have been shown to be influential in educational persistence. No formal hypotheses are tested for these control variables.

Because my focus is on adult students between the ages of 25 and 32, and this represents a stage in the life course characterized by career and family establishment, it is also important to include information on work and family roles in the analyses. I also include an indicator of enrollment pattern (i.e., continuous or intermittent) since enrollment continuity may be expected to result in faster progress. Thus, I next analyze a second set of models which include six proximate or intervening variables that are expected to mediate the effects of the control variables on 1986 degree progress. The intervening variables correspond with each student's period of enrollment as an adult student. I test specific hypotheses for the intervening variables.

Both the partial and full models are tested with two samples of students: associate and baccalaureate degree seekers. In addition, because previous research has shown differences in the persistence and status attainment process for males and females, I conduct separate analyses by gender. (As noted later, preliminary analyses with the NLS-72 samples used in this study also supported the rationale for separate analyses.) Moreover, I estimate partial and full models for male and female associate degree students and for male and female baccalaureate degree students. These tests examine similarities and differences

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8 As described in more detail later, each student's "period of enrollment" is bounded by the earliest and most recent dates of enrollment during the 1979-1986 time frame of the Fifth Follow-up survey.
between the four groups. Table 1 displays the full model tested in this study, with the five background variables, six intervening variables, and dependent variable of degree progress.
### Table 1. Model of Degree Progress

<table>
<thead>
<tr>
<th>Background (control) variables</th>
<th>Intervening variables</th>
<th>Dependent variable</th>
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</thead>
<tbody>
<tr>
<td>Race</td>
<td>Relationships</td>
<td>Degree progress</td>
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<tr>
<td>Parental SES</td>
<td>Childbirth</td>
<td></td>
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<tr>
<td>High school program</td>
<td>Age of youngest child</td>
<td></td>
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<tr>
<td>College attendance (prior to 1973)</td>
<td>Employment pattern</td>
<td></td>
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<tr>
<td>1979 degree plans</td>
<td>Number of jobs</td>
<td>(1986)</td>
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<tr>
<td></td>
<td>Enrollment pattern</td>
<td></td>
</tr>
</tbody>
</table>

### Independent Variables

Table 2 summarizes all background and intervening variables included in the models, as well as the dependent variable. Variable values and descriptions are indicated, as is the reference category for each independent variable.
Table 2: Variable Specification

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>1 = Degree completers</th>
<th>2 = Active degree seekers</th>
<th>3 = Inactive noncompleters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress toward degree (1986)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>1 = Hispanic</td>
<td>2 = Black</td>
<td>3 = White d</td>
</tr>
<tr>
<td>Parental socioeconomic status</td>
<td>1 = Low d</td>
<td>2 = Medium</td>
<td>3 = High</td>
</tr>
<tr>
<td>High school program</td>
<td>1 = General d</td>
<td>2 = Academic</td>
<td>3 = Vocational/technical</td>
</tr>
<tr>
<td>College attendance (prior to 10/73)</td>
<td>0 = No enrollment in college by 10/73 d</td>
<td>1 = Enrolled in a two-year college by 10/73</td>
<td>2 = Enrolled in a four-year college by 10/73</td>
</tr>
<tr>
<td>Degree plans as of 1979</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For bacc. seekers:</td>
<td>1 = Less than bachelor’s degree d</td>
<td>2 = Bachelor’s degree</td>
<td>3 = Beyond bachelor’s degree</td>
</tr>
<tr>
<td>For assoc. seekers:</td>
<td>1 = Less than two years of college d</td>
<td>2 = Two or more years of college, no degree</td>
<td>3 = Bachelor’s degree or higher</td>
</tr>
<tr>
<td>Relationship pattern during period of enrollment</td>
<td>1 = Married or marriage-like relationship throughout</td>
<td>2 = Nonmarried throughout d</td>
<td>3 = Changed status</td>
</tr>
</tbody>
</table>
**Table 2 (continued)**

<table>
<thead>
<tr>
<th>Childbirth during period of enrollment</th>
<th>0 = No child born during period (^d)</th>
<th>1 = Child born during period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of youngest child at start of enrollment</td>
<td>0 = No child (^d)</td>
<td>1 = Preschool child</td>
</tr>
<tr>
<td>Employment pattern during period of enrollment</td>
<td>1 = Employed full-time throughout (^d)</td>
<td>2 = Other work pattern</td>
</tr>
<tr>
<td>Number of jobs during period of enrollment</td>
<td>0 = Fewer than two jobs (^d)</td>
<td>1 = Two or more jobs</td>
</tr>
<tr>
<td>Enrollment pattern during period of enrollment</td>
<td>1 = Intermittent (^d)</td>
<td>2 = Continuous</td>
</tr>
</tbody>
</table>

Note: \(^d\) refers to the reference category.

**Background (Control) Variables**

Five background variables are included in the model: race/ethnicity, parental socioeconomic status, high school program, college attendance prior to 1973, and degree plans as of 1979. Because these are considered control variables, no formal hypotheses are posed. Background variables are presented in their chronological order of occurrence, beginning with race/ethnicity.
Race/ethnicity. Studies that have incorporated race/ethnicity have found mixed effects when other variables were controlled. In a sample of adult part-time students, Joseph (1980) found that black students were more likely than whites to drop out of college. Metzner and Bean’s 1987 study of nontraditional students at a single institution revealed only indirect negative effects of race through grades and stress. Using NLS-72 data, Vellez (1988) found that nonwhite students were significantly less likely to complete degrees than whites and that race interacted with educational plans. (Nonwhite students with low educational aspirations were more likely to complete degrees than white students, whereas white students were high educational aspirations were more likely to complete degrees than nonwhite students.) Munro’s (1981) study with NLS-72 data found indirect negative effects of being nonwhite on persistence. However, Anderson (1981), also using NLS-72 data but comparing black, white, and Hispanic students, found no race/ethnicity effects on persistence into the third year of college. Thus, even with the same data set, the effect of race depended upon the way in which the dependent variable was defined and analyses conducted. Lowe and Witt (1984) found that race did not have a significant effect on educational attainment, despite a large sample size. However, although Pascarella, Duby, and Iverson (1983) found that race did not significantly predict persistence at one commuter institution, some of the same authors (Pascarella, Duby, Miller, & Rasher, 1981) determined that at another urban commuter campus, dropouts were more likely to be black. Using High School and Beyond data, Williamson and Creamer (1988) found that race had an indirect effect on persistence in higher education in both the two-year and four-year student groups. In a review of persistence literature, Lenning (1982) noted that Hispanic
students are more likely to drop out than students with other racial/ethnic backgrounds, despite controlling for other possible explanatory factors.

Although the effects of race/ethnicity are inconsistent across studies, sufficient evidence exists to suggest that a student's racial/ethnic status may make a difference in educational outcomes. In the present study race is measured as a dummy variable (with white as the reference category,) and the sample is limited to white, black, and Hispanic students. The variable is included in the fifth follow-up study data set.

Some previous studies have included separate analyses by race or have studied just one racial or ethnic group. Nora (1987) found that the persistence process was different for Hispanic students in that institutional and goal commitments were more important and academic and social integration less important than for white students. Tracey and Sedlacek (1987) found that determinants of persistence differed for white and black students, with academic ability being more important for whites and noncognitive factors more important for blacks. However, the relatively small number of Hispanic and black students in the associate and baccalaureate student samples precludes conducting separate analyses by race. I do not state formal hypotheses for race effects, but in general I expect nonwhite students to be at a disadvantage in the degree completion process.

**Parental socioeconomic status.** The status attainment research tradition has clearly demonstrated the importance of one's family of origin in educational attainment. Indicators of family socioeconomic status have included parental education, occupational status, and earnings. Many studies of persistence also control for family background, although both Nora (1987) and Lenning et al. (1980) concluded that persistence studies that examine the

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9 As noted earlier, Native American and Asian American students were excluded due to their extremely small numbers in both samples.
effects of parents' education have found mixed results. In his own study of Hispanic
community college students, Nora (1987) found that parental education had a fairly strong,
direct, positive effect on persistence. Astin (1975) found that parental educational
attainment was positively related to staying in college. Smith and Hooker (1989),
Upchurch and McCarthy (1990), and Wilson and Allen (1987) also found parental
education to be a significant predictor of educational attainment.

Family socioeconomic background has been shown in other studies to be positively
related to educational persistence (Anderson, 1981, 1988; Pascarella et al., 1986;
Robertshaw & Wolfe, 1983; Stoecker et al., 1988; Vellez, 1988; Whitaker and Pascarella,
1992). However, Lenning et al. (1980) noted that the effects of parental income and
occupation may weaken or disappear when other variables are controlled. Nora et al.
(1990) found that family socioeconomic status had only indirect negative effects and no
direct effect on persistence. Pascarella and Terrenzini (1983) concluded that background
factors were relatively unimportant predictors of persistence.

Several studies have demonstrated that the effects of socioeconomic status may be
conditional by race, gender, and/or college type. Stoecker et al. (1988) saw a relationship
between socioeconomic background and persistence only for black male and white female
students. Pascarella, Smart, and Ethington (1986) found that family socioeconomic status
had a direct positive effect on degree persistence for women beginning college in two-year
institutions. Pascarella, Smart, and Stoecker (1989) showed that family socioeconomic
status had a positive direct effect on the educational attainment of black men and a positive
indirect effect for black women. Using High School and Beyond data, Williamson and
Creamer (1988) discovered that family socioeconomic status had no effect on persistence in
higher education in a sample of students pursuing a two-year degree, but had both indirect and direct positive effects for four-year students. They suggested that background characteristics may be more important than institutional ones in examining long-term persistence in higher education.

It appears that parental socioeconomic status may be more clearly linked to overall educational attainment than to institutional persistence and may be more influential to some student populations than others. Further, the indicators used may affect results. Some studies include a composite measure, while others focus strictly on the components of occupational status, education, or income. Interval-level measures are used in some studies, while others use categorical ones. Parental socioeconomic status in the NLS-72 data set is measured as a weighted index of father's education, mother's education, father's occupation, family income, and household goods in 1972 (i.e., the senior year in high school). This composite variable is then assigned to one of three categories, depending on whether the score fell into the lower, middle two, or upper quartile range (Riccobono, Henderson, Burkheimer, Place, & Levinsohn, 1981). I use low socioeconomic status as the reference category.

Unlike most studies of persistence, this study is concerned with the importance of parental socioeconomic status on degree progress for older students. Status attainment research suggests that the effects of one's family of origin continue into adulthood and thus may influence the likelihood of degree completion. Possibly such influences may occur through one's educational aspirations, early career choices, and financial resources. Because family socioeconomic status is being employed as a control variable, no specific
hypotheses are being tested, although my informal expectation is that students from higher SES backgrounds are most likely to succeed.

**High school background.** High school background has been shown to be an important determinant of later educational success in a number of studies. Astin's (1975) CIRP study found that a student's past academic record, along with academic ability, was the strongest predictor of persistence. Likewise, status attainment research has shown the importance of high school academic performance. The effect of high school grades on persistence in college was also demonstrated by Bean (1980), Dey (1990), and Nora (1987, 1990). Even among nontraditional students, high school grades had an important total effect (Metzner & Bean, 1987). These results indicate that it would be useful to control for high school grades in this study; however, the amount of missing data for this variable prevents its inclusion.

Fortunately, another indicator of high school background has more complete information: high school program type. This indicator has also been shown to influence later degree completion. Anderson (1981), Bourque and Cosand (1989), Haggstrom et al. (1986), and Vellez (1985) differentiated between college preparatory curriculum and vocational or general programs. As expected, the most successful students in college were those who followed college preparatory programs in high school. Wilson and Allen (1987) also found that high school curriculum significantly affected educational attainment in a sample of black youth. Using NLS-72 data, Rosenbaum (1980) showed that high school track (college or noncollege) significantly influenced students' college attendance, even after controlling for students' plans.
High school program type is thus included in this study as a dummy variable with three categories: academic, vocational, and general. General program serves as the reference category. High school program information comes originally from the NLS-72 base year data collection effort. Although sample members in the present study were several years beyond high school graduation, their high school program type may be expected to have an effect on their progress toward degree completion as adult students.

**College attendance prior to October, 1973.** Research suggests that one's chances of completing an associate or baccalaureate degree are affected by when and where high school graduates begin college. Delayed college entry has been shown in some studies to decrease the odds of earning a degree. Kempner and Kinnick (1990) found that delayed entrance had a significant negative effect on baccalaureate degree completion among an Oregon sample. Using NLS-72 data, Robertshaw and Wolfle (1983) saw that both delayed entry and discontinuity in college negatively affected attainment. Temple and Polk (1986) also found that students going directly to college from high school were most likely to succeed.

Most studies on persistence do not examine the effect of timing, but for this study, timing of entry is particularly important. Adult students return to school either because they did not attend college immediately following high school or because they did so and then dropped out. Is later degree attainment more likely for one group than the other?

Although timing is important, even more important is the type of institution a student first attends. Several studies have found that the student's first college may affect his/her chances of graduation. Anderson (1981) and Vellez (1985) found that entry into a two-year college discouraged baccalaureate degree completion, even among students who
initially held that aspiration. Whitaker and Pascarella (1992) also found that beginning college in a two-year versus a four-year college had a significantly negative effect on educational attainment. Kempner and Kinnick (1990) and Temple and Polk (1986) compared entry into a community college with university attendance and discovered that beginning college in a four-year institution greatly enhanced the likelihood of earning a baccalaureate degree. Given these findings, controlling for college entry and type is important, although the effect on associate degree completion is unclear.

