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# Age and College Completion: A Life-History Analysis of Women Aged 15–44

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A substantial proportion of students who are enrolled in U.S. colleges and universities are over age 25. A key question is whether older students are as likely to obtain degrees as are younger students. The authors examine the odds of obtaining a bachelor's degree by the age of the enrolled student. The effects of background attributes and adult role events are also examined using data on women aged 15–44 from the 1995 National Survey of Family Growth. Women over age 25 are at a disadvantage in completing their degrees, but this effect is due largely to the fact that older students are more likely to be enrolled part time and to face competing demands for their time and attention. When part-time enrollment is taken into account, the negative effect of age on the completion of degrees is explained. The implications of these results for future research and for policies and practices regarding adult college students are discussed.

**A**dult students represent a significant proportion of college enrollments. Overall, 43 percent of the students (including graduate students) who are enrolled in postsecondary institutions are aged 25 years or older. In 1995, over one-third of undergraduates were aged 25 or older (37.3 percent), including 18.8 percent of full-time students and the majority (63.3 percent) of part-time students (U.S. Department of Education 1998).<sup>1</sup> In that year, women made up 60.0 percent of all undergraduates over age 25 and 57.2 percent of the full-time undergraduate students over age 25. The enrollment of women in higher education has grown more rapidly than that of men since

1970 (Jacobs and Stoner-Eby 1998).<sup>2</sup> This development is part of a broader evolution of "out-of-sequence" developments in the life course (Rindfuss, 1991; Rindfuss, Swicegood, and Rosenfeld 1987).

Adult education may represent a significant source of investment in human capital (Jacobs and Stoner-Eby 1998). Anne Mullen (personal communication, 2001), drawing on data from the 1993 Baccalaureate and Beyond Longitudinal Study, found that 22 percent of men and 24 percent of women earn their bachelor's degrees at age 25 or older. Returning to school is a way that an individual who did not complete his or her education earlier in life can catch up to those with more cre-

dentials. Astone, Schoen, and Ensminger (2000) reported that 44 percent of African American women in a recent cohort reentered school at least once. Evidence from a sample of teenage mothers in Baltimore who have been followed since the late 1960s (Jacobs and Rich 1998), and from a 30-year follow-up of students enrolled at the City University of New York in 1970 (Lavin 2001) also points to significant additional schooling completed years and even decades after the initial entry into college. Yet adult education remains understudied.

Three themes stand out in the literature on adult education. The first is an effort to pinpoint the wage returns to schooling that occur at different ages. This research has sought to determine whether one year of education completed at age 30 has the same effect on wages as a year of education completed at age 22 (Grubb 1992; Kane and Rouse 1995; Light 1995; Monks 1997). The research has generally underscored the economic significance of enrollment for older students. In other words, there is substantial support for the notion that the wage and salary returns to a year of schooling are similar whether that schooling is undertaken on a traditional academic schedule or is completed in a nontraditional time frame. The question of whether obtaining a degree per se is especially valuable is still being debated (Jaeger and Page 1996; Kane, Rouse, and Staiger 1999).

A second theme in the literature has been an examination of the factors that differentiate the enrolled from those who are not enrolled. These studies have tended to draw on large national samples that often involve panel designs, following populations over a period of years (Bradburn, Moen, and Dempster-McClain 1995; Elman and O'Rand 1998; Felmlee 1988; Light 1996; Teachman and Polonko 1988). They have made it clear that many adult social roles, such as being married and being a parent, tend to reduce women's likelihood of enrolling in college at later ages. We build on this approach by focusing on whether these factors affect the acquisition of a degree.

A third theme in the literature is the barriers faced by older students in completing

their studies, including rusty academic skills and the lack of social supports (see Pitts 1992 for a review). Many of these studies have drawn on case studies of individual campus programs, often relying on qualitative data or surveys eliciting students' opinions about the factors that promote or inhibit their satisfaction with their college experiences. Relatively few such studies have followed students to examine the factors that influence their completion rates (for two exceptions, see Cleveland-Innes 1994 and Metzner and Bean 1987), and fewer still have compared the factors that affect older and younger students.

The objective of our study was to determine how the chances of completing a degree vary with age. In pursuing this objective, we sought to assess the effect of timing measures, such as previous enrollment spells and delayed enrollment, on the likelihood of completing a degree. We also examined the effect of specific life events, such as childbirth, marriage, divorce, and employment, on the chances of a woman completing her degree. We focused on women because life events, such as marriage, parenthood, and divorce, are more consequential in shaping women's life trajectories than men's. Our analysis controlled for background characteristics, such as race, ethnicity, and parental education, on the chances of finishing a spell with a diploma in hand.

We build on the existing literature in three specific ways. First, the analysis of the completion of spells of schooling by age is unprecedented. We examined the chances of completing spells of college on a recent sample of a wide age spectrum of women. Much of the previous research has focused on limited age cohorts (Felmlee 1988) and has captured only a portion of women's educational trajectories (but see Bradburn et al. 1995). Second, having a wide spectrum of ages in the same sample enabled us to ascertain whether life events have more of an effect on education at some points in the life course than at others. Third, we examined the relative contribution of social background and life events in influencing the completion of bachelor's degrees. Most other research has focused on life events without incorporating measures of social origin into the analysis (Bradburn et al. 1995; Felmlee 1988).

The next section discusses studies of attrition and persistence in more detail. Then we present specific hypotheses about the age trajectory of attrition, drawing on the literature on adult enrollment. Sections on Data and Methods, Results, and Discussion follow.

## ATTRITION AND PERSISTENCE IN COLLEGE

Many studies have examined the attrition of students from college (see, e.g., Adelman 1999; Tinto 1993), but these studies have not addressed how attrition varies across students in their early 20s, late 20s, 30s, and even 40s. Only a few studies have explored the determinants of completing school among older students, and they have not directly addressed the issues raised here. The most common approach to studying completion rates is to follow a cohort of students over time (Adelman 1999; Horn and Carroll, 1997; Light and Strayer, 2000; McCormick and Carroll, 1999). For example, Adelman (1999) presented data on the cumulative chances of completing a degree through age 30, drawing on data from the High School and Beyond cohort. Other studies conducted by researchers at the National Center for Education Statistics (NCES) have used the same general approach, but have focused on specific populations or have followed students for a shorter period than did Adelman.