The NLS-72 data set includes composite variables for October 1972 and October 1973 that indicate a respondent’s enrollment status in a postsecondary academic program. Using this information along with other indicators of any postsecondary schooling prior to October, 1973, I created a new variable that incorporates vocational as well as academic enrollments in a junior or community college. Both were considered two-year college enrollments, since Adelman (1992) has argued that the lines between academic and vocational programs in the NLS-72 data set are fuzzy and inconsistent. (See Appendix B for further details on variable construction.) Using this new composite variable, I control for both timing of entry and initial college type. As Table 2 shows, variable categories included not being in school prior to October, 1973 (over one year beyond high school graduation) to being enrolled in a two-year or four-year institution. No college enrollment is the reference category. Although no formal hypothesis is tested, Kempner and Kinnick (1990), Temple and Polk (1986), and Whitaker and Pascarella’s (1992) research leads me to expect that students who had initially attended a four-year institution will be most successful in baccalaureate degree pursuit later. Given the lack of research on associate
degree completion, I am uncertain whether initial college attendance will affect associate
degree students’ progress.

**Degree plans as of 1979.** One psychological dimension that influences eventual
educational attainment deals with student aspirations, plans, and commitments. Studies in a
variety of institutions and with differing groups of students have found that commitment or
aspirations are positively related to persistence (Anderson, 1988; Astin, 1975; Bean, 1980;
most cases the effect of commitment was direct. Nora (1987) found that goals and
commitment had surprisingly strong effects for Hispanic community college students.
Williamson and Creamer’s 1988 study found that goal commitment had the strongest direct
effect of all variables in their model. Pascarella et al. (1983) found that goal commitment
was less important in a commuter college setting than in other institutions. Munro (1981)
saw that goal commitment at the end of the first year of college had the strongest effect on
persistence in higher education. Vellez (1985) found that students with plans to finish a
two-year or four-year degree as well as those who were uncertain were more likely to finish
than others with no plans. Status attainment research has also demonstrated the importance
of one’s educational and occupational aspirations to later achievements (e.g., Sewell &
Hauser, 1975; Sewell & Shaw, 1968).

Influenced by these findings, the present study includes educational goals as a
control variable. Because over 25 percent of students in the sample were missing base year
data for this item, information on students’ educational goals while still in high school
cannot be used. A more complete and useful measure is available from the fourth survey
round conducted in 1979, immediately before the period (1979-1986) under consideration in
this study. Students were asked, "As things stand now, how far in college do you think you actually will get?" Six response categories ranged from no attendance to Ph.D. or advanced professional degree completion. They were collapsed into three categories on the basis of response distribution. Response categories for associate degree seekers are: less than two years of college, two years or more but no baccalaureate, and baccalaureate degree or higher. Response categories for baccalaureate degree seekers: less than baccalaureate degree, baccalaureate degree, or graduate/professional degree. I expect students with the highest degree plans to be the most likely to have completed degrees.

**Intervening Variables**

The control variables are considered background variables that may influence adult student degree progress. All were measured as part of or prior to the 1979 follow-up survey, when sample members were approximately 25 years old. As the model in Table 1 shows, several factors are expected to mediate the effects of these background variables on degree progress as of 1986. These include relationship, parenting, employment, and enrollment patterns. Formal hypotheses are stated for each expected effect.

Factors external to one's student role and institution may affect persistence, particularly among adult students who commonly juggle multiple responsibilities. External factors have not been included in persistence studies as often as have other factors, but several studies have shown the importance of including them. Staman (1979) found that external factors such as employment status are more important in a nontraditional environment. Anderson (1981), using NLS-72 data, found that students who were employed or living off campus were more likely to drop out than those who were more closely tied to campus. Astin's 1975 study of dropping out found that living and working
on campus were most conducive to persistence; Vellez (1985) found similar results using NLS-72 data. Metzner and Bean (1987), in their study of nontraditional students, found that environmental variables did not directly affect dropout but that outside encouragement was the sixth most important predictor when total direct and indirect effects were considered. Mulligan and Hennessey (1990) found that while external variables did not increase the explained variance in persistence for older community college students, they indirectly affected persistence for part-time students. External factors have included such characteristics as employment status, marital status, number of children, and encouragement from others. This study's particular focus is on the relationship of employment and family responsibilities to degree completion. Thus, these external factors are of critical importance.

This study's life course perspective suggests that life roles and responsibilities often coincide with the role of student. In order to examine these coincidental roles, I first defined a "period of enrollment" for each sample member. I then could categorize relationship, parenting, and employment patterns for each student based on his/her specific period of enrollment. The period of enrollment was bounded by the earliest and latest dates between 1979 and 1986 in which an individual was pursuing a baccalaureate degree (for the baccalaureate analysis) or an associate degree (for the associate analysis). For some individuals, this period of enrollment was continuous, but for others it was marked by one or more interruptions. Although it is not a perfect measure, it is the most manageable method to identify concurrent roles. In addition, I believe it to be a good indicator of the overall time period committed to college between 1979 and 1986. During this period, the college student role was continuously or intermittently a part of a sample member's life.
Once each student’s period of enrollment was identified, the intervening variables were created in relationship to it. The following paragraphs describe the importance of family and employment responsibilities and discuss how indicators of these external factors were developed for this study.

**Family roles and responsibilities.** A few studies of persistence and educational attainment have examined the effects of marriage and children. Grosset (1990) found in a community college setting that the number of dependents was actually positively related to persistence. Metzner and Bean (1987) found that number of children had no significant effect on attrition among nontraditional students, but noted that this result might have differed if the analysis had been confined to older students instead of a broader age range. Nora, Castaneda, and Cabrera (1992) studied persistence in a single institution and saw that family responsibilities had a significant direct negative effect on persistence but also an indirect positive effect, resulting in no net effect. However, their study was confined to students under age 24 who were not married; thus, family responsibilities probably had a very different meaning to this group than to older students. In addition, the researchers did not study the effect of gender through running separate analyses or examining conditional effects. Nevertheless, Nora et al.’s inclusion of outside responsibilities in this and other recent studies suggests a new interest among college student researchers in considering the student role in an overall life context.

Using General Social Survey data, Lowe and Witt (1984) demonstrated that early marriage resulted in generally reduced educational attainment. Bourque and Cosand (1989) found similar results in a study of the educational attainment of Los Angeles women, as did Smith and Hooker (1989), in their study of a white, middle-class sample of women. Taken
together, these studies suggest that early marriage has a detrimental effect on educational attainment.

Differences in results regarding the effects of marriage and parenthood may be attributable to sample and dependent variable differences. When the dependent variable is overall educational attainment rather than persistence in college, the impact of marriage and parenthood appears to be more pronounced. Although the influence of marriage and children on associate or baccalaureate degree completion in adulthood is not clear, adult students often cite family responsibilities as a primary reason for dropping out of college (Joseph, 1980; Swift, 1987). I am thus particularly interested in seeing whether or not a relationship is demonstrated between progress toward a degree and one's family roles.

In the NLS-72 fifth follow-up study (1986), detailed information is included on sample members' marriage or marriage-like relationships. Similarly detailed information is available on parenting. The challenge to this study is to capture the complexity of people's lives in a usable manner, recognizing the limitations of doing so. Because of my primary interest in student roles outside of college, I used students' "period of enrollment" as the time frame in which to trace marital, parenting, and employment patterns.

I created relationship patterns by comparing the beginning and ending dates of marriages or marriage-like relationships with the beginning and ending dates of each students' enrollment period. Persons who said they were in marriage-like relationships were considered married. Persons who were divorced, separated, or widowed were considered nonmarried. I coded cases as follows:
Appendix C provides further details on variable coding. Dummy variables were used in the analyses, with single students serving as the reference category. I expect these relationship patterns to relate to chances of degree completion in the following ways. (Table 3 at the conclusion of this chapter portrays a visual representation of these and the remaining hypotheses.)

**Hypothesis 1:**

Relative to nonmarried students, married students are more likely to be inactive noncompleters than to be either degree completers or active degree seekers. There is no significant difference between married and nonmarried students in the likelihood of being active degree seekers rather than degree completers.

**Hypothesis 2:**

When compared with nonmarried students, students who experience a marital status change are more likely to be inactive noncompleters than degree completers. They will, however, be more likely to be active degree seekers than inactive noncompleters. There is no significant difference in the likelihood of being active degree seekers rather than degree completers.
I further anticipate that these effects may be stronger for women, whose emphasis on maintaining relationships tends to be stronger than men’s (Gilligan, 1982). I do not expect substantial differences between associate degree and baccalaureate degree samples.

Information on parenting incorporated a similar process to that described above, using each student’s period of enrollment as the time frame. Two indicators of parenting were used. The first deals with changes in parenting status as evidenced by childbirth experienced during the period of enrollment. I coded each student into one of two categories:

--no childbirth experienced during period of enrollment

--childbirth experienced during period of enrollment (including first or subsequent child)

The reference category consisted of those who had not experienced childbirth during the period of enrollment. The following hypothesis will be tested:

**Hypothesis 3:**

Relative to students who did not have a child born during the period of enrollment, those who experienced childbirth are less likely to be degree completers or active degree seekers than to be inactive noncompleters. Students who experienced childbirth are more likely to be active degree seekers than degree completers, compared with students who did not have a child.

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10 I initially used a measure of primary parenting responsibilities rather than childbirth experienced. However, this first measure was partially confounded with a second parenting indicator, age of youngest child. Thus the measure of primary parenting responsibilities was replaced by childbirth experienced. See Appendix D for further information.
The second variable related to parenting is age of youngest child at the start of a student's period of enrollment. This dummy variable has three categories: no child at start of enrollment period (reference category), preschool child, and school-age child. Children age six or older were considered school age. (See Appendix D for further information on variable construction for both parenting variables.) Given the demands that young children place on parents' time, I expect that a positive relationship will exist between the age of the youngest child and the likelihood of degree completion. The following will be tested:

**Hypothesis 4:**

Relative to students with no children at the start of their period of enrollment, students with preschool children are less likely to be degree completers or active degree seekers than to be inactive noncompleters. Further, those with preschool children are more likely to be active students than to have completed degrees.

**Hypothesis 5:**

When compared to students with no children, students with school-age children at the start of their enrollment period are less likely to be degree completers than to be inactive noncompleters. They are more likely to be active degree seekers than either inactive noncompleters or degree completers.
I expect the effects of parenting to be stronger for women than men, since women have traditionally borne more responsibility for child rearing (Hartmann, 1981; Hochschild, 1989; Huber & Spitze, 1986). I also anticipate that parenting responsibilities may play a stronger role in the baccalaureate degree completion process than among associate degree seekers, given the number of credits the former degree entails.

**Employment.** According to Joseph (1980), Swift (1987), and Brown and Robinson (1988), employment responsibilities are also frequently cited by adult students as reasons for dropping out of school. Even among younger students, employment may negatively affect persistence. Astin (1975) found that persisters are more likely to work just part-time rather than full-time. Nora, Castaneda, and Cabrera (1992) also found that the number of hours worked directly and negatively influenced persistence in a single institution, although it also had a positive indirect effect through intervening variables. They hypothesized that hours worked may serve as a proxy for financial need for the traditional-aged students in their sample. Metzner and Bean (1987) found that hours of employment had only a very small effect on persistence in college among nontraditional students, although they suggested that as with family responsibilities, limiting their analysis to the older student in their sample might have produced different results. Anderson (1981) noted that potential role conflict exists for working students, although work-study jobs on campus moderate this conflict. Anderson found that hours worked had both direct and indirect negative effects on persistence. Because many adults in their twenties are establishing careers, job responsibilities may well interfere with degree completion plans; thus, I include two indicators of employment in the analysis.
Employment information was handled similarly to marital and parenting data, using each student's "period of enrollment." I created the first indicator, employment pattern, by considering paid work only and coding cases as follows:\textsuperscript{11}

---employed full-time throughout period
---not employed throughout period
---other work pattern (e.g., part-time, mixture of working and not working, etc.)

Full-time employment is the reference category. (Appendix E contains additional details on variable construction.) The effects of employment are difficult to predict, because one's employment may also determine or result from financial resources available for college. I view employment patterns from the perspective of competing responsibilities, however, and test the following hypothesis:

\textbf{Hypothesis 6:}

Relative to students employed full-time throughout, those who did not work at all and those with other work patterns (e.g., part-time) are more likely to be degree completers or active degree seekers than to be inactive noncompleters. Compared with students who worked full-time, other students will be less likely to be active degree seekers than to be degree completers.

\textsuperscript{11} Additional employment categories were created initially, but low frequencies led to this collapsed scheme. See Appendix E for details.
Although the effects for students who follow other work patterns than full-time continuous employment are not predicted to differ from effects for students who do not work at all during the period, I believe these work patterns are different enough to warrant separate categories.

The number of jobs a person held during the period of enrollment may also influence degree completion. It is possible that those students changing jobs more often experienced turmoil that may have had an impact on their ability to progress well through college. Up to four jobs could be reported for the 1979-1986 period. Two categories are used for this analysis:\^12

--- Fewer than two jobs (reference category)

--- Two or more jobs

The following hypothesis will be tested.

Hypothesis 7:

Relative to students with fewer than two jobs, those with two or more jobs are less likely to be degree completers or active degree seekers than to be inactive noncompleters. However, they are more likely to be active degree seekers than completers, when compared with students with fewer than two jobs.

\^12 Initially a three-category coding scheme was used: no jobs, one job, and two or more jobs. However, the first two categories had to be collapsed in order for the analysis to run successfully because persons who did not work were also the persons with no jobs.
I expect the effects of employment to be less pronounced for associate degree seekers than for baccalaureate students, again due to the extended time commitment a bachelor's degree requires. I further expect employment effects to be stronger for men than women inasmuch as men have traditionally had heavier career commitments.

**Enrollment pattern.** Adult students are more likely than their traditional counterparts to attend college intermittently, often due to other responsibilities or lack of finances. Such attendance slows degree progress. Enrollment patterns were coded as continuous or intermittent during each student's period of enrollment, with intermittent attendance as the reference category. A summer break did not cause a student to be considered intermittent if attendance was continuous otherwise. However, a student who took two courses in autumn but none in the winter was considered intermittent. The following hypothesis will be tested:

**Hypothesis 8:**

Relative to intermittent students, students attending college on a continuous basis will be more likely to have completed degrees or be active than be incomplete and inactive. They will also be more likely to have completed degrees than to be active degree seekers.

**Summary of hypothesized effects.** In summary, additional responsibilities beyond the student role are hypothesized to serve as vulnerabilities in terms of degree completion.

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13 Another possible influence on degree progress is full-time/part-time attendance status. However, this information was available only for the most recent period in which a student was enrolled and thus did not meet the longitudinal needs of this study.
A visual summary of the research hypotheses is shown in Table 3. It shows the three dependent variable comparisons that are made: degree completers vs. inactive noncompleters, active degree seekers vs. inactive noncompleters, and active degree-seekers vs. degree completers. The table also shows the anticipated direction of the effects. The three comparisons are made for each category of the independent variable, relative to the reference category for that variable. A positive (+) sign indicates that, relative to the reference group, the comparison group is more likely to have experienced the first outcome than the second. A negative (-) sign indicates that, relative to the reference group, the comparison group is less likely to have experienced the first outcome than the second, or, stated differently, the comparison group is more likely to have experienced the second outcome than the first one.
Table 3. Summary of Hypothesized Effects of Intervening Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>C/I</th>
<th>A/I</th>
<th>A/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARRIAGE (Single)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Changed status</td>
<td>-</td>
<td>+</td>
<td>Not sig.</td>
</tr>
<tr>
<td>CHILDBIRTH (No birth)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child born</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>AGE OF YOUNGEST CHILD (No child)</td>
<td></td>
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</tr>
<tr>
<td>Preschool</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>School-age</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>EMPLOYMENT PATTERN (Full-time)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other work</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>No work</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>NUMBER OF JOBS (0-1 jobs)</td>
<td></td>
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</tr>
<tr>
<td>2 or more jobs</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>ENROLLMENT PATTERN (Intermittent)</td>
<td></td>
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</tr>
<tr>
<td>Continuous</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes: The reference categories appear in parentheses beside each variable name.

C/I refers to the comparison of degree completers to inactive noncompleters.
A/I refers to the comparison of active degree seekers to inactive noncompleters.
A/C refers to the comparison of active degree seekers to degree completers.
Data Analysis

Analysis by gender. The present study’s focus on adult students makes an examination of gender effects critical. During the time period covered, sample members were approximately 25 through 32 years old, an important childbearing period for women. Because the responsibilities involved in parenting young children tend to fall more heavily on women, women may be less likely than men to have completed degrees. Separate analyses are run for men and women because of the differences in the persistence process demonstrated in previous research. In addition, I ran analyses of the pooled data and found several significant interactions between gender and other independent variables, thus also justifying separate analyses. For associate degree seekers, interactions by gender were significant at the .05 level for family socioeconomic status, race, and high school program. For baccalaureate degree seekers, interaction terms were significant at the .05 level for gender and age of youngest child, family socioeconomic status, race, and employment pattern.

In many studies, gender has been shown to affect educational persistence and attainment, although the results are complicated. Pascarella et al. (1983) found that gender had an effect on persistence in commuter institutions, with women being significantly more likely to persist than men. Similarly, Voorhees (1987) found that women persisted at higher rates than men regardless of enrollment status. Using NLS-72 data, Vellez (1985) and Whitaker and Pascarella (1992) found that when other independent variables were controlled, men were more likely to finish college than women. In a path analytic study using NLS-72 data, Munro (1981) found the effect of gender on persistence in higher education to be mainly indirect, through intervening variables. However, Williamson and
Creamer (1988) found a direct effect of gender on persistence in higher education only among four-year college students, not two-year. In a study of the effects of early marriage, Lowe and Witt (1984) found that gender effects on educational attainment were both direct and indirect. Alexander and Eckland (1974) discovered that women who graduated from high school in the 1950s attained a lower educational level than men, despite controlling for other differences. The authors speculated that more recent cohorts might show fewer differences.

A few studies have not found significant gender differences in attainment or persistence (Anderson, 1981; Metzner & Bean, 1987; Pascarella, Duby, Miller, & Rasher, 1981; Wilson & Allen, 1987). These results indicate that the effects of gender might vary by setting or student population. Further, if these studies had examined possible interactions between gender and other independent variables, they would likely have found differences. Numerous studies have found that gender effects are conditional on other characteristics. For example, Lenning (1982) and Tinto (1987) note that women are more likely than men to leave college for nonacademic reasons, whereas academic factors are more important predictors for men. Terenzini and Pascarella (1978) found an interaction between gender and social and academic integration. Pascarella and Terenzini (1980) also found that gender interacts with goal commitment to produce different outcomes.

Because of the likelihood of interaction effects, a number of studies have conducted separate data analyses by gender (Anderson, 1988; Bean, 1980; Mulligan & Hennessy, 1990; Pascarella et al., 1986; Stage, 1988). They have typically found that the persistence process itself differs for men and women, with the variables that are important to one group not necessarily influencing the other. I expect to find gender differences in the factors
influencing degree progress in that work and family responsibilities will have a stronger negative impact on women than on men.

**Logistic regression analyses.** Because the dependent variable and independent variables in this study are categorical, conditional logistic regression is a more appropriate technique than traditional multivariate analyses that assume an interval level of measurement. Demaris (1992) notes the advantages of the logit model, saying that its assumptions are not as strict as those for regression or discriminant analysis, and it offers various tests of significance that are not available in cross-tabulation analysis.

With a trichotomous dependent variable, we model how the proportion of responses in one of the three categories (degree completers, active degree seekers, and inactive noncompleters) depends on the independent variables. The logit model is based on the probability of each dependent variable outcome occurring. Thus with three possible degree progress outcomes denoted as PO = 1, 2, or 3 with respective probabilities of P1, P2, and P3, the conditional logits (L) are:

\[
L_1 = \ln(P_2/P_1) \tag{1}
\]

and

\[
L_2 = \ln(P_3/P_1) \tag{2}
\]

These definitions imply the third conditional logit as:

\[
L_3 = \ln(P_3/P_2) = \ln[P_3/P_1(P_1/P_2)] = \ln(P_3/P_1) - \ln(P_2/P_1) = L_2 - L_1 \tag{3}
\]

(Hanushek & Jackson, 1977)
In this analysis, $P_1$ represents the probability of degree completion, $P_2$ the probability of being an active degree seeker, and $P_3$ the probability of being an inactive noncompleter. The logistic regression model (for the $P_2/P_1$ comparison) can be written as:

$$\ln(P_2/P_1) = \alpha + \beta X \quad (4)$$

where $\alpha$ is an estimated constant, and $\beta$ is the coefficient of the predictor variable.

In logistic regression, one category for each explanatory variable is omitted to serve as the reference. The coefficients for the remaining categories represent differences in the logit of, for example, completing a degree and being an inactive noncompleter (C/I) between those particular categories and the omitted category. Thus, results are always viewed in relative rather than absolute terms.

Multinomial logistic regression equations are estimated using the procedure CATMOD in the statistical package SAS. Models are estimated by maximum likelihood methods. The model's fit is judged by calculating a chi-square statistic on the basis of expected and actual cell frequencies. In addition, SAS produces chi-square tests of the significance level of each independent variable overall and the individual parameter estimates (i.e., C/I, A/I, or A/C).

Weights are used in order to more accurately represent the national population. This results in greater generalizability. Weights were divided by the average mean weight (as noted below) so as not to inflate the sample size.

**Summary**

In this chapter, I described the data set used for the study (NLS-72) and the samples selected. Specifically, persons who said they took credit courses toward an

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14 The weight used is the Fifth Follow-up Survey weight (variable FU5WT) divided by the average mean weight (228.7).
associate or baccalaureate degree between 1979 and 1986 are included in the associate or baccalaureate student sample. The dependent variable of progress toward degree completion was also described operationally. The model linking background characteristics, intervening variables, and degree progress outcome was presented. Finally, the independent variables were delineated, beginning with the control variables of race/ethnicity, parental socioeconomic status, high school program, college participation prior to 1973, and degree plans in 1979. No formal hypotheses were posed for these background characteristics. Intervening variables were defined in terms of each student's "period of enrollment." They include relationship patterns during the period, childbirth, age of youngest child at start of period, employment pattern, number of jobs, and enrollment pattern. I advanced formal hypotheses for each of these explanatory variables. Chapter IV presents the results of the bivariate and multivariate analyses.
CHAPTER IV

RESULTS

In this chapter, I begin by presenting the bivariate relationships among the independent variables and dependent variable. Also included in this first section is a brief description of differences in the independent variable distribution by gender and by degree program (associate or baccalaureate). I then present the results of the multinomial analyses of degree progress for all four groups (male and female associate and baccalaureate degree samples). This presentation includes a discussion of the process of model selection. Throughout the presentation of results, I compare results for males and females as well as those for associate and baccalaureate degree students. Chapter V contains a detailed discussion of the results.

Bivariate Results

The frequency of each control and intervening variable is presented across the three categories of the dependent variable: degree completers, active degree seekers, and inactive noncompleters. Table 4 displays these results for male and female associate degree students, while Table 5 includes the results for male and female baccalaureate degree students. Within each of these four groups, chi-square tests were conducted to ascertain significant bivariate relationships among the dependent variable and independent variables. A significant relationship is indicated in Tables 4 and 5 with asterisks beside the independent variable and under the appropriate group heading (i.e., males or females).
Table 4. Distribution of Independent Variables Across 1986 Degree Progress Outcomes for Associate Degree Seekers, By Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Males</th>
<th></th>
<th>Total</th>
<th>Females</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>A</td>
<td>I</td>
<td>C</td>
<td>A</td>
<td>I</td>
</tr>
<tr>
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<td></td>
<td></td>
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<td>10</td>
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<td>32</td>
</tr>
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<td>20</td>
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<td>24</td>
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<td>13</td>
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<td>57</td>
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<td>26</td>
<td>45</td>
<td>36</td>
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<td></td>
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<td>38</td>
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<tr>
<td>Less than two years</td>
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<td>52</td>
<td>33</td>
<td>68</td>
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<td>31</td>
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<tr>
<td></td>
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<td>I</td>
<td>Total N</td>
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<td>A</td>
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<td>CHILDBIRTH</td>
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<td>Had child</td>
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<td>AGE OF YOUNGEST CHILD</td>
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<td>75</td>
<td>49</td>
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<td>57</td>
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<td>NUMBER OF JOBS</td>
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<td>34</td>
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<tr>
<td>Two or more</td>
<td>41</td>
<td>54</td>
<td>5</td>
<td>52</td>
<td>29</td>
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<tr>
<td>ENROLLMENT PATTERN</td>
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<td></td>
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<tr>
<td>Intermittent</td>
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<td>58</td>
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<td>38</td>
<td>15</td>
<td>54</td>
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<td>Continuous</td>
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<td>29</td>
<td>30</td>
<td>235</td>
<td>40</td>
<td>32</td>
</tr>
</tbody>
</table>

Notes:

C = Degree completers  
A = Active degree seekers  
I = Inactive non-completers

Significance level for chi-square statistic for bivariate relationship between dependent and independent variables:  * p < .10  ** p < .05  *** p < .01

Variables are weighted in this analysis.
Table 5. Distribution of Independent Variables Across 1986 Degree Program Outcome for Baccalaureate Degree Seekers, By Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Males</th>
<th></th>
<th></th>
<th>Total</th>
<th></th>
<th></th>
<th>Total</th>
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<td></td>
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<td></td>
<td>C</td>
<td>A</td>
<td>I</td>
<td>N</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>44</td>
<td>26</td>
<td>30</td>
<td>345</td>
<td>34</td>
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<td>RACE/ETHNICITY</td>
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<tr>
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<td>28</td>
<td>315</td>
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<td>41</td>
<td>18</td>
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<td></td>
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<td>168</td>
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<td>110</td>
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<tr>
<td>COLLEGE PRIOR TO 10/73</td>
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<td>29</td>
<td>123</td>
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<td>39</td>
</tr>
<tr>
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<td>74</td>
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<td>27</td>
<td>137</td>
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<tr>
<td>DEGREE PLANS, 1979</td>
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<td></td>
<td></td>
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<tr>
<td>Nonmarried throughout</td>
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<td>32</td>
<td>108</td>
<td>29</td>
<td>38</td>
<td>33</td>
</tr>
<tr>
<td>Married throughout</td>
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<td>30</td>
<td>29</td>
<td>177</td>
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<td>44</td>
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Notes:

C = Degree completers  
A = Active degree seekers  
I = Inactive non-completers

Significance level of chi-square statistics for bivariate relationships between the dependent and independent variables:  
* p < .10  
** p < .05  
*** p < .01

Variables are weighted in this analysis.