These valuable studies have enriched our understanding of persistence and attrition among college students, but they have not directly examined the questions we pose here; specifically, how completion rates vary with age is not fully addressed in these studies. For example, Adelman (1999) showed the cumulative chances of finishing by age 30, but did not consider whether the chances of obtaining a degree are steady or decline with age. Light and Strayer (2000) reported a positive effect of age on college completion, but this finding merely reflects the fact that there is a cumulative increase in college completion as individuals age. In other words, those who do not complete college by age 22 can try again when they are 23, again when

they are 24, and so on. Thus, the chances of finishing college will inevitably be higher by age 30 than they were at age 22. In our study, we sought to answer a slightly different question: Do the chances of completing college rise or fall with age?

Horn and Carroll (1997) came the closest to addressing the issues we pose in this article. They found that older students are less likely to complete college within five years than are their younger counterparts. This finding may well be due to the fact that older students are more likely to be enrolled in school part time and, as a result, take longer to finish than do their younger counterparts. We examine enrollment spells, rather than a fixed period, to see whether older students who start a given encounter with the system of higher education are as likely to persist until they complete their degrees as are younger students. This approach removes the arbitrary imposition on the analysis of a fixed period until completion.

This article is the first to compare systematically the chances of completing a college degree for older and younger students.<sup>3</sup> Specifically, we examine how the odds of completing a given spell of school vary with the current age of the student. We then examine the effects of social background, competing social roles (marital, parental, and employment status), and other covariates on the chances of completing a college degree during a given spell of schooling.

## HYPOTHESES

There are several prominent reasons to expect that younger students will be more likely to complete college than will older students and some good reasons to expect little or no decline with age. We summarize the considerations on each side of this issue.

Many analysts suspect that older students are less likely to complete their degree programs because of the many barriers that older students face in returning to school (Fleishman 1992; Pitts 1992; Sperling 1991). Here we divide these barriers into those associated with social roles and those associated with social integration. Research has consis-

tently pointed to the fact that older students have more competing demands for their time and attention than do younger students (Home 1998; Terrell 1990; Valentine and Darkenwald 1990). Haggstrom, Kanouse, and Morrison (1986), for example, found that being married and especially having children reduce educational attainment among women. Older students are likely to have acquired several important adult roles, such as worker, spouse, and even parent, in addition to the role of student. We expect that the more competing roles one has acquired, the less the individual will be able to focus on the role of student and the less likely that person will be to finish college.

The competing-role thesis is principally a matter of conflicting time commitments, but there is more to role obligations than time per se. For example, some husbands of women who return to college resent their wives' pursuit of a college degree (Hollenbeck and Kimmel 1996; Suitor 1987). Thus, educational decisions reflect familial and other types of support.

One specific manifestation of the competing-roles argument is that older students are more likely to enroll part time rather than full time. Clearly, students who attend full time are likely to finish in a shorter time. Moreover, they have less exposure to disruptive life events—marriage, the birth of a child, or the loss of a job that provides tuition benefits—and thus are more likely to finish school during a given spell of enrollment. A key empirical question we address in this article is whether part-time status completely accounts for the effect of multiple roles on the completion of college.

A second set of reasons that older students may be less likely to complete their degrees is that they are likely to be less socially integrated on campus than are younger students. Tinto (1993, 1998) emphasized the importance of social connectedness in predicting college retention. At least one study (Ashar and Skenes 1993) found that one measure of social integration, specifically smaller class sizes, aided the retention of older students. Integration into the college scene may be easier for younger than for older students for several reasons (Cross 1981; Graham and

Donaldson 1999). For example, most social events remain oriented to the experiences and lifestyles of younger students. In addition, younger students are more likely to reside on campus and take part in campus social life than are older students (Bean and Metzner 1985). As a result, if social integration is one of the keys to the retention and persistence of students, then younger students are likely to have an advantage over older students.

A related argument is that being atypical itself represents a kind of barrier to older students completing their degrees. For instance, Redding and Dowling (1992) suggested that the ceremonies and rituals of college are designed with 18- and 19-year-old full-time students in mind. Their small sample of older women spontaneously developed their own ceremonies and rituals, since these needs were not met by the traditional university practices. The problem of fitting in is often noted in studies of older students (Spannard 1990).

Is social integration key to the success of older students? This question remains open partly because the importance of social integration for older students has not been well documented, since most studies have focused on college students in their late teens and early 20s. Moreover, there is a question of whether students need to be integrated into school or just integrated into some social collectivity, such as the workplace or the family (Bean and Metzner 1985). Young residential college students who are not well integrated into campus life are unlikely to have other strong ties, while older students have many potential bases of social integration. This research raises the question of whether social integration in general or social integration in the educational setting per se is most important in predicting persistence in school (for conflicting evidence on this issue, see Cleveland-Innes 1994; Metzner and Bean 1987).

Although the preponderance of the literature focuses on the barriers faced by adult students, there are at least three arguments that point to the potential advantages that older students may have in terms of the chances of completing college. First, older

students generally have already accumulated college credits from earlier periods of college enrollment. Most older students are not enrolling in college for the first time but, rather, are returning to college. As we discuss later, in the data we examined, 82.38 percent of the female students who enrolled after age 25 were engaged in a return spell of college enrollment, rather than an initial foray. The obvious, but often neglected, implication of this fact is that older students have a shorter distance to the finish line than do younger students. All other things being equal, their accumulated credits should increase the chances of older students finishing school, although the difficulty that students often face in transferring credits from one program to another may limit this advantage.