The chi-square statistic for race/ethnicity should be considered unstable due to the low expected cell frequency for at least one cell.
As Tables 4 and 5 show, male and female associate degree students and female baccalaureate students have similar degree completion outcomes. The percentages of degree completers in these three groups are 37, 35, and 34, respectively. The percentages of inactive noncompleters are 30, 29, and 27, respectively. Male baccalaureate students have a similar rate of non-completion (30 percent). However, their 44 percent degree completion rate is much higher than the other three groups.

Race/ethnicity has significant bivariate effects for women in both samples but not for men. In both the associate and baccalaureate degree female groups, black women tend to have a higher likelihood of degree completion than do either white women or Hispanic women. The chi-square results should be interpreted with caution due to the small number of Hispanic students, however. Parental socioeconomic status (SES) is significantly related to degree outcome only for female baccalaureate seekers; women from the lowest socioeconomic families of origin are actually more likely than other women to complete degrees. Only female baccalaureate students and male associate degree students show a significant relationship between high school program and degree progress. In both cases, students who had taken academic programs have a higher rate of degree completion than do students from other program backgrounds.

Students' college experience prior to October, 1973 (one year beyond high school graduation) is significantly related to later degree outcomes for all four groups. Among all groups except associate degree females, students who attended a four-year institution prior to 1973 have higher degree completion rates by 1986 than other students. Associate degree females who attended a two-year school initially have the greatest likelihood of being degree completers later (47 percent), compared with other associate degree women. Across
groups, students who had not attended any college within a year of high school are least likely to be degree completers. Students' degree plans in 1979 are significantly related to degree progress by 1986 for all four groups. Of those who held the highest degree expectations, the most likely outcome was to complete the degree. This was not true for the students with the lowest plans.

Relationship pattern is significantly related to degree outcome only for female baccalaureate degree students. Within that group, women who changed status (e.g., got married or divorced) have a higher rate of degree completion than do married or nonmarried students. Having a child born during the period of enrollment relates significantly to degree outcome for all groups except female associate degree students. In the other three groups, students who did not have a child born tended to have higher degree completion rates than those who did. The age of the student's youngest child at the beginning of the period of enrollment is significantly related to degree outcome for all groups of students, but these relationships are not consistent. Among associate and baccalaureate degree men, those without children complete degrees at the highest rates (54 and 50 percent, respectively) and those with preschool children at the lowest (26 and 35 percent, respectively). However, among women in both degree samples, those with preschool children actually have a higher likelihood of completing degrees than women without children or with school-age children.

Regarding employment pattern, male students with "other" employment patterns (e.g., part-time, mix of full-time and not working) have higher degree completion rates than students working full-time or not employed at all. As Table 5 shows, among baccalaureate degree women, 47 percent of those who were not employed while in school completed
degrees, compared with just 22 percent of those working full-time. The number of jobs held during college is significantly related to degree progress for male associate degree students and female baccalaureate students. In both cases, the results are counterintuitive. Students who held no jobs or one job are more likely to be inactive noncompleters than are those who held two or more jobs throughout their period of enrollment. For example, as Table 4 shows, only 5 percent of associate degree men holding two or more jobs are inactive noncompleters. Finally, students' enrollment patterns show that, for all groups, students who enrolled continuously are more likely than intermittent students to be degree completers.

Male and female students differ substantially in their distribution across independent variable categories. (Cross-tabulations of each independent variable by gender were conducted but are not shown here.) Black women outnumber black men in both degree samples. Among baccalaureate degree seekers, the ratio of black women to black men is about 3 to 1. Women are more likely than men to come from middle SES parental backgrounds rather than high SES ones. In high school, associate degree men most frequently attended academic programs, whereas associate degree women most frequently followed general high school curriculums. Among baccalaureate degree seekers, a higher proportion of women than men have vocational or academic program backgrounds. Other male/female differences are apparent in terms of college attendance after high school graduation and in 1979 degree plans. Also, women are more likely than men to have school-age children at the start of their enrollment period and less likely to experience continuous full-time employment while in school.
The profiles of associate and baccalaureate degree seekers also differ. Over half of the baccalaureate students followed an academic program in high school, compared with just 40 percent of the associate degree students. Over 60 percent of the associate degree seekers had no college experience in the year after high school, whereas only 35 percent of the baccalaureate students had none. Over 70 percent of the baccalaureate students expected to earn at least a bachelor's degree, compared with only about 30 percent of the associate degree sample. A somewhat higher proportion of baccalaureate students than associate degree student are nonmarried. Across degree samples and without regard to gender, baccalaureate students are less likely than associate students to have had school-age children when they returned to school.

The bivariate results provide useful, but limited, insights because they do not take into account other influences on degree progress. More important is knowledge about the effects of each of the independent variables when the effects of the other variables are controlled. For example, does the effect of employment remain significant when a student's race and educational plans are taken into consideration? The multinomial logistic regression results that follow address these issues.

Multinomial Logistic Regression Results

Model Selection

As indicated earlier, the multinomial analyses had two stages leading to the selection of final models. First, partial models (Model 1) were tested with the four groups (associate and baccalaureate males and females) to determine the effects of the background variables (race, parental SES, high school program, college prior to 1973, and degree plans in 1979) on degree progress. The intervening variables of relationship pattern, parenting,
employment, and enrollment pattern were then added, and the expanded models (Model 2) were tested and compared to the partial models. In all four groups, the addition of intervening variables improved the models significantly. We can conclude that, as a group, the intervening variables—all of which are more recent than the background variables—have a significant effect on degree progress. However, as the later presentation shows, not all variables have the predicted effects.

I initially planned to drop any insignificant variables in order to select the most parsimonious model. Each group had specific variables that were insignificant, but no variable was insignificant for all four groups. Thus, for comparability purposes across groups, the final model selected includes all the background and intervening variables initially proposed. Table 6 presents both the partial and final models, tested with associate degree males and females, and Table 7 shows results of the same analyses for baccalaureate degree males and females.

As shown, the overall fit of the partial and full models is significant for all four groups. All chi-square statistics (shown on the last page of each table) are significant at the .001 level. The full model best fit the female baccalaureate student data ($X^2=348.02$, df=38). The least effective fit is for male baccalaureate students ($X^2=186.5$, df=38).

\[15\] Chi-square statistics for the differences between the partial and full models for each group are as follows: associate degree males, $X^2=81.4$, 18 df; associate degree females, $X^2=87.6$, 18 df; baccalaureate degree males, $X^2=86.7$, 18 df; and baccalaureate degree females, $X^2=101.9$, 18 df. (p < .001 for all four models.)

\[16\] Parental SES and student’s number of jobs do not have significant effects for baccalaureate males or associate degree females. Race is not significant for baccalaureate females. Relationship pattern is significant only for associate degree males. High school program is significant for baccalaureate degree seekers but not for associate students. Additional analyses (not shown here) explored the possibility of dropping these variables for specific groups; results indicated that the variables could have been dropped without affecting the model’s fit significantly.
Table 6. Multinominal Logistic Coefficients Showing Effects of Background and Intervening Variables on Degree Progression

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<th>Predictor Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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<td>C/I</td>
<td>A/I</td>
<td>A/C</td>
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<td>-1.95**</td>
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Effects of Background and Intervening Variables on Degree Progress Among Adult Associate Degree Students, by Gender.

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-2 Log likelihood   | 397.01                         | 323.00          | 510.11        |
Model $X^2$         | 209.6                          | 283.0           | 126.4         |
Degrees of freedom  | 20                              | 38              | 20            |
Unweighted number of cases | 207                | 194+            | 274           |

Notes: C/I = Degree completers versus inactive non-completers.  
A/I = Active degree seekers versus inactive non-completers.  
A/C = Active degree seekers versus degree completers.  
* p < .10. ** p < .05. *** p < .01.  
Variables are weighted in this analysis.
<p>| | | |</p>
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* = significant at p < 0.05
** = significant at p < 0.01
*** = significant at p < 0.001

completers.
non-completers.
completers.
Table 7. Multinomial Logistic Coefficients Showing Effects of Background and Intervening Variables on Degree Pro

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Effects of Background and Intervening Variables on Degree Progress Among Adult Baccalaureate Degree Students, by Gender.

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Notes:  C/I = Degree completers versus inactive non-completers.  
A/I = Active degree seekers versus inactive non-completers.  
A/C = Active degree seekers versus degree completers.  
* p < .10.  ** p < .05.  *** p < .01.  
Variables are weighted in this analysis.
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completers.
For readers unfamiliar with logistic regression, an orientation to the comparisons expressed in the tables may be helpful. I will use parental SES as an example and draw from Table 6, with results for associate degree seekers. Reading across the page, the reader sees two models for associate degree males and two for associate degree females. Within each model, three comparisons are made for every independent variable: degree completers are compared to inactive noncompleters (C/I), active degree seekers to inactive noncompleters (A/I), and active degree seekers to degree completers (A/C). These comparisons are made for each category of an independent variable, relative to the reference category of that variable. In the case of parental SES, the reference category is low SES, indicating that persons from medium and high SES backgrounds are compared to those from low SES backgrounds. A positive coefficient indicates that, compared to the reference group, persons from the comparison category are more likely to have achieved the first outcome than the second. A negative coefficient indicates they are less likely. Thus results are always expressed in relative terms, with comparisons of one possible outcome to another. The significance level of coefficients is indicated by asterisks. For example, looking at parental SES for associate degree males in Model 1 (Table 6), one sees that compared with students from low SES backgrounds, those from medium backgrounds are significantly less likely (.01 level) to be degree completers (-1.77***) or active degree seekers (-2.37***) than inactive noncompleters. In the full model (Model 2), the significance level for the C/I comparison has dropped to the .1 level (-1.33*). The active degree seekers versus inactive noncompleters coefficient (-2.11***) remains significant at the .01 level. With this orientation complete, I proceed to a narrative presentation of results, beginning with the background variables. Results for all four groups (associate and
baccalaureate males and females) are presented and compared. I also discuss the findings in light of any formal hypotheses posed earlier.

**Background Variables**

**Race/ethnicity.** As Table 7 shows, with other independent variables controlled, race/ethnicity has no significant effect on degree progress for baccalaureate females. Race/ethnicity appears to impact degree progress for the other three groups, although the effect differs by group. The effect of being Hispanic compared to white is significant only for associate degree males. As the first panel in Table 6 indicates, in Model 1, Hispanics are less likely than whites to be active degree seekers versus inactive noncompleters (-2.20) or degree completers (-1.95). In model 2, only the A/C comparison remains significant (-2.31), showing that more recent factors mediate the initial relationship. Being a black male associate degree student rather than white is a definite disadvantage: Black males are significantly more likely to be noncompleters than either degree completers or active students (both models).

The effects for black associate degree females relative to whites are more positive. Black women are significantly more likely than white women to complete associate degrees than to be active degree seekers or inactive noncompleters. (The C/I effect is only significant in Model 2, and only at the .10 level.) However, compared with whites, they are also less likely to be active degree seekers than inactive noncompleters.

Results shown in Table 7 indicate that compared with white baccalaureate degree males, black males are more likely to be inactive noncompleters (-1.41) or active degree seekers (1.64) than to complete degrees. This effect is apparent only in Model 2, which signifies that more recent factors suppressed the relationship until they were controlled.
Overall, relative to associate degree students, baccalaureate degree students appear to experience little impact of race or ethnicity on their degree progress, once all independent variables are controlled. The variable is not significant at all for baccalaureate females and has limited effects for males. Race/ethnicity thus may have more to do with the level people are trying to attain (i.e., associate or baccalaureate degree) than the success at that level.

**Parental socioeconomic status (SES).** Parental SES has significant effects only for associate degree males and baccalaureate females, and these effects are not consistent for both groups. Beginning with Model 1 in Table 6, it can be seen that associate degree males from medium or high SES backgrounds are significantly more likely to be inactive noncompleters than to complete degrees (-1.77) or be active students (-2.37), relative to students from low SES backgrounds. When intervening variables are added, however, the effect is greatly reduced or disappears for the C/I comparison, thus showing the mediating effect of more recent factors. Also, associate degree males from medium or high SES backgrounds are less likely than those from low SES backgrounds to be active students versus degree completers (significant in Model 2 only).

Results presented for baccalaureate degree females in Table 7 show that in both models, students from medium or high SES backgrounds are significantly more likely to be active students than to complete degrees, relative to students from low SES backgrounds. The addition of more recent variables does not mediate these SES effects. A tendency for higher SES women to be inactive rather than completing degrees is significant, however, only in Model 1.
Overall, for associate degree males and baccalaureate degree females, the results are contrary to what might be expected. Students from low SES backgrounds appear to be more successful in their degree progress than those from higher SES levels. Chapter V discusses this finding further.

**High school program.** The effect of a student's high school program is significant only for associate degree students. The lack of any significant effects of high school program for baccalaureate students is contrary to expectations that a lingering effect might occur.

As Table 6 shows, in both models, associate degree males with academic rather than general program backgrounds are significantly more likely to be degree completers than active degree seekers. This effect confirms informal expectations. In Model 2 only, associate degree males from vocational backgrounds are slightly more likely than men from general programs to complete degrees rather than be active students (-1.14).

Associate degree females show some surprising effects. Women with academic backgrounds rather than general are less likely to have completed a degree or be considered active students than to be inactive noncompleters. The C/I effect is weak, however. Vocational program attendance (compared with general) is also associated with a greater likelihood of degree completion versus inactivity (-.86) or being an active student (.80), although these effects are weak as well.

**College attended prior to October, 1973.** Table 6 indicates that the effect of attending a four-year school in comparison to non-attendance is insignificant for both male and female associate degree students, once other independent variables are controlled. However, males who attended a two-year college rather than not going to college at all are
significantly more likely to be active degree seekers than to be either inactive noncompleters or degree completers. The coefficients are significant in both models. Associate degree women with two-year college backgrounds are slightly more likely than women who did not go to college to complete degrees than to be inactive noncompleters (only in Model 2).

I speculated that attending a four-year institution in the year after high school would positively affect progress toward a baccalaureate degree later. This expectation received only partial support, as Table 7 indicates. Among baccalaureate degree students, four-year attendance, compared with no college at all, is associated with a somewhat greater tendency to complete degrees than to be active students. However, this finding is significant only in Model 1, showing the mediating effect of more recent variables. Females are also significantly more likely to be degree completers than inactive noncompleters (.89 in Model 2) if they attended a four-year college initially rather than not attending college at all. Overall, for both baccalaureate and associate degree students, the influence of college attendance in the year following high school is relatively minor when other factors are considered.

**Degree plans in 1979.** The effects of students' degree plans in 1979 are generally consistent, strong, and in line with expectations. In both models and for all four groups, students with the highest degree plans are significantly more likely to complete degrees than to be inactive noncompleters or active degree seekers, compared with students with the lowest plans. The strength of this variable is further shown by the fact that none of the significant effects are eliminated when the intervening variables are considered.
For associate degree students, the highest degree plans refer to earning at least a baccalaureate. As Table 6 shows, males and females with that goal are significantly more likely to be degree completers rather than incomplete or active students, relative to students who planned to attend college for less than two years. These same effects occur for male but not female students who planned to attend college for two years or more without earning a baccalaureate. One unexpected finding is that associate degree men who expect to attend college for two years or more without earning a baccalaureate are less likely than those with lower aspirations to be active students rather than inactive noncompleters (-1.09).

As Table 7 shows, like associate degree students, baccalaureate males and females with the highest degree aspirations (in this case, beyond the bachelor’s) are significantly more likely to complete degrees than to be inactive noncompleters or active degree seekers. However, both males and females are less likely to be active students than inactive noncompleters if they planned to earn more than a baccalaureate degree versus less than a bachelor’s. For females, this surprising effect also occurs for students who planned to stop with the bachelor’s degree (-.89).

Overall, these results are quite consistent with expectations, with the exception of some of the A/I comparisons, which ran counter to prior predictions.

**Intervening Variables**

*Marriage or relationship pattern.* Marital or relationship pattern is the first intervening variable discussed and thus the first for which formal hypotheses were posed. Relationship pattern has a significant effect on degree progress only for associate degree males (Table 6) and baccalaureate degree females (Table 7). Comparing associate degree
men who changed status (i.e., went from being single into a relationship or vice versa) with those who were nonmarried throughout, the status changers are more likely to complete degrees than to be inactive noncompleters (1.59) or active degree seekers (-1.77).

Baccalaureate degree women who were married throughout were slightly more likely than nonmarried women to be active degree seekers rather than degree completers (.69).

Overall, the hypothesized effects of a student’s relationship pattern received very little support. The relationship pattern has small effects for associate degree males, and for them, the effect is different than specified. The one significant effect for baccalaureate women is weak but is in line with expectations. I also speculated that effects might be stronger for women than men, but the data do not bear this out. Possible explanations for these results are discussed in Chapter V.

**Childbirth during period of enrollment.** The effects of parenting were tested with two variables, the first being the experience of childbirth during one’s period of enrollment. Tables 6 and 7 show that childbirth has a significant effect only for baccalaureate degree females, and that the effect is counter to the hypothesis. Baccalaureate women who had a child sometime during their period of enrollment are actually more likely than those who did not give birth to complete degrees rather than becoming inactive noncompleters (1.20). Although childbirth was expected to delay or interrupt degree progress, this outcome is not seen for any group. I discuss this further in Chapter V.

**Age of youngest child.** Another measure of the effects of parenting came from including in the analysis the age of the youngest child at the start of a student’s period of
enrollment, with the three response categories being: no child, preschool age, and school-age. The youngest child's age has a significant effect for all four groups.

As Tables 6 and 7 show, school-age children have the most consistent effects on degree progress. For all four groups, compared to students with no children at the start of enrollment, students with school-age children are significantly more likely to be active degree seekers than to be either inactive noncompleters or degree completers. Thus it appears that older children may slow students down but not totally halt them. Having school-age children has no significant effect on any of the C/I comparisons. Support for the hypothesis about school-age children thus exists for the A/I and A/C comparison, but not the C/I one.

The effects of having preschool children are somewhat consistent with the hypothesis. Preschool children have no significant effect on degree progress for baccalaureate degree males and associate degree females. As Table 6 shows, compared with associate degree men with no children, men with preschool children are less likely to have completed degrees than to be inactive noncompleters (-1.07). Table 7 demonstrates that baccalaureate women with preschool children are more likely than childless women to be active students as opposed to having completed degrees (.79). Findings thus support the hypothesis about preschool children, but only for these groups and these comparisons, and only at the .10 level.17

Overall, effects are not greater for baccalaureate than associate degree students, nor do they demonstrate convincingly that women are disadvantaged by young children more

17 I explored the possibility of single parenting effects by conducting analyses that included interaction terms between age of youngest child and relationship pattern. These did not prove to be significant.
than men. Thus my expectations about these group differences are not confirmed.
Speaking generally, the hypotheses about children's age are only partially supported.
School-age children appear to affect degree progress more than do younger children.

**Employment pattern.** Employment responsibilities during each student's period of
enrollment included two indicators: employment pattern (full-time, other, or none) and
number of jobs held (0-1 versus 2 or more). A student's employment pattern has
significant effects for three out of four groups, with the exception of associate degree
males. As Table 6 shows, associate degree women who worked other patterns (e.g., part-
time, mixture of part-time and full-time), compared to women who worked continuously
full-time, are more likely to complete degrees than to be inactive noncompleters (1.59).
This fits expectations. Also as predicted, women who did not work at all or who held
other employment patterns are less likely than full-time working women to be active
students versus degree completers. Contrary to expectations, associate degree women who
did not work are slightly less likely than those who worked full-time to be active students
rather than inactive noncompleters (1.05). Overall, at the associate degree level, the
hypotheses received no support for males but stronger confirmation for females.

As Table 7 shows, baccalaureate men who did not work or worked other patterns
than full time are more likely than full-time workers to complete degrees rather than to be
inactive or active students. These findings are consistent with the hypothesis. Like their
male counterparts, the A/C comparison is significant for baccalaureate women. However,
contrary to the hypothesis, baccalaureate women are less likely to be active students than
inactive if they did not work at all (-1.64). This A/I comparison is not significant for men.
Additionally, employment pattern does not distinguish female degree completers from
inactive noncompleters, contrary to the hypothesis. Thus, effects for baccalaureate degree students, when significant, are generally in support of the hypothesis, but not all hypothesized effects are significant.

Overall, the hypothesis pertaining to employment pattern is relatively strongly supported, except for associate degree males.

**Number of jobs.** The number of jobs a student held is significant for only associate degree males (Table 6) and baccalaureate females (Table 7). For both groups, compared to students who held fewer than two jobs, those with two or more jobs are more likely to be active than inactive students. Baccalaureate females who held two or more jobs are also significantly more likely than those with fewer jobs to have completed degrees rather than to be inactive (1.72). Thus, the hypothesis pertaining to number of jobs received no support. This variable either has no significant effect on degree progress or operates in an opposite direction than predicted.

Overall, employment responsibilities have several important effects on degree progress, but not always in the manner predicted. Further, the expectation that the effects would be greater for men than women is not true; for associate degree males, all of the comparisons possible for employment patterns and number of jobs yielded only one that is significant. As expected, the effects of employment are somewhat stronger among baccalaureate students compared to associate degree students.

**Enrollment pattern.** The final intervening variable included in the model is enrollment pattern during the period of schooling. Did a student attend continuously or intermittently, and did this pattern affect degree progress? Relative to intermittent enrollees, associate and baccalaureate students who attended continuously were
hypothesized to be degree completers rather than active students or inactive students, and
active students versus inactive ones. Enrollment pattern significantly affected degree
progress for all four groups.

As Table 6 shows, associate degree males and females who attended college
continuously are more likely to complete degrees than to be either active or inactive
students. This confirms the hypothesis, although the C/I comparison for males is
significant only at the .1 level. Contrary to the hypothesis, however, associate degree
females with continuous enrollment patterns are somewhat less likely (.1 level) to be active
than inactive students.

Table 7 shows some similar effects among baccalaureate degree students.
Continuous enrollment distinguishes completers from inactive noncompleters for females
but not for baccalaureate males. Both males and females who attended continuously are
more likely to have completed degrees than to be active degree seekers. Other than the
lack of significant effect in the C/I comparison for males, these results confirm the
hypothesis. Overall, the hypothesis is supported strongly, but not totally, by the data for
both associate and baccalaureate students.

Summary

In this chapter, bivariate relationships between independent variables and degree
progress were presented. The primary emphasis was on the multivariate analyses in which
two models were tested. The first model, which includes only the background variables,
fits the associate and baccalaureate degree data well. However, the second and final model,
with intervening variables included, is a significant improvement for all four groups.
The background variable with the strongest and most consistent effects is 1979 degree plans, when students were about 25 years old. In general, students with the highest plans are the most likely to complete degrees. Because this indicator comes right at the start of the period covered by the present study, these findings make sense. They also confirm the importance of one’s intentions. Other background characteristics have mixed or negligible effects. Parental socioeconomic status is significant only to baccalaureate degree females and associate degree males. High school program is irrelevant to baccalaureate students. Race is significant mainly for associate degree students. College attended prior to 1973 holds some significance for all four groups.

Although the intervening variables add strongly to the model’s fit, they do not all support the hypotheses. The clearest support comes from students’ enrollment and employment patterns, with age of youngest child also providing relatively strong support. Relationship pattern has almost no effect at all, and the effect of having a baby is negligible as well.

In general, male and female effects were less different from each other than expected. Rather, it was more often the case that a variable had significant effects for one of the female and one of the male groups rather than for all males or all females. The many differences seen between groups in significant effects point to the importance of conducting separate analyses or studying interactive effects in pooled analyses.

In Chapter V, these results are interpreted and discussed in light of previous research. I also discuss limitations and implications for policy, practice, and future research.
CHAPTER V
DISCUSSION

This study addresses one primary research question: Do the multiple roles associated with family and employment affect the probability of associate or baccalaureate degree completion among students in early adulthood? Implicit in the question is a comparison of the degree completion process for associate and baccalaureate degree seekers. Gender differences in factors affecting degree progress are also of interest.

The model used for this study posits that degree attainment is a function of background characteristics and intervening variables. The background or control variables include race, parental socioeconomic status (SES), high school program, college experience prior to October, 1973, and degree plans in 1979. Intervening variables expected to mediate these earlier influences include relationship pattern, having a baby, age of youngest child, employment pattern, number of jobs, and enrollment pattern. These variables were developed in correspondence with each student's period of enrollment. Because gender was shown to have interactive effects and sample sizes were sufficiently large, separate analyses were conducted for men and women.

The preceding chapter presented results of the bivariate and multinomial analyses for four groups of adult students: male and female associate and baccalaureate degree seekers. This chapter discusses the results in light of my original research question, model,
and hypotheses as well as in the context of other research findings. It is important to remember the cohort and age range encompassed by the NLS-72 data. First, the cohort graduated from high school in 1972. Second, results pertain to students in early adulthood, defined in this study as ages 25 to 32. Other studies of adult students typically use age 25 as the lower bound, but they often have no upper limit. Thus the comparability and generalizability of my findings must be considered with this difference and the cohort effect in mind.

One note about the complexity of the results is in order. The dependent variable has three possible outcomes, all independent variables are categorical, and four student groups are included. Taken together, these factors complicate the presentation and discussion of findings. This chapter’s goal is to provide a broader picture of the results, although it is impossible to leave the details totally behind.

The chapter begins with an overview of the associate and baccalaureate degree samples and the multivariate results. More detailed discussions of the effects of the background characteristics and intervening variables follow, as does a discussion of group differences. Finally, study limitations, implications, and conclusions are presented.

**Overview**

These research results corroborate other studies that have shown group differences in the persistence and degree completion process (Metzner & Bean, 1987; Nora, 1989; Pascarella, Smart, & Stoecker, 1989). Only one variable (1979 degree plans) has significant effects for all four groups. These results support the decision to conduct separate analyses by degree sought and gender.
Overall, both the partial and full models initially posited are supported by the data. Taken together, background characteristics continue to be important, despite the fact that students are older than the subjects of many persistence studies. However, not all background characteristics are pertinent to each student group, as I discuss in detail later. For example, very few of the background characteristics significantly affect degree progress for baccalaureate males.