A second consideration that favors older students is greater maturity and motivation. The greater focus of older students is a prominent theme in the literature (Dirkx and Jha 1994; Leppel 1984; Schlossberg, Lynch, and Chickering 1989). Spannard (1990) suggested that older students are more vocationally oriented and see more clearly the payoff to schooling as a result of direct encounters with other adults who have completed their degrees. The clearer sense of the economic payoff of schooling among older students may lead to better work habits and, consequently, a high rate of completing degrees.

Third, some older women have greater financial resources, either their own savings or from jobs that provide tuition assistance (Elman and O'Rand 1998). In addition, married women may have the income and savings of their husbands to draw on. Does marriage promote or inhibit older women's completion of college? On the one hand, as was noted earlier, marriage represents a competing role that may detract from the single-minded focus on schooling. On the other hand, the greater financial resources of marriage may enable women to concentrate more fully on their studies.

What does the evidence show with respect to resources and returning to school? Felmlie (1988) reported that women with higher-status jobs are more likely to return, while Bradburn et al. (1995) found that women who work part time are more likely to return

than are those who work full time. Marini (1978) and Teachman and Polonko (1988) noted that being married has an inhibiting effect on enrollment, which indicates that the positive effect of added resources stemming from marriage is not sufficient to counterbalance the negative effect of additional role responsibilities. In our analysis, we examine the effect of these factors on the completion of degrees, rather than on enrollment.

We also search for several interaction effects. First, does the presence of young children have the same effect on completing school for younger mothers as for older mothers? One may expect that the presence of young children has an especially significant effect on the chances of younger mothers completing college. Previous research has shown that teenage mothers are less likely than nonmothers to graduate from high school (Jones et al. 1999) and less likely to attend college if they do complete high school (Upchurch 1993; Upchurch and McCarthy 1990). Also, younger mothers are less likely to be married (Morgan and Rindfuss 1999) and thus forgo financial and emotional support during college. On the other hand, analyses of women's return to work after childbirth have not shown significant effects of a woman's age at the birth (Desai and Waite 1991).

A second interaction that we consider is whether the age trajectory and determinants of degree completion vary for full-time and part-time students. Since part-time students constitute the majority of older students, it is important not only to see if there is an effect of part-time enrollment on the chances of completing a degree, but to consider whether the covariates have the same effect on the enrollment of part-time students as they do for full-time students.

## **DATA AND MEASURES**

We conducted our analyses on a nationally representative sample of American women from the National Survey of Family Growth (NSFG), a retrospective study that was designed to elicit information on the fertility and reproductive histories of women in the

United States. We analyze data from Cycle 5, carried out in 1995, which consists of 10,847 respondents who represent women aged 15–44. The data included oversamples of racial and ethnic minority groups, along with appropriate sampling weights. The sample was stratified for age, race and ethnicity, marital status, and birth parity (National Center for Health Statistics, NCHS, 1997). A total of 8,535 of the women in the NSFG (or 78.7 percent of the sample) completed high school or earned general equivalency diplomas (GEDs) and thus were eligible to attend college.<sup>4</sup> Our analysis focuses on the subsample of 5,142 women who reported at least one spell of college attendance and gave valid dates for when they last attended high school. These women represent 60.2 percent of the high school graduates in the NSFG.<sup>5</sup>

These data have several attractive features for the analysis of college completion rates. First, the NSFG data set includes information on a wide age range of women, not a single cohort followed over time, which allows for an analysis of age-specific completion rates that has not previously been attempted. Second, the sample is large and allows for detailed analyses of various uncommon groups, such as GED recipients. Third, the data set interweaves educational histories with other life-course events, such as marriage, childbearing, and employment. We are thus well positioned to see the effect of these life events on the completion of college degrees.

Women retrospectively reported up to 10 periods of college attendance, as well as the dates when they received their degrees. The first question asked was: "Now I'd like to know about the periods that you attended college. Please report periods of full-time and part-time attendance separately. In what month and year did you first attend college?" (NCHS 1997:A12). Instructions to the interviewer noted, "Respondent Should Include Only College That Counts Toward an Associate's, Bachelor, Graduate, or Professional Degree" (NCHS 1997:A12). The respondent and interviewer worked together on a life-history calendar to prompt recall, and the instructions told the interviewer to help the respondent write in college-attendance dates on the calendar, if necessary.

The interviewers next assessed whether the spell was full time or part time. The instructions stated that the respondent should determine this status for herself. The definition that the interviewer was supposed to give if asked was that "part-time status is anything less than full-time attendance at the particular institution or in the particular program" (NCHS 1997:A12). Finally, the respondent reported when the spell ended, in answer to the question, "When did that period of . . . attendance end? Don't include summer vacation as a break in attendance if you returned the next fall" (NCHS 1997:A13).<sup>6</sup>

Each continuous reported period of attending college is defined as an enrollment spell. A total of 9,087 spells of enrollment in higher education were reported by the NSFG sample. To limit our analyses to college spells only, we distinguished college from postgraduate spells by defining spells that occurred before the attainment of a bachelor's degree as a college spell and those that occurred afterward as postgraduate work. We ignored the possibility that a woman returned for a second bachelor's degree.

## Variables

We used several time-constant variables to measure the respondents' demographic and family background characteristics. We created spell-specific variables that were based on the respondents' schooling histories, as well as measures that cumulated across spells. Finally, we used the pregnancy, marriage, and employment histories to create measures of life-course status at the beginning of and events during each spell. These characteristics may change from spell to spell.

**Invariant demographic and background characteristics** We divided the respondents into four racial and ethnic groups: Hispanic, non-Hispanic white, non-Hispanic African American, and non-Hispanic of any other race. We also included a measure of whether the respondent was born outside the United States (immigrant). Measures of the respondent's social background included father's education (less than a high school diploma, high school graduate, some college, four or

more years of college, or postcollege), mother's education (same categories), and mother's work status during the respondent's childhood (worked for pay, did not work for pay). The maternal employment question specifically asked whether the respondent's mother worked for pay "most of the time" during the period when the respondent was aged 5–15. Our measure of GED status indicates whether the respondents completed high school by obtaining a GED or not. We also constructed a measure of whether the respondent began her first spell of college directly after she completed high school (i.e., within one year).

**Spell-specific variables** We constructed the following indicators for each spell of schooling: start month, end month, length in months, whether the respondent was enrolled full time or part time, and whether the spell ended with the attainment of a bachelor's degree.

**Measures cumulating across spells** These measures included the number of this spell among all undergraduate spells and the accumulated time (in months) as an undergraduate before the current spell.

**Life-history measures** For each person-month, the data indicate the respondent's age, the presence of preschool-age children, marital status, and full- and part-time employment. These measures may change during a given spell. For example, we found that 3.4 percent of the women in our sample became divorced at some point during a spell of schooling. We found that we needed to lag the measures of employment status by one month because the respondents often reported being employed full time during the month that they graduated. When we did so, the result conformed to our expectation that full-time employment inhibits the completion of degrees.

### **Limitations of the Data**

Some limitations of these data should be noted. First, the information was collected retrospectively, which may have resulted in

some women not reporting all spells of schooling.<sup>7</sup>

Second, the NSFG includes information on employment but not about specific jobs, and we were thus unable to explore the impact of job attributes on educational patterns (Elman and O'Rand 1998). The data also do not include retrospective information on income or earnings, so we were unable to consider family income as a determinant of returning to school or individual earnings as a consequence of returning to school (Felmlee, 1988; Light, 1995). The NSFG includes information on gender-role attitudes and family care responsibilities at the time of the survey but not contemporaneously with each spell of schooling (Bradburn et al. 1995). We did not include these important questions because they would not have been consistent with the temporal ordering of our analysis.

The third and main drawback of the NSFG data set is that several important educational indicators are lacking. For example, the data do not indicate whether a respondent was enrolled in a two-year or four-year program. The data indicate whether the respondent earned an associate's degree, but for those who had not yet completed the degree, the data do not indicate whether they were in this type of program.<sup>8</sup> In addition, test scores, credits toward a degree, and information on the type of college attended are not included in these data. While this limitation is unfortunate, key findings presented here are unlikely to be affected by this omission. Specifically, the effects of particular predictor variables may be mediated by test scores and grades, but the inclusion of these measures should not alter the age patterns that are the principal focus of the analysis.

## **METHODS**

Life-history data collected in the manner of the NSFG survey are susceptible to the problem of right censoring, which means that respondents may have experienced some life events, such as marriage, but have not yet reached the point in their lives to encounter other events, such as having children. Those who are still enrolled in school are considered

censored because they have neither completed school nor dropped out. Our approach to the problem of censored data was to use event-history methods that utilized every person-month of data available. Doing so allowed us to examine the behavior of those whose education was not yet complete, as well as those who completed school or dropped out.

We created a person-month file that was based on all months in which the respondents were attending college and used discrete-time event-history methods with logistic regression to predict the attainment of degrees. This approach also allowed us to model marital, parental, and employment statuses as varying each month. Our data set yielded 231,434 person-months of enrollment in higher education.

Our multivariate analyses focus on the effects of age and how other variables alter these effects. We used logistic regression on the person-month file to estimate the effects of the variables on the likelihood that a given spell would end in a degree. The odds ratios refer to the relative chances that the respondent would earn her degree in a given month. This type of estimation does not suffer from dependence among the observations because each respondent experiences only one event (Allison 1995). This approach allowed us to model the effects of time directly and not to impose assumptions, such as those required in proportional hazards (also known as Cox regression) or parametric approaches.

## RESULTS

Figure 1 presents annualized degree-completion rates by age for all women who were enrolled in higher education and for full-time and part-time enrollees. A number of findings are evident in Figure 1. First, there is a clear spike in the completion of degrees at ages 22 and 23. This finding conforms to the pattern one would expect for students who enrolled full time directly after high school. Compared with students aged 22 or 23, students at later ages have a lower rate of completing college. However, the downward slope with age is

remarkably gradual. Roughly 15 percent of the students who enrolled at age 25 graduated within the year, compared with roughly 10 percent after age 30.

The division of students into full-time and part-time enrollees sheds further light on the degree-completion picture. Among part-time students, there is no clear downward trend with age. Indeed, there is only the slightest uptick in completion around age 23. Completion rates hover between 7 percent and 9 percent for most ages between 22 and 40. There is a slight downward trajectory in completion rates among full-time students, but the slope of the curve is quite gradual, remaining over 20 percent for most ages between 25 and 40. The biggest change after age 25 is that the composition of students shifts from mostly full time to mostly part time. As a result, the completion rate for all students tracks that of full-time students before age 25 and that of part-time students afterward. Figure 1 clearly establishes that both the level and the age profile of degree completion differ between full-time and part-time students. This finding suggests that analyses that separate full- and part-time students would be justified.

Table 1 presents the characteristics of enrolled students by age. This analysis compares the respondents' 6,918 spells of college enrollment that began when the respondents were less than 25 years old with the 2,169 spells of enrollment of those aged 25 years or older. The results clearly indicate that students who enroll in school before age 25 differ in many important respects from their older counterparts. For the younger group, most encounters with college represent their first spell of enrollment. Less than one-third (31.26 percent) are repeat entrants for this group. For the older students, the vast majority of cases (82.38 percent) represent repeat spells. (All the differences between older and younger students presented in Table 1 are statistically significant at  $p < .05$ .)