As expected, the group of intervening variables add significantly to the model's fit for both associate and baccalaureate degree students. A few of the background characteristics lost significance with the addition of intervening variables, indicating that more recent influences such as parenting and employment mediated some earlier effects. However, the intervening variables clearly did not eliminate all effects of the control variables, thus showing the lingering impact that earlier choices such as high school program and immutable characteristics such as race or parental SES may have. This finding is at least partially consistent with status attainment research.

My informal expectations and formal hypotheses received mixed support overall. As expected, students' 1979 degree plans are a consistent and strong predictor of degree completion, although plans differentiate less effectively between active students and inactive noncompleters. This result fits with previous persistence and status attainment research that has demonstrated the importance of goals, plans, and intentions (e.g., Bean, 1980; Metzner & Bean, 1987; Sewell & Hauser, 1976; Tinto, 1975, 1987). However, other variables are less consistent with the hypotheses. The inclusion of external influences adds to the model's fit, but not all variables are significant, and the direction of the effects is not always as predicted. When employment patterns have significant effects, they tend to
support the hypothesis that full-time employment negatively affects the chances of completing a degree. The age of youngest child and a student's enrollment pattern partially support predictions. However, relationship patterns have almost no effect on degree attainment, and the effect of having a child born is equally minimal. Thus my view of the importance of activities outside the student role is not fully supported through this study. I discuss this further in a later section.

Differences between the samples should be kept in mind as multinomial results are discussed. First, male baccalaureate students have a higher degree completion rate than do the other three groups. Second, associate degree students in this study are less likely than baccalaureate students to come from high SES families, take academic curriculums in high school, and attend college within the year following high school graduation. Third, gender differences are apparent in the samples. Men are more likely than women to come from high SES parents, be white, attend college after high school, and have a child and work full-time while in college as an adult. Women are more likely to have school-age children at the start of the period of enrollment considered in the present study.

Having presented this general overview, I turn now to a more specific discussion of the background variables.

**Background Variables**

Background characteristics (race, parental SES, high school program, college experience prior to 1973, and 1979 degree plans) all have significant effects for at least one group of degree seekers. Together, the variables had a significant fit with the data. Also, most effects do not disappear once intervening variables are included. Only seven of 41 significant effects are eliminated. The effectiveness of the partial model is driven largely
by the inclusion of 1979 degree plans.\textsuperscript{17} As noted, degree plans strongly distinguished degree completers from active and inactive students. The positive effect for women was confined to those students with the highest degree plans versus the lowest, whereas for men the effect was significant for students with the middle and highest levels of education planned. These findings are no surprise; previous persistence research has consistently shown the importance of commitment or aspirations (Anderson, 1988; Astin, 1975; Bean, 1980; Brown & Robinson, 1988; Grosset, 1990; Munro, 1981; Nora, 1987, 1990; Vellez, 1985). Had more complete data been available on degree aspirations in 1972, it would have been interesting to compare those dreams with 1979 plans. Did students with the highest intentions in 1979 have similar goals in 1972? If so, what caused the dreams to remain unfulfilled for years? And what of the students who had plans in 1979 for at least a bachelor's degree but who were classified as inactive noncompleters in 1986? Did life circumstances cause them to abandon those plans, or was their period of inactivity just a temporary setback? Would a more recent follow-up study find them back in school or even finished?

One unexpected finding was that degree plans distinguished between active and inactive students in a manner opposite than expected. For all but associate degree males, higher degree plans were associated with a greater likelihood of being inactive rather than active. This finding is difficult to interpret, and because previous research has not used a trichotomous dependent variable such as this, I cannot relate this effect to other studies.

\textsuperscript{17} Logistic analyses of the partial model, excluding 1979 degree plans, (not shown here) revealed substantial and significant drops in the chi-square statistic for each sample. The reduced model was still significant for all groups.
More mixed effects are seen with the other control variables, in keeping with conflicting results from previous research. Regarding race effects, previous research has not been conclusive. While some studies have shown direct and indirect negative effects for being nonwhite (Metzner & Bean, 1987; Munro, 1981; Pascarella, Duby, Miller, & Rasher, 1981), others have not (Anderson, 1981; Lowe & Witt, 1984; Pascarella, Duby, & Iverson, 1983). The current study is equally inconclusive. The effect of being Hispanic rather than white is almost always insignificant, possibly because of the small number of Hispanic students. Race has no significant effect whatsoever for baccalaureate degree females. However, results for the other three groups indicate that black males are at a disadvantage compared with whites, while black females tend to be at an advantage. The black male disadvantage is particularly strong at the associate degree level. These discrepant results for black males and females, coupled with the fact that black females outnumber black males in both degree samples, are not encouraging news for those concerned about the difficulties black males have experienced in achieving educationally, occupationally, or economically. The small number of black students suggests caution in overstating the findings, however.

Parental SES presents perhaps the most puzzling result. It has significant effects for only two groups (baccalaureate females and associate males), which is consistent with other studies which showed differential effects by student group (Pascarella, Smart, & Stoecker, 1989; Stoecker et al., 1978; Williamson & Creamer, 1989). However, the effects are at variance with previous research and with my informal expectations. Medium and high SES students appear to be at a disadvantage in completing degrees relative to students from low SES backgrounds. This result contrasts with other studies (all using NLS-72
data) in which parental socioeconomic background has been found to have positive effects on educational persistence (Anderson, 1981, 1988; Robertshaw & Wolfle, 1987; Vellez, 1988). The contradictory effects seen in this study may be due to its adult student sample, since other studies have examined the effect of parental SES on traditional-aged students. Possibly the same underlying characteristics or reasons that prevented higher SES students from completing college when they were younger work against them later. Studying discontinuities in schooling, Featherman and Carter (1976) found that men with good grades but poor family backgrounds were most likely to persist. The researchers speculated that the poorer men were more determined to succeed. The same dynamic may be operating among these adult students.

The effect of one's high school program appears to dissipate completely for adult baccalaureate degree students. Perhaps it affects the decision to return to college, but once that decision has been made, high school curriculum does not influence degree completion. The effects for associate degree students are more pronounced. Previous studies have shown positive effects of following an academic program in high school (Anderson, 1981; Bourque & Cosand, 1989; Haggstrom et al., 1986; Vellez, 1985; Wilson & Allen, 1987). Consistent with these results, associate degree males in this study are more likely to complete degrees as opposed to being active students if they had not followed a general high school curriculum. Perhaps those who followed vocational programs in high school were later employed in related work which dovetailed well with their associate degree programs. However, associate degree females from academic and vocational curriculums are actually less likely to complete degrees or be active students than those from general programs. This is a surprising finding when we consider the fact that students in the
general track in high school typically are weaker students without strong career goals. Possibly the period that has elapsed since high school has allowed such students to develop greater maturity, motivation, and direction through intervening experiences. Studying for an associate degree might be a very good choice for them at that point in their lives, because it can provide a more immediate reward than can a baccalaureate degree. In general, the overall lack of influence of high school program (especially in the direction expected) shows that earlier choices do not always dictate later success.

Finally, the effects of one's college experience after high school may be more limited than several other researchers (Kemper & Kinnick, 1990; Robertshaw & Wolfe, 1989; Temple & Polk, 1986) found, at least once other variables are controlled. These researchers found that discontinuities in schooling after high school graduation had negative effects on the chances of completing degrees later. However, in this study, attending a two-year college in the year after high school graduation produces no advantage compared to not going on to school for adult baccalaureate degree seekers. Attending a four-year college by October 1973 led to a somewhat greater likelihood of completing a degree rather than being an active student for baccalaureate students, and among female students, it distinguishes degree completers from inactive noncompleters. However, these effects are less pervasive than Kemper and Kinnick had found. Differences between these authors' study and the present one might be accounted for by sample differences. Kemper and Kinnick studied the general adult population in Oregon rather than a national sample of adults who had already made the decision to return to college. One caveat to my findings should be stated. Not all NLS-72 participants actually graduated in 1972. It is possible that a few students in the present study's samples were repeating their senior year in high
school in 1972-73. If so, they might have gone on to college within the year after a 1973 graduation date, but would have been coded as "no college" in the present study, which might have slightly changed the results.

Limited research has been done on the effects of early college experiences on later associate degree progress. In this study, attending a four-year college prior to October, 1973, has no significant effect on associate degree completion. However, two-year college experience has more positive effects. Previous research has also pointed to the advantage of beginning college in a four-year institution rather than a two-year one, but this comparison was not possible, given the reference category (i.e., students with no college experience).

Overall, the results of the present study only partially support previous research. Consistent with that research, bivariate results show that the degree completion rate for students with four-year college backgrounds is much higher than the rate for other students. However, this advantage lessens or disappears when other independent variables are controlled. Thus high school students' decisions about college, while important, do not necessarily dictate later outcomes if the student returns to college in early adulthood.

**Intervening Variables**

As a group, the intervening variables add significantly to the model's fit for male and female associate and baccalaureate degree students. They also mediate some of the effects of background variables. Thus, in general, including more recent factors is critical in studying adult student persistence.

The answer to the primary research question is a qualified yes. Work and family roles definitely impact the likelihood of degree completion, but they have differing effects,
depending upon student group. In this section, I speculate as to why my hypotheses were or were not supported.

Relationship patterns affect only male associate degree and female baccalaureate degree students, and then to a limited extent. Men who changed status are slightly more likely than nonmarried men to complete degrees than to be inactive or active students. The small number of men in this category suggests caution in interpreting this result, however. I expected, but in most cases did not find, that single students would be most likely to complete degrees. (Only among baccalaureate females are nonmarried students more likely than married students to complete degrees rather than remaining as active students). My hypotheses were based on the premises that nonmarried students would have more time and energy to commit to their studies and that status changes could have traumatic effects. The lack of significant effects for one’s relationship pattern points to several possible explanations. First, given the age range covered by this study (ages 25 through 32), a number of nonmarried students may have been in the process of seeking and forming serious relationships. This process may well take more time and energy than maintaining an established relationship. Second, due to sample size, the "nonmarried" category included single, separated, divorced, and widowed students. Perhaps effects of relationship patterns were masked by this aggregation. Further, it should be noted that relationships have been viewed in this study from a dominant culture perspective. Due to sample limitations, I did not examine possible interactions between relationship pattern and race/ethnicity, for instance. The conceptualization of relationship patterns used in the present study clearly does not capture the variety of life situations that actually exist.
Another explanation regarding the lack of significant effects of relationship pattern is the possibility that a marriage or marriage-like relationship that survives may act as a resource rather than a vulnerability. A strong relationship may provide support and financial stability. Married students with supportive spouses may receive important encouragement to continue (Tittle & Denker, 1980). Encouragement from others has been shown to be an important predictor of nontraditional student persistence (Metzner & Bean, 1987). Adequate finances have also been shown to contribute to student persistence (Cabrera, Nora, & Castenada, 1992; Nora, 1990). These possibilities could explain the similar success rates that married and nonmarried students experience when other variables are controlled. Not all spouses are supportive of their partner's student role, but such support may be more common in early adulthood, when home roles and responsibilities are probably not well entrenched. Tittle and Denker (1980) discussed the ambivalence and even resentment some husbands experience when their wives return to school. However, their discussion centered on older reentry women and thus may be less relevant for younger adults such as the NLS-72 sample.

I expected that students who changed relationship status might be at a disadvantage relative to nonmarried students, but that did not prove to be the case. Effects are either nonsignificant or, in the case of associate degree males, opposite from expectations. This suggests that even status changes that are traumatic may even out their impact on the student role over the long term. The longitudinal perspective of this study allows us to view the longer term impact of life changes. Possibly such changes actually serve as catalysts that encourage students to continue pursuing and completing degrees.
Another major life change that has little impact on degree progress, over the long term, is having a child born during the period of enrollment. Childbirth has a significant effect only for baccalaureate females, and then in an opposite manner than expected. As it did with marital changes, the longitudinal perspective of this study allows us to view childbirth in the context of a longer period in students' lives. What is likely a major event initially appears to have less drastic impact over time. It should be noted that only 17 associate degree women gave birth during the time they were enrolled in college; thus, results for this group should be viewed with caution. I expected childbirth to have a greater effect on women than on men, but this is not the case. According to bivariate results, lower percentages of men than women who experienced childbirth (or whose partners did) completed degrees. Women appear to be able to adapt to a new baby in ways other than setting aside their degree goals.

The age of a student's youngest child has a more predictable effect. For all groups, having school-age children at the start of one's period of enrollment slows degree completion but does not stop it. Preschool children have a similar effect, but only for associate degree males and baccalaureate females, and only the .10 level. All significant effects are in the directions hypothesized, but fewer effects were significant than I expected.

I expected women to be more disadvantaged than men by having children, but this did not occur. I also expected that baccalaureate degree students would be more affected by parenting responsibilities than would associate degree students, given the time commitment to attain a bachelor's degree. However, this expectation was not borne out, possibly as a result of differences in the nature of associate and baccalaureate degree students.
One caveat should be stated in relation to the age of youngest child at the start of the period of enrollment. The fifth follow-up study asked respondents to provide information on educational pursuits between 1979 and 1986. Some students in the sample were probably already in college in 1979. In these cases, 1979 would have been coded as the beginning of their period of enrollment, when in actuality it was not the beginning. If such a student was close to graduation in 1979 and had a preschool child, the child might have affected the student's college progress only for a short time. In other words, this variable is more complex than it might first appear, and its effects should be considered with this in mind.