Younger students are more likely to be enrolled full time. Just over three quarters (75.39 percent) of enrollment spells under age 25 are full-time spells, compared with less than 2 in 5 (36.55 percent) for spells starting at age 25 or later. Younger students are less likely to

Figure 1. Completion of Degrees, by Age and Full-time Status (Annualized)

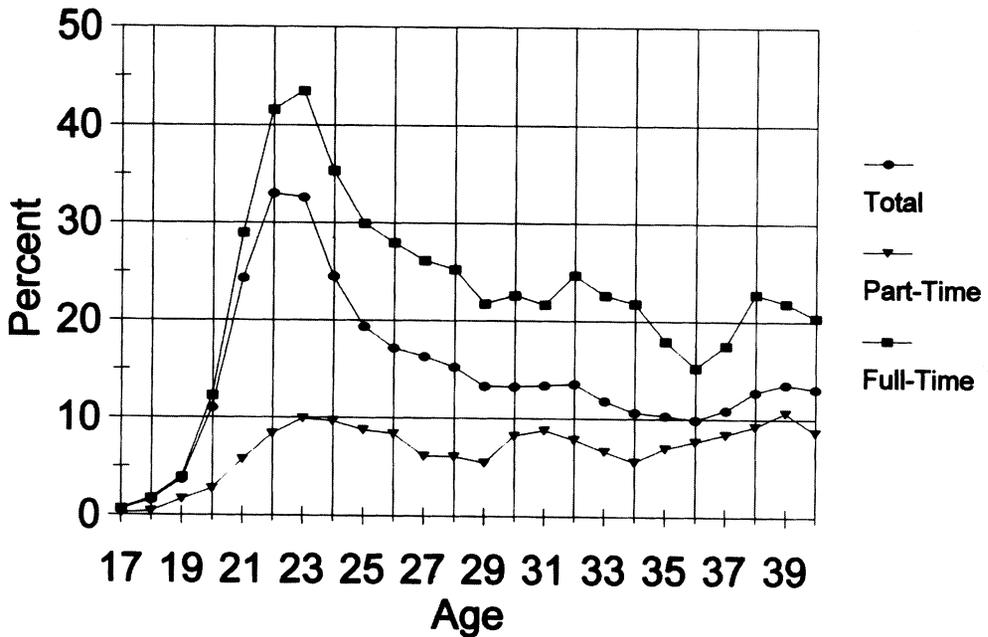


Table 1. Characteristics of Enrollment Spells, by Respondent's Age at the Beginning of the Spell (percentage)

Characteristic	Age	
	Younger than 25 (6,918 spells)	25 or Older (2,169 spells)
Repeat spell	31.26	82.38
Enrolled full time	75.39	36.55
Delay between high school completion and first college spell	37.06	55.99
GED	1.37	5.96
Married	9.23	44.40
Divorced	2.19	26.05
Preschool-age child at home	7.70	53.14
Working full time	39.54	63.11
Working part time	24.94	12.95

Note: All the differences between younger and older students are statistically significant at  $p < .05$ .

have experienced a delay between completing high school and starting college, to have GED degrees, to be married or divorced, to have a preschool-age child at home, and to be working full-time. A notable minority of the younger students (39.54 percent) enroll in col-

lege even though they have full-time jobs, but this is a smaller fraction than for the older students (63.11 percent). However, younger students are more likely to work part time while enrolled than are older students.<sup>9</sup>

As was noted earlier, many of these factors

**Table 2. Determinants of the Odds of Obtaining a College Degree During the Observed Month**

Variables	Parameter Estimate	Standard Error	Odds Ratio
<i>Current Age</i>	0.005	.008	1.005
<i>Age 17–18 (dummy)</i>	-2.621**	.252	0.073
<i>Age 19–20 (dummy)</i>	-1.266**	.070	0.282
<i>Race and Ethnicity</i>			
Non-Hispanic white (reference)	—	—	—
African American	-0.254**	.060	0.776
Hispanic	-0.338**	.082	0.713
Other races	-0.356**	.104	0.701
<i>Immigrant</i>	-0.071	.074	0.931
<i>Parental Education</i>			
Father did not complete high school (reference)	—	—	—
Father a high school graduate	0.034	.061	1.034
Father had some college	-0.065	.072	0.937
Father had college plus	0.027	.065	1.027
Mother did not complete high school (reference)	—	—	—
Mother a high school graduate	0.036	.065	1.037
Mother had some college	-0.111	.074	0.895
Mother had college plus	-0.081	.074	0.923
Mother worked when respondent was young	0.009	.041	0.991
<i>Number of Previous Spells of College</i>	0.198**	.026	1.219
<i>Delay Between High School Completion and First College Spell</i>	-0.033**	.011	0.968
<i>GED</i>	-0.587**	.188	0.556
<i>Duration of Spell (in months)</i>	0.008**	.001	1.081
<i>Duration of Spell Squared</i>	-0.001**	.000	0.999
<i>Summer Enrollment</i>	0.281**	.095	1.442
<i>Full-Time Enrollment Status</i>	1.292**	.064	3.640
<i>Marital Status</i>			
Single (reference)	—	—	—
Married	0.094	.059	1.099
Divorced	-0.154	.094	0.857
<i>Employment Status</i>			
Not employed (reference)	—	—	—
Employed full time	-0.160**	.047	0.852
Employed part time	-0.424**	.055	0.654
<i>Preschool-age Children in Household</i>	-0.105	.081	0.900
<i>Preschool Children x Age Less than 25</i>	-0.240*	.124	0.786
<i>Intercept</i>	-5.937**	.278	—
<i>-2 Log Likelihood</i>			
Total	29262		
Model	25700		
<i>Degrees of freedom</i>	27		
<i>Reduction in -2 log likelihood</i>	.122		

\*  $p < .05$ , \*\*  $p < .01$ .

are likely to reduce the chances of completing a spell of schooling. (The exceptions are previous spells, which should increase the chances of finishing, and possibly marriage, which could have both positive and negative influences on the chances of completion.) Since the factors are more heavily weighted to older students, it may be that these attributes are responsible for the lower completion rates of older students. In other words, it may be that older students would be just as likely to finish as would younger students if they were able to enroll in school full time, did not have to work full time, and did not have young children to attend to.

Table 2 presents the results of logistic regression models for all enrolled students. This analysis presents the factors that help to distinguish completion (1) from noncompletion (0). Positive coefficients indicate that the variable increases the odds of completion, whereas variables with negative coefficients inhibit the chances of completion. The unit of analysis is person-months enrolled. The models presented in Table 2 and subsequent analyses are based on 231,434 person-months of enrollment in higher education. We included two dummy variables for age 17–18 and age 19–20 to capture the fact that students at these ages are unlikely to have accumulated enough credits to earn a degree. A continuous time-varying measure of age was also included.

In all the models, we included a measure of the duration (in months) from the beginning of the spell. This is a necessary component in the models we estimated to avoid spurious effects that are due simply to the length of the spell in school. We also included a squared duration term to test for nonlinearities in the relationship between the length of spells and the completion of degrees.

There is no statistically significant effect of age on the odds of completing college in the full model presented in Table 2, contrary to the expectations of skeptics of adult education. We found a negative effect of being age 17–18 and 19–20 on completion. This negative effect is due to the fact that students at these ages have rarely accumulated enough credits to graduate, even if they are enrolled full time. Once the strong negative effect of

these early years is taken into account, current age bears no relationship to the odds of completing a degree.

Table 2 presents the coefficients of the full model. Several social background measures affected the completion of a degree, while others did not. Nonwhites are less likely to finish than are other students. It should be noted that there may be many other factors that account for these effects other than race and ethnicity per se that are not included in our analysis. For example, these effects may reflect differences in the quality of previous education available to these students, test scores, or differences in income or wealth. Unfortunately, the data at hand did not allow us to pin down how much of these racial and ethnic differences are due to race and ethnicity per se or reflect other differences among the groups. The effect of being an immigrant on completing a degree is not statistically significant. Parental education does not affect the chances of completion, net of other factors in this analysis. We found the weakness of parental education in all of our models somewhat surprising, given the wealth of evidence on parental education and children's educational outcomes (Kerckhoff 1995; Schneider and Coleman 1993). It seems that parental education may affect the chances of beginning a spell of college enrollment, rather than affect the chances of finishing among those who are already enrolled (King and Jacobs 1999).

Turning to variables related to the timing of schooling, we found that students with accumulated spells are more likely to finish school than are those who enter college for the first time. For every additional previous encounter with college, the odds of finishing increase by 22 percent (odds ratio of 1.219). (We conducted additional tests, not shown, that indicated that this effect is essentially linear.) Those who delay their enrollment between high school and their first entry into college are less likely to finish, as are those who finish high school with a GED. Those with GEDs are about 45 percent less likely than others to finish college (odds ratio of .555), other factors being equal.

The duration of a spell of schooling is directly related to the chances of obtaining a

degree. In other words, the longer students have been in school, the closer they are to the finish line. However, we also found a negative effect of duration squared. This effect means that the relationship between the length of spells and the odds of completion is curvilinear. In other words, spells that have lasted a long time are less likely to produce a degree. This finding suggests that some students are enrolled but are not accumulating the credits needed to graduate (Adelman 1999). Enrolling during a summer month had a positive effect on the chances of completion, which, as we will show, is an effect confined to part-time enrollees.

Turning to measures of competing social roles, those who are enrolled full time are much more likely than those who are enrolled part time to finish. The odds ratio is 3.640, which is the largest effect in the analysis. (Later, we report additional analyses that determined whether the effects documented here are the same for full-time and part-time students.) Given the sharp increase in the part-time enrollment of older students, this is the principal reason that older students are less likely to complete their degrees during a given period.

The effect of being married on the chances of completing degrees was not statistically significant; the same was true of being divorced. Note that both these effects are net of enrollment status. (In additional analyses not shown, we found that divorce indeed has a negative effect on completion, but it operates by inducing divorced women to enroll part time.) Paid employment, whether full time or part time, decreases the chances of finishing.

The presence of preschool-age children reduces women's likelihood of finishing, net of other factors, including part-time enrollment status. But we found that this effect varies by age. In other words, younger mothers (those under age 25) are impeded in their efforts to complete their degrees, but the effect of motherhood for older mothers is not statistically significant.

In results not shown, we found that both work and parenting have a significant negative effect on completion rates that partly operate through part-time employment. In

other words, the direct effect of these adult roles is negative but is reduced somewhat when part-time enrollment is included in the analysis. The effect of marriage is not statistically significant even without controlling for part-time employment, but divorce does have a negative effect on the chances of completion. In short, these analyses provide additional support for the competing-roles thesis.

In other results not shown, we examined the factors that explain the age effect. The biggest factor that accounts for the effect of age on completion is part-time status. Other factors, such as a delay between the completion of high school and the start of college and being employed full time, alter the age effect only slightly. Once these factors and other factors included in Table 2 are taken into account, the chances of completing a spell of schooling no longer decline with age. In other words, among older women who return to college full time and who are childless, the chances of completing college are similar to those who enrolled in their early 20s. On the other hand, older women who are enrolled part time, who delayed their entry into college, and who have become mothers are much less likely to complete their degrees than are younger women.

Table 3 presents models for full-time versus part-time students. The comparison of these results indicates that age has a slightly positive effect for full-time students but no statistically significant effect for part-time students. Enrolling in college part time thus represents an obstacle to finishing, but it is no greater an obstacle at older ages than at younger ages.

The results for most of the covariates for full-time enrollees are similar to those for the full sample presented in Table 2, with several exceptions. The presence of preschool-age children is not statistically significant for full-time students, whereas it is in the full sample. Marriage has a positive effect for full-time students, whereas the effect is not statistically significant in the full sample. And summer enrollment has no positive effect for full-time students, whereas the effect is positive in the full sample.