Adult students frequently cite family responsibilities as a reason for not persisting in college (Joseph, 1980; Swift, 1987; Tittle & Denker, 1980). My study results suggest that the impact of family responsibilities is less clearcut than adult students' statements indicate. The longitudinal perspective used in this study provides one explanation for the effects seen. In addition, the difference between bivariate and multivariate analyses is important. When competing explanations for degree progress are controlled, the significance of family responsibilities is somewhat reduced. A quantitative study such as this also masks the variations that occur between families with children. For example, one adult student may have a child with health problems, while another may not. The positive news is that being an adult student and a parent can be compatible roles. Students who are also parents may experience role strain or conflict which may slow their progress but not necessarily lead them to drop out.

The effect of employment patterns follows predictions more closely. Adults cite job responsibilities as a reason for dropping out even more frequently than they mention
family responsibilities (Brown & Robinson, 1988; Joseph, 1980; Swift, 1987). Further, some empirical studies with both adult and traditional-age students have found that full-time employment negatively affects persistence (Astin, 1975; Brown & Robinson, 1988; Staman, 1979). In this study, associate degree males are not affected by their patterns of employment, possibly because so few did not work while in school. For the other three groups, employment patterns strongly differentiate degree completers from active students. Students who worked full-time throughout their period of enrollment are less likely to complete a degree than to be active students. This result makes sense when we consider that working adult students are likely to attend college part-time and thus may take longer to finish. Baccalaureate males and associate females who worked full-time are also less likely to complete a degree than to be inactive noncompleters. For these two groups, working full-time is definitely detrimental to degree progress. One interesting and unexpected finding for women in both degree samples is that students who did not work at all are less likely than those who worked full-time to be active students as opposed to inactive ones. I expected the opposite effect, and previous literature does not speak to this issue. Some women who did not work at all were probably full-time homemakers, dependent upon their husbands for support. Possibly a reversal in finances or another change in family life forced them to drop or stop out of school. Other women might have been dependent upon government assistance; a change in such assistance or some other life change may have caused them to become inactive.

The number of jobs held by adult students affects degree progress in limited and surprising ways. Holding two or more jobs rather than fewer is more beneficial than I expected. The hypothesis for this variable was based on the assumption that a higher
number of jobs might be a sign of career instability or upheaval. However, only a small proportion of associate degree males and baccalaureate females who held two or more jobs are inactive noncompleters. Possibly for these groups, multiple jobs indicate an improvement in financial resources (e.g., higher salaries, tuition assistance benefits) rather than career instability. It may be necessary to look at job changes more closely to determine why they may have had the effect they did. Empirical studies on persistence have not included a longitudinal measure of employment such as this; thus, it is difficult to compare the findings of this study to other research.

The final intervening variable, enrollment pattern, affects degree progress as expected. It seems clear that students who attend college on a continuous basis will be more likely than intermittent attenders to complete their degrees, and this hypothesis is supported. Only for baccalaureate males does continuous attendance not distinguish between being a degree completer and an inactive noncompleter. One caveat should be mentioned. The coding of enrollment pattern is only as accurate as the information provided. Because information was provided retrospectively, it is possible that respondents quickly circled the entire time period they were enrolled in college rather than indicating each starting and stopping date. This response error would clearly inflate the number of continuous students. I have no way to judge the extent of this response error or the effect it might possibly have had on results, although I suspect that the results would still have supported the hypothesis.

One advantage of taking a longitudinal perspective is in seeing how activities beyond the student role affect degree progress over time. It is clear that relationship patterns have little effect on degree outcomes. On the other hand, employment patterns
have a more substantial influence. The responsibilities that accompany parenthood have inconsistent effects. Life circumstances that I expected to have important impacts may actually interfere less with persistence than with the initial decision to return to college. Once adults have made a commitment to return, many are motivated to juggle multiple roles. For adult students, the concept of "social integration" may have more to do with how one integrates school into an overall life context than how involved the student is with college extracurricular activities (Spanard, 1990). Having family and employment responsibilities may make such integration more difficult but not impossible.

**Group Differences**

Definite differences were seen between student groups, as expected. Baccalaureate degree students (especially males) are generally less influenced by background characteristics than are associate degree students. Degree outcomes for baccalaureate males are driven primarily by just two variables: 1979 degree plans and employment patterns. On the other hand, baccalaureate females are affected by far more influences. Women who complete bachelor's degrees tend to come from lower SES parental backgrounds, have attended a four-year college in the year following high school, plan to earn a graduate degree, enroll continuously, and have held two or more jobs during their period of enrollment. The single strongest effect for both men and women is their 1979 degree plans.

Associate degree students are more influenced by background characteristics. Race and high school program have little or no effect on baccalaureate students' outcomes, but both factors play a role in associate degree student persistence. Degree plans in 1979 affect men's outcomes very strongly and women's somewhat less strongly. Parenting
responsibilities have no significant effect for women, whereas employment patterns do. Conversely, employment patterns do not affect men’s outcomes, but parenting patterns do. These results differ from my expectations and suggest that associate degree students have definite distinctions from baccalaureate students.

I originally expected to find that gender differences would hold across degree samples; that is, I speculated that male associate and baccalaureate students would share commonalities, as would female associate and baccalaureate students. Actual similarities are few. The only variable that operates similarly for both samples of men is 1979 degree plans. For women, the two similarities are in the effects of 1979 degree plans and enrollment patterns. These results point to the danger of over-generalizing and the need to look at distinct student groups separately.

**Bivariate/Multivariate Differences**

A comparison of bivariate and multinomial results yields a few surprises in terms of variables that have strong effects in the bivariate case but not in the multivariate, once other variables are controlled. For instance, for associate degree males, the impact of having attended a four-year college after high school appears substantial in the bivariate case. Sixty percent of these students completed degrees, compared to only 31 percent of associate degree men who did not attend college by October, 1973. Four-year college attendance has no significant effect once other variables are controlled, however. Possibly 1979 degree plans reduce the impact of earlier actions for this group of students. Among the intervening variables, the impact of employment upon degree completion for associate degree males is also notable in this regard. Sixty-six percent of associate degree males who had "other" employment patterns (e.g., part-time, mixed part-time and full-time) completed
degrees. This was a much higher figure than for students who worked full-time or did not work at all, yet the comparison is not significant in the logistic analyses. One explanation may be that controlling for enrollment pattern reduces the effect of work schedule for this group. Likewise, the effect of school-age children on degree completion shows up very strongly for associate degree males in the bivariate analysis; only 13 percent of men with school-age children completed degrees, compared with 52 percent of men without children at the start of the enrollment period. Among baccalaureate degree women, 60 percent of black women completed degrees compared with 30 percent of white women, but race/ethnicity has no significant effects in the multinominal analysis. Half of the baccalaureate men who had taken academic programs in high school later completed degrees, whereas only 34 percent of their peers from vocational programs did so. However, high school program has no significant effects for this group once other independent variables are controlled.

Although the multivariate analyses are critical to sorting out the factors that affect degree progress, descriptive information also contributes to a better understanding of degree progress. Descriptive data point out obvious problem areas or group differences, and explanatory data such as that gained from logistic regressions reveal underlying effects.

Study Limitations

The present study is the first of its type in that it uses a national adult student sample and a longitudinal perspective to examine progress toward degree completion. Nevertheless, it is not without its weaknesses. Most limitations of this study relate to the data set itself, as noted below. Any secondary data analysis such as this is restricted to information available in the original data.
The model specified for the present study excludes two areas that have been shown to be important to the persistence process: finances (Cabrera, 1988, 1990b; Mallett and Cabrera, 1991; Nora, 1990) and integration or involvement (e.g., Astin, 1975; Terenzini & Pascarella, 1977, 1978; Tinto, 1975, 1987). Because this study's emphasis is on family and work roles, the omission of these variables is less important than it would be if I were attempting to develop a comprehensive causal model of degree progress. Neither financial factors nor institutional adjustment factors can be used with the current sample because questions about both areas pertained to the most recent school attended. The most recent school was not always the one in which a student pursued an associate or baccalaureate degree. However, it would be possible to conduct subsequent analyses with more limited samples and include measures of financial capability and institutional adjustment.

Other possible influences on degree completion that were not brought into the data analysis process included psychological characteristics, ability, and institutional characteristics. Students in the base year study completed an ability test, but a large amount of missing data exists as a result of schools being added to the study later. The missing data is unacceptably high for the ability measure. Psychological characteristics include locus of control and self-esteem measures, which were part of the base year study and several subsequent rounds. Again, the amount of missing data for these measures was judged to be too high; in addition, the value of these measures was uncertain. Finally, including information on institutional characteristics involves utilizing another data set and adding considerable complexity to the analysis. Given the focus of this study and the sample sizes, institutional characteristics were not determined to be essential information.
and thus were not considered. However, a comprehensive model of degree progress would attempt to include these factors as well.

Another limitation pertains to minority student representation. Due to the small number of Asian American and Native American students, the study was restricted to white, black, and Hispanic students. Also, the number of Hispanic students is small enough to warrant caution in interpreting results.

The sample size also precluded one possible approach to conceptualizing parenting responsibilities. An initial indicator of parenting included four groups: persons without children throughout the period of enrollment, parents throughout, noncustodial parents, and persons who had a first child during the period of enrollment. These categories had to be collapsed, and ultimately the variable was abandoned and the "childbirth" variable added. The original variable may or may not have been an effective measure. The point is that alternative conceptualizations of parenting exist and that my choice of childbirth and age of youngest child affects the results.

Related to this, other indicators of family and employment responsibilities could have been used. For instance, an examination of position level (e.g., managerial, skilled labor) might have yielded interesting results. The amount of time spent with child care or housework might have affected degree progress. However, the longitudinal approach would have made characterization of actual responsibilities difficult given the changes that can occur over time.

As mentioned earlier, the "period of enrollment" might have actually begun prior to 1979, the start of the time period covered in this study. This has the effect of possibly
complicating the interpretation of the age of youngest child but should not affect any of the other intervening variables.

Results are only as valid as the original data. Any errors in recall of dates, for example, affect the reliability of the measures constructed from date information. If a student provided the wrong starting or ending date for college, all variables based on the period of enrollment are suspect. Also, because the sample was selected on the basis of students' stated degree goals, its validity is subject to the accuracy and honesty with which students reported these goals. The dependent variable measure is also dependent on student honesty in reporting correct outcomes, although a check for accuracy was done.

Finally, the cohort studied and age range of the sample should always be kept in mind. Because students were between the ages of about 25 and 32 during the time period covered in the present study, results may be generalizable to other students in early adulthood. However, results are not intended to generalize to older populations of students, such as the reentry woman who returns to college after her children have grown. Also, whether a more recent cohort would show the same effects is uncertain.

Study Implications

The study offers a number of implications for theory, policy and practice, and further research. In the theory domain, the study contributes to the literature on college student persistence by conceptualizing a model of degree completion that is especially relevant for adult students. The inclusion of life course variables is important, as is the longitudinal perspective. The trichotomous dependent variable, while awkward analytically, captures persistence for this adult student audience more appropriately than do traditional measures. The study thus extends previous research on adult students and corroborates the
necessity of incorporating external factors in persistence models. Relationship patterns appear to be the major exception to this suggestion.

The study also offers insights related to policy and practice. The first pertains to admissions criteria. This study has demonstrated that the importance of one's high school curriculum diminishes as time passes. Adult students from academic program backgrounds are not necessarily the most successful, other factors being equal. College admission standards that are appropriate for high school seniors may not be as effective in predicting which adult students will succeed. Although the present study was not able to examine the effects of high school grades, its findings regarding high school curriculum are instructive. They suggest that colleges and universities should deemphasize high school background and instead consider more recent factors in making selection decisions about adult applicants. Documentation of work quality from paid employment or volunteer activities might be a useful alternative, for example.

Results indicate that adult baccalaureate degree seekers who had attended a four-year institution in the year after high school are at some advantage later. This finding suggests that high school students who aspire to a bachelor's degree should be encouraged to begin their higher education immediately after high school and should attend a four-year college or university. There is a role for community colleges to play, however, particularly for high school students who want to earn associate degrees. The findings also support the need for two-year colleges to continue their efforts at strengthening the transfer function. A number of baccalaureate seekers had begun their college educations the year after high school in two-year institutions, but this gave them no significant advantage over students who did not attend college at all within that year. Since the early 1970s, when NLS-72
students were beginning college, the community college transfer function has been strengthened through articulation agreements with four-year institutions and other measures to ensure transferability of credits. However, more work remains before the effect of a two-year college start is indistinguishable from the effect of beginning in a four-year institution.

Motivation plays a more critical role in degree progress. The most successful students in 1986 clearly had the highest degree plans in 1979. An assessment or discussion of a student's degree plans upon entry to an institution might provide a valuable indicator of student commitment. Determination and motivation obviously cannot be taught or mandated, but it can be discussed in terms of its impact on degree progress. Students may also be identified as at-risk as a result of having information on degree plans. Orientation or advising sessions might provide opportunities for college and university staff members to talk with adult students in greater depth about their aspirations and plans. I suspect that strongly motivated students are most able to overcome the role conflicts and other life circumstances that may derail other less motivated students.