Turning to part-time students, one notable finding is how few of the predictors are statistically significant. The explanatory power of

Table 3. Determinants of the Odds of Obtaining a College Degree During the Observed Month

Variables	Full Time			Part Time		
	Parameter Estimate	Standard Error	Odds Ratio	Parameter Estimate	Standard Error	Odds Ratio
<i>Current Age</i>	0.027**	0.010	1.027	-0.011	0.013	0.989
<i>Age 17-18 (dummy)</i>	-2.184**	0.264	0.113	-2.303**	1.010	0.100
<i>Age 19-20</i>	-1.091**	0.075	0.336	-0.988**	0.310	0.372
<i>Race and Ethnicity</i>						
Non-Hispanic white (reference)	—	—	—	—	—	—
African American	-0.299**	0.066	0.741	-0.143	0.153	0.867
Hispanic	-0.386**	0.091	0.680	-0.238	0.190	0.788
Other races	-0.320**	0.110	0.726	-0.501	0.306	0.606
<i>Immigrant</i>	-0.116	0.080	0.891	0.107	0.198	1.113
<i>Parental Education</i>						
Father did not complete high school (reference)	—	—	—	—	—	—
Father a high school graduate	0.063	0.068	1.065	-0.043	0.141	0.958
Father had some college	-0.059	0.078	0.943	-0.151	0.187	0.860
Father had college plus	-0.001	0.072	0.999	0.177	0.157	1.194
Mother did not complete high school (reference)	—	—	—	—	—	—
Mother a high school graduate	0.034	0.072	1.035	-0.043	0.153	0.958
Mother had some college	-0.085	0.082	0.918	-0.301	0.185	0.740
Mother had college plus	-0.092	0.083	0.912	-0.006	0.192	0.994
<i>Mother Worked When Respondent Was Young</i>	-0.012	0.045	0.988	-0.013	0.104	0.988
<i>Number of Previous Spells of College</i>	0.182	0.031	1.200	0.232**	0.049	1.261
<i>Delay between High School Completion and First College Spell</i>	-0.021	0.013	0.979	-0.064**	0.022	0.939
GED	-0.862**	0.220	0.422	0.084	0.369	1.087
<i>Duration of Spell (in months)</i>	0.101**	0.004	1.107	0.035**	0.005	1.035

continued

Table 3. Continued

Variables	Full Time			Part Time		
	Parameter Estimate	Standard Error	Odds Ratio	Parameter Estimate	Standard Error	Odds Ratio
<i>Duration of Spell Squared</i>	-0.001**	0.000	0.999	0.0002**	0.000	1.000
<i>Summer Enrollment</i>	0.006	0.194	1.006	0.374**	0.111	1.691
<i>Full-Time Enrollment Status</i>	—	—	—	—	—	—
<i>Marital Status</i>	—	—	—	—	—	—
Single (reference)	—	—	—	—	—	—
Married	0.125*	0.067	1.133	0.096	0.126	1.101
Divorced	-0.120	0.115	0.887	-0.232	0.176	0.793
<i>Employment Status</i>	—	—	—	—	—	—
Not employed (reference)	—	—	—	—	—	—
Employed full time	-0.121*	0.050	0.886	-0.305*	0.149	0.737
Employed part time	-0.467**	0.058	0.627	-0.130	0.188	0.879
<i>Preschool-Age Children in Household</i>	-0.149	0.104	0.862	-0.075	0.135	0.928
<i>Preschool Children x Age Less than 25</i>	-0.202+	0.143	0.817	-0.325	0.303	0.723
<i>Intercept</i>	-5.406**	0.319		-5.203**	0.529	
<i>-2 Log Likelihood</i>						
Total	24069			4946		
Model	20762			4757		
<i>Degrees of Freedom</i>	26			26		
<i>Reduction in -2 Log Likelihood</i>	.137			.038		

\*  $p < .05$ , \*\*  $p < .01$ .

the model is much higher for full-time students than for part-time students (reduction in  $L^2$  of .137 for full-time versus .038 for part-time students). Having had previous spells of enrollment increases the chances of finishing for part-time students. It is also interesting to note that part-time students are more likely to receive their degrees during the summer, which accounts for the positive effect of summer enrollment for the full sample. This finding underscores the nontraditional nature of part-time enrollment in higher education. Having a delay between the end of high school and the start of college reduces one's chances of finishing. Working full time reduces the chances of completing one's degree for part-time students. But the balance of the measures—social background and marital and parental status—fail to differentiate part-time students who are likely to complete their degrees from those who are destined to end a given spell without their degrees. Further research is clearly needed to gain a better understanding of the factors that promote and inhibit the completion of degrees by part-time students, who make up such a large segment of students over age 25.

## DISCUSSION

We have answered several questions about the place of college attendance within the life course of adult women. The principal results concern the probability that enrollment spells end with the acquisition of a degree. The chances of finishing a degree increase until age 22 or 23 and decline thereafter. We found that the decline at older ages is explained by part-time enrollment and other intervening variables included in the analysis. A delay in enrollment between high school and college and having obtained a GED, rather than a traditional diploma, both sharply reduce the chances of finishing a college degree, and both factors explain a significant portion of the age effect. Once the full set of variables is included in the analysis, the effect of age on the chances of completing a degree is fully accounted for.

The results thus provide some support for both the principal hypotheses outlined earlier.

On the one hand, it is clear that older students are less likely to finish a given spell of enrollment with their diplomas in hand. On the other hand, this age differential disappears once control variables are taken into account. These results are consistent with those of Horn and Carroll (1997), who found lower completion rates among older students. We refine this conclusion by showing that it is principally a function of the part-time enrollment status of older students.

The results clearly support the hypothesis that competing demands make it more difficult for older students to complete their studies. The tendency for older students to enroll part time reflects the presence of competing social roles, and part-time enrollment is the principal cause of lower completion rates at older ages. In addition to part-time enrollment, both full-time and part-time employment inhibit the chances of completing a given spell of schooling. Being married (or divorced) affects the completion of a degree indirectly by increasing part-time enrollment.

The accumulation of other social roles is much more likely to have already occurred among those who return to school than among those who go straight through after high school, but since those who return are, on average, significantly older than the other group, this finding is expected. The effect of having young children at home appears to be the most detrimental to younger women's educational prospects. Older women may be better situated to juggle school and family demands or may have a keener sense of the importance of obtaining an educational credential. There is a similarity between this interaction effect and the effect of delayed enrollment after the completion of high school. In both cases, inhibiting factors that occur relatively early in life have a large effect in jeopardizing the completion of college.