Colleges and university should also encourage adult students to maintain continuous attendance to the extent possible. Continuity in student role may be more important than part-time/full-time status. The "stopout" phenomenon is very real among adult students, and unfortunately a temporary stopout is at risk of becoming a permanent dropout. For a variety of reasons, however, continuous attendance is not possible for some students. In these cases, institutions must do more to maintain contact with intermittent attenders and encourage their continuation in school.
The parenting role does not necessarily prevent degree completion, although it may slow progress. This good news is important for campus administrators and for adult students themselves. Family support may serve as an asset to adult students, if they seek it and can benefit from it. An understanding of the complex lives adult students lead is essential for college and university faculty and administrators. It is important to break down stereotypes, whether they are assumptions that all students are similar to traditional-age students or that all adult students will have problems completing degrees due to alternate life roles. Although this study was not able to examine the issue of child care, such arrangements sometimes prove problematic to current or prospective adult students. Institutions are encouraged to investigate child care needs if they wish to serve adult students more effectively.

The lack of significant effects of relationship patterns points to the possibility that the support and encouragement from others might serve to balance any negative effects. Adult students should be encouraged to actively seek support from friends and family. Such support might range from emotional understanding to physical help in sharing household chores.

Given the detrimental impact that full-time employment may have on degree completion, adult students should be encouraged to minimize work involvements to the extent possible. This recommendation is difficult to implement, however, because most adult students must support themselves and possibly a family as well. Responding to adult students' work commitments through convenient course scheduling and flexibility in assignments may also help to minimize the impact of full-time work. Institutions may also form partnerships with employers to find ways to improve the interaction between
employment and schooling in adult students' lives. Employers also have a role to play in terms of the benefits and encouragement they provide to employees. If they are committed to employee education and training, they will see college attendance as a good investment. Tuition assistance, flexible work scheduling, and reasonable job expectations may all provide incentives for employed students to make steady progress toward degree completion. Employed adult students themselves also have a responsibility to recognize the difficulty of balancing work and school commitments and to view themselves as active partners in achieving a balance.

Although an examination of the impact of institutional environment was outside the scope of this study, the weight of evidence from previous research indicates that individual colleges and universities very likely play an instrumental part in adult student persistence. They can present institutional barriers in the form of policies and procedures that discourage adults from enrolling initially or continuing beyond initial enrollment. For instance, adults who must go to five different offices to register for class may be unlikely to return, at worst, or at best may be disgruntled with the bureaucracy. Alternatively, institutions can equip themselves to serve adult learners by increasing flexibility and convenience, offering support services geared for adult students, and in general understanding the nature of the "new majority." Adult students' complex lives mean that coping strategies become extremely important to their success; through targeted workshops or individual advising sessions, institutions can help adult students balance multiple roles more effectively. Faculty members probably play a particularly crucial role in adult student persistence, since so many adults do not have the time or inclination to partake of extracurricular activities on campus. Thus, the classroom becomes many students' primary
point of contact with their college or university. How faculty members respond to adults and recognize their life circumstances and experience as well as engage and involve them in the intellectual life of the institution may make a difference in persistence. Institutional environments may be welcoming, indifferent, or even hostile to adult students. I concur with Schlossberg et al.'s (1991) suggestion that the whole institution benefits when environments for adult students are improved.

Must all institutions be equally concerned about adult students? Of course not. Institutional mission and situation clearly make a difference in terms of the relevance of this study’s findings. Urban community colleges and four-year commuter institutions are most affected, whereas some highly selective liberal arts colleges geared to younger students may find little in this study which pertains to them. However, a substantial number of institutions in the United States enroll hundreds or even thousands of adult students despite the fact that many still operate as if all students were 18 to 22 years of age.

The present study also suggests policy implications for federal and state governments. If this country values an educated citizenry for economic and social purposes, it must encourage continued education of its adult citizens as well as its youth. Economic incentives are one effective way to accomplish this. Examples of such incentives include financial aid for both part-time and full-time students, tax benefits to employers that offer tuition assistance programs, and individual exemption from taxation of employer-provided tuition assistance. In addition, state coordinating boards might be able to encourage institutional accommodation of adult students through subsidy policies and other means.
The study’s implications also extend to the research arena. First, it should be noted that the present study examined a selected group of adults: those who had made the decision to continue their educations. Further research might examine all NLS-72 members who had not earned degrees by 1979 to determine what distinguished those who were in college as adult students from those who were not.

Future research on adult student persistence should incorporate influences not considered in this study, particularly academic integration and financial factors. Such research could be done using a sub-set of the two NLS-72 samples used in the present study. The numbers might preclude conducting separate analyses for men and women, however. Also, studies using more recent cohorts should be conducted. For example, if the High School and Beyond study (high school graduating class of 1980) has a follow-up data collection round similar to that conducted with the NLS-72 sample, the present study could be replicated. Institutionally-based research efforts that included institutional, background, and external influences would complement national-level studies nicely.

Future research on adult student persistence should take a longitudinal view when possible and should include the types of external commitments considered in the present study, with the exception of relationship patterns or marital status.

Alternative conceptualizations of parenting and employment roles and responsibilities might be explored and tested in future studies. For example, researchers might take number of children at the beginning and end of the period of enrollment into consideration. Also, the effects of the nature of job responsibilities, extent of authority, or employer characteristics might be explored in an analysis. Related to this, a more finely-
grained analysis of the number of jobs held might be useful in determining why students
who had two or more jobs were more likely to complete degrees than students with fewer.

Finally, qualitative methodology should be employed to provide richer information
about some of the major effects found through this study. Case studies might be developed
in an attempt to understand why school-age children slowed degree progress more than did
preschool children. What specific aspects of employment responsibilities affect the
likelihood of completing a degree, and how do some students surmount them? How have
adult students' earlier high school experiences and post-high school college attendance
patterns shaped their college experiences as adult students? Why is it that persons from
higher socioeconomic backgrounds were less successful as adult students? It is difficult to
answer these and related questions quantitatively.

Conclusion

Using data from the National Longitudinal Study of the High School Class of 1972,
this study examined the impact of work and family roles on progress toward degree
completion among associate and baccalaureate degree students in early adulthood. It found
that life circumstances such as full-time employment and school-age children may
negatively affect the likelihood of degree completion. However, degree plans are extremely
important as well; this finding helps explain how two students in similar circumstances may
differ in their degree outcomes. Also, other factors being equal, adult students who
enrolled continuously had better outcomes than did intermittent attenders. The longitudinal
perspective used in this study allowed for an improved examination of the long-term
impacts of major life changes such as childbirth, marriage, or divorce. It appears that over
the long term such events do not have the dramatic impact on degree progress that one might assume.

The present study has helped to close the gap in literature pertaining to adult students and expand knowledge of the persistence process as it relates to adults. The incorporation of a life cycle, longitudinal perspective contributes to the conceptualization of a degree completion model. Moreover, implications for policy, practice, and research may benefit adult students in the future. Many institutions developed new services and programs to respond to the influx of adult students in the 1970s and 1980s. Community colleges and urban universities have been notable in this regard. With the current shortage of traditional-age students and the need for an educated work force, colleges and universities must continue to shape institutional environments that accommodate and value adult students. My hope is that institutional responses are not triggered solely by demographics and that as the number of traditional students begins to rise again, higher education will recognize that all students benefit by the changes inspired by the "new majority."
REFERENCES


One criterion for sample selection for both associate and baccalaureate degree students was 1979 degree status. Only students who had not earned an associate or baccalaureate degree, respectively, were included in the samples. However, 16 baccalaureate degree students and 17 associate degree students had not participated in the Fourth Follow-up Study in 1979. Thus their degree status in 1979 was unknown. These students' educational histories from previous survey rounds were examined to determine the likelihood of their having earned a degree. Two associate degree students were disqualified on the basis of this examination. All baccalaureate degree students were considered eligible for sample inclusion.

A further modification to the sample resulted from a check of possible inconsistencies in two 1986 measures of educational attainment. The dependent variable (degree outcome) was compared to the second measure of educational attainment. Thirty-nine baccalaureate degree students and seven associate degree students had apparent inconsistencies. Some students claimed to have completed degree requirements, yet later in the questionnaire said they had a lower level of educational attainment. Others claimed not to have completed degree requirements, but later said they held the degree in question. Not all of these cases were actually inconsistent, because some respondents completed the degree after the date specified in the educational attainment question.
inconsistent cases, I checked actual 1986 questionnaire data available on microfilm. Because the inconsistencies could not be resolved, these cases were dropped from the samples. Among baccalaureate degree seekers, 21 inconsistent cases were dropped. No associate degree seekers were dropped.
APPENDIX B

VARIABLE CONSTRUCTION FOR COLLEGE ATTENDANCE

PRIOR TO OCTOBER, 1973

To construct this variable, I began with two existing composite variables, CACD72 and CACD73, which indicated attendance in a college academic program in 1972 or 1973, respectively. The new variable was identical to the composite variables if either indicated attendance at a two- or four-year college. For cases in which CACD72 and CACD73 was missing or did not indicate any college attendance, I examined other educational participation indicators from previous survey rounds to determine if any of these cases had actually been in academic or vocational programs prior to October, 1973. If they had been, I coded the new variable as a two- or four-year college enrollment, as appropriate. This examination resulted in 68 recodings from CACD72/CACD73 responses in the baccalaureate sample and 38 in the associate.
APPENDIX C

RELATIONSHIP PATTERN VARIABLE CONSTRUCTION AND CODING RULES

Cases were initially coded into five categories: married, nonmarried, nonmarried to married, married to nonmarried, and multiple changes. Those in a marriage-like relationship were considered married; divorced, widowed, and separated persons were considered nonmarried. Due to the response distribution, the last three categories were collapsed into one covering any status changes.

Coding followed each student’s period of enrollment, using data from the fifth follow-up study conducted in 1986. If these dates were missing, data were considered missing unless a person had never been married or was married before 1979 and had not separated.

If a relationship ended the same month a person began college, they were considered nonmarried. Two associate degree cases were coded accordingly. No baccalaureate degree cases fell into this category.

If a change in relationship status and the end of the period of enrollment occurred concurrently, I coded the case as having a status change. For example, if the student’s period of enrollment ending date and date of marriage were the same, I coded the case as "changed status." Eleven baccalaureate degree cases and two associate degree cases were coded according to this rule.
APPENDIX D
CONSTRUCTION OF VARIABLES RELATED TO
PARENTING RESPONSIBILITIES

Initially two variables were created: parenting responsibilities and age of youngest child. Each variable was created using students' period of enrollment as the time backdrop and data from the fifth follow-up study in 1986.

Parenting responsibilities had four categories initially: no child throughout period of enrollment, had child throughout period, first child born during period, and noncustodial parent. Due to response frequencies in each category, this variable was collapsed into two groups: primary parent (including having first child born) and non-primary parent (including noncustodial parents). Noncustodial parent consisted of any person who did not live with his/her child during the period of enrollment. Information on these students was examined in detail before a person was considered a noncustodial parent. First, cases were examined to determine the ending dates of relationships, whether or not the child was a stepchild, and with whom the child lived. If evidence was inconclusive, original questionnaires on microfilm were checked.

Age of youngest child was created using the child's age relative to the beginning of the period of enrollment. The variable has three categories: no child, including parents who had a baby after the start of their period of enrollment; preschool child (up to 72
months old); and school-age child. Noncustodial parents (as described in the preceding paragraph) were considered as having no child.

These two variables overlapped in terms of the nonparent categories in each. In addition, persons who had their first child during the period of enrollment were coded as parents for the primary parenting variable and as having no children for the age of youngest child variable. Given these problems, the primary parenting variable was not used. Instead, a new indicator was created: childbirth during the period of enrollment. This variable is a simple dichotomy that indicates whether or not the student (or student’s partner) had a child during the period of enrollment. The child born could have been a first or subsequent child. Coding was straightforward because no cases had childbirth dates concurrent with the beginning or end of the period of enrollment.
APPENDIX E

EMPLOYMENT PATTERN VARIABLE CONSTRUCTION AND CODING RULES

Employment pattern was constructed according to each student's period of enrollment during the time covered by the fifth follow-up study conducted in 1986. Initially, several response categories were created for the employment pattern. These included (a) employed full-time throughout, (b) employed part-time throughout, (c) part-time/full-time combination, (d) part-time/full-time/not working, (e) part-time/not working, (f) full-time/not working, and (g) not working. Students who worked at least thirty-five hours weekly were considered to work full-time. Due to low response frequencies in several categories as well as the complexity of interpretation with this number of categories, a collapsed scheme was used. Students were coded as working full-time throughout the period of enrollment, working some other work pattern, or not working at all. Employed students whose number of hours of work or dates of employment were missing were considered to have had "other" employment patterns.

The NLS-72 Fifth Follow-up Survey questionnaire allowed respondents to report information on four jobs. When a person's work history from 1979-1986 involved more than four jobs, I charted their work patterns during the period of enrollment. These persons were categorized as having worked full-time only if they had a continuous, full-time work history throughout the four jobs reported.
The indicator for number of jobs was originally coded as none, one, and two or more. However, because none overlap exactly with the "no work" category of employment pattern, the analysis did not run correctly. Thus, I collapsed the first two categories (0-1 job) into one.