The results provide some support but also raise some questions about the relevance of Tinto's (1993) social integration thesis for older students. We were not able to test this argument directly, since there are no measures of participation in campus activities that would allow for a direct assessment of Tinto's perspective. But the weakly negative age relationship itself bears on this issue. It is reason-

able to assume that older students are less integrated into campus life than are other students and face issues of not fitting the normative expectations of college life, although they may be more socially integrated in other contexts. This reasoning suggests that older students should be much less likely to finish their degrees, other things being equal. Since the age effect is accounted for by part-time enrollment and other factors, the results raise questions about the relevance of Tinto's thesis to older students.

On the other hand, the large negative effect of part-time enrollment on completion rates may itself be taken as indicating support for Tinto's integration thesis. It is reasonable to surmise that part-time students are less socially integrated than are full-time students. The analyses presented in Figure 1 and Table 3 suggest that part-time status is a major inhibitor of the completion of degrees at all ages, not just among older students. Thus, those who are committed to the social integration perspective could view these results as consistent with their theory. However, the negative effect of part-time enrollment could simply represent competing time commitments. Further research on the reasons why part-time enrollment affects the completion of degrees, especially variation in the chances of completion among part-time students, is clearly in order.

Some key social background factors do not appear to affect the chances of completion among this group of individuals, all of whom had at least begun their college education. In particular, parental education did not predict which students succeeded in completing their degrees. The only social background effects that did persist in the final model are race and ethnicity (specifically lower degree-completion rates among African Americans, Hispanics, and those of other races compared with non-Hispanic whites). As we noted earlier, these effects may be a reflection of other social factors not measured in the analysis. In general, the competing role obligations of adults, such as part-time enrollment status and employment status, are more consequential in predicting the completion of degrees than is social background.

A number of important measures that were not included in these data limited the scope of

this study. We did not have retrospective data on the nature of the jobs that the women had held, their earnings levels over time, or whether their employers subsidized their enrollment in college. Nor did we have information on family earnings at different stages in the life course. The lack of data on students' test scores, credits accumulated, and grades obtained are among the most serious limitations of this analysis. Finally, having more detail on the nature of the schools that the women were attending, the availability of financial aid, and the nature of the programs designed to support adult learners at these institutions would have been most helpful. We hope that future research can build on this study by examining the role of these other variables in studying this important component of our system of higher education.

In policy terms, these results suggest that financial and other supports that allow older students to enroll full time would be most beneficial to their chances of completing degrees. Of course, we have no objection to programs or services that are tailored specifically to the particular needs of older students, but the fact is that part-time enrollment is a major barrier to the completion of degrees among younger and older students alike. If programs could be developed to facilitate full-time enrollment, degree-completion rates would likely improve among all age groups.

In addition, these data suggest that adult education indeed contributes substantially to the skill stock of the country. We do not mean to suggest that only those who complete their degrees acquire skills, nor do we believe that all those who do complete their degrees are technically proficient. The results clearly indicate that age per se does not inhibit college completion. In other words, comparable probabilities of completion of older students (that is, controlling for other factors) are more similar to those of younger students than some observers of adult education might have expected.

There is much room for further research on older students. The most important area for more detailed study is the experience of part-time students. Few of the factors that were included in this analysis were helpful in distinguishing recipients of degrees from other

part-time enrollees. This is a particularly noteworthy area for further investigation, since part-time students constitute such a large fraction of older students as well as a growing fraction of younger students. Direct data on the social integration of students at a variety of ages would allow for a more direct test of Tinto's (1993) thesis. Variation across types of schools and programs within schools would also be most informative.

## NOTES

1. Age 25 is the conventional point of comparison between traditional-age and older students and is used by the U.S. Department of Education as well as many researchers. Although those who start college after age 25 are clearly not traditional, some of those who started college right after they completed high school may still be finishing their degrees at age 25. Our results include a detailed age profile of the completion of degrees.

2. Jacobs and Stoner-Eby (1998) noted that the aging of the baby-boom generation contributed to the growth of adult enrollment, especially for men. Corman (1983) noted that adult enrollment responds to economic cycles, but she did not directly explain the secular increase in it.

3. See Adelman (1999) for a discussion of the significance of the completion of degrees. Horn and Carroll (1997) noted that not all adult students intend to obtain a degree. Although there are surely significant benefits to be garnered from attending college short of completing a degree, evidence that older students succeed in completing their degrees would represent a strong indication of the efficacy of education at this stage of life.

4. Note that the NSFG data included 1,133 respondents who were age 18 or younger and thus were unlikely to have completed high school. The high school completion rate rose to 88.3 percent for those over age 18.

5. This level of enrollment is similar to the 61.4 percent fall enrollment rate for female high school graduates in 1995, based on data from the October Current Population Survey (NCES 1997:209).

6. We attempted to assess whether the respondents followed the instruction regarding summer spells. In our sample, 4,145 respondents reported at least one spell of enrollment that continued over the summer. We found 448 cases in which one enrollment spell ended in the spring (May or June) and a new spell began in August or September, but 73.4 percent of these cases involved changes between full-time and part-time enrollment spells. The balance of cases may be legitimate cases of new enrollments, since they might have involved changes of schools, programs, or types of degrees. Since summer months are typically included and few students obtain their bachelor's degrees during the summer, we included a dummy variable for summer months in our multivariate analyses.

7. The survey researchers tried to minimize recall problems by having each respondent fill out a personal-history calendar, placing births, marriages, and periods of employment and schooling into a single framework. If the women omitted spells of schooling that did not end with the attainment of a degree, this omission would inflate the likelihood of completing college among the remaining spells.

8. We did not include a measure of the completion of an associate's degree in the analysis because we were unable to identify others who were in associate's degree programs. Thus, the coefficient on such a measure would yield an ambiguous comparison between associate's degree recipients, on the one hand, and some who were in two-year programs and others who were in four-year programs, on the other hand.

9. We repeated the comparison between younger and older students using age 27 as the dividing line. The results were similar to those presented, but the differences were slightly attenuated. This finding suggests that students aged 25 and 26 are generally more like the older students, and including them with the younger group slightly blurs the distinction between the two groups.

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