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Does Social Class Matter Equally for the Timely Transition Into and Out of College? Evidence from the NLSY97

Serge Atherwood[1] · Gabriela Sánchez-Soto[2]

Abstract

Although the positive relationship between social determinants and college attainment is well established, less is known about how social class specifically relates to the linear and timely completion of postsecondary degrees. In this paper, we empirically examine on-time completion of bachelor's degrees using social class proxies for a national sample of U.S. high school graduates, using the life course perspective and social selection hypothesis to contextualize social effects on the two key transitions—timely full-time enrollment and timely degree completion—that bound the traditional 4-year college pathway. We find strongly positive associations between several social indicators and attainment of both transition events, although effects are larger and more numerous for the initial transition, indicating social selection may be more influential in launching the 4-year college pathway than in completing it. Gradients of social advantage also appear more complexly gendered and racialized at the start of the college pathway than at the end. Finally, we confirm that parenthood is highly incompatible with a 4-year path to a degree regardless of social class and conspicuously more likely to interfere with the timely completion of a bachelor's degree than other major life transitions.

Keywords Social class · Timelyenrollment · Degree completion · College pathway · Life course · Social selection

Introduction

For many high school students in the United States, college is seen as the essential next step in the transition to adulthood (Alexander et al., 2008; Goyette, 2008; Silva & Snellman, 2018); the last stage of an unbroken trajectory of formal education. In this schema, high school graduation is merely a waystation on a journey ending with a postsecondary degree by around the age of 24. But while pursuing a bachelor's degree at a 4-year institution and finishing it on time are often perceived as normative in the U.S. (Alexander et al., 2008; Lamkin, 2004; Niu & Tienda, 2013a), the reality is more complex (DesJardins

✉ Serge Atherwood
  satherwood@berkeley.edu

1   University of California, Berkeley, Berkeley, CA, USA

2   Rice University, Houston, TX, USA

et al., 2002). Only about half of U.S. college students complete any degree at all (Collins & Vargas, 2017; Jones, 2015), and of those that do, only half earn a 4-year degree (Kelly & Whitfield, 2015). Moreover, just two-thirds of graduates from 4-year institutions each year are aged 24 or less (Kelly & Whitfield, 2015). Similarly, data from the fall 2012 national freshman class show that while two-thirds of first-time enrollees at U.S. colleges were seeking bachelor's degrees, only 46% of them finished within 4 years (National Student Clearinghouse Research Center, 2019). Four-year programs continue to attract the lion's share of high school graduates' attention but completing those programs on time is an outcome that perhaps half of young collegegoers do not experience.

Obstacles to college completion attract much theoretical and empirical attention, including from the perspective of social class. But whereas the positive association between social class and educational attainment is well established (e.g., Barr, 2015; Niu & Tienda, 2013a; Sirin, 2005; White, 1982; Wilson, 2001), little work has been done to relate social class to *timely* degree completion (Zarifa et al., 2018). Even in studies showing that students are increasingly failing to complete their degrees on time (e.g., Bound et al., 2012; Steele & Erisman, 2016), the role played by social class remains unclear. This role is potentially important, however, as the massification of higher education (Gumport et al., 1997) means that historically large proportions of high school graduates are enrolling in college as part of a career-oriented strategy for upward mobility (Carnavale, 2008), even though not all of them have access to the resources (tangible or otherwise) needed to succeed in that setting (Goldrick-Rab et al., 2007; Venezia & Jaeger, 2013). The most enduring theories addressing student success, such as the student integration model of college dropout behavior (Tinto, 1975), are premised in no small part on the social reproduction of college-going attitudes and behaviors from one generation to the next.[1] Consequently, social class becomes relevant to the analysis of timely degree completion, as higher levels of class relate with integration ability and an on-time completion has little room for errors such as failed courses that can be caused by poor integration. As the social class gradient of collegegoers widens with massification, social class variation in the likelihood of a timely outcome may increase. Moreover, if a timely degree reflects the ability to withstand or remain sheltered from counterproductive situations or behaviors during the college-going period (e.g., Furstenberg, 2008; Houle, 2013; Staff & Mortimer, 2008; Waithaka, 2014), a positive association between social class and timely completion might mean that mastery of the traditional 4-year college pathway has origins in the student's socioeconomic or social background. This may also suggest that the resources involved in a student's successful integration into a higher education setting could be used to master other situations, such as career development or lifetime earnings, that reproduce or intensify social inequality over time (Bernardi, 2014; Lee, 2002; Rumberger, 2010).

On the social class—degree completion relationship, the life course perspective and social selection hypothesis provide a useful frame. At its simplest, the life course perspective interprets the exposures and transitions in a person's life as events along a linear path from birth to death, such that the cumulative experiences at any given point help to shape outcomes occurring after that point (Elder, 1994, Elder et al., 2003; Pallas, 2006). Path

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[1] SIM construes that a student's ability to adapt to the rigors of a 4-year academic program and enmesh themselves into the social dimensions of college life influence the likelihood that they will persist towards completion of a degree. Along with individual-level attributes and pre-college academic experiences, family and social background are the principal factors that inform persistence in higher education (Tinto, 1975; Rubin, 2012).

dependence of events has been investigated with an eye toward the long view of individual biography and all the transitions, roles, and statuses that occur over the course of decades (McLeod & Pavalko, 2008), but only recently has the life course perspective focused on individual pathways into and out of higher education. In fact, to our knowledge, the explicit appeal to apply this perspective to college attainment outcomes goes only as far back as Roksa & Velez (2012), who used it to examine the relationship between delayed matriculation and bachelor's degree completion within the 1997 cohort of the National Longitudinal Survey of Youth. The social selection hypothesis, meanwhile, contends that childhood socioeconomic status has a causal relationship with unequal outcomes in adulthood (Blane et al., 1993; Contini et al., 2018; McKetta et al., 2017). An individual makes choices today about things that directly influence whether tomorrow will bring an improvement in their life situation, but the range of options to choose from is constrained by their socioeconomic circumstances (Caspi, 2004). Social selection is in many ways similar to the life course perspective, but with more emphasis on the early social origins of adults' decisions. Appropriately for a theory originating in social epidemiology, much of the literature on social selection addresses health inequalities (e.g., Elo & Preston, 1992; Link & Phelan, 1995; Hayward & Gorman, 2004; Haas, 2006; Warren, 2009), but lately the hypothesis has been applied to other contexts, including educational outcomes (Agnafors et al., 2020; Contini et al., 2018; Iannelli, 2008; Polesel & Leahy, 2019).

Together, the theories of life course and social selection offer a rational basis for linking social conditions early in life to college attainment outcomes during emerging adulthood. We use them in this paper to empirically examine the relationship between social class and timely bachelor's degree completion for a national sample of U.S. high school graduates, in the same vein as Zarifa et al. (2018) and Contini et al. (2018). We also follow the life course example set by Roksa & Velez (2012), even using their data source. Among our contributions is equal analytical consideration for the key transitions at each end of the 4-year college pathway. While the educational attainment literature has usually examined enrollment and degree completion transitions in isolation (Stratton et al., 2008; Yue & Fu, 2017), a student cannot finish college without first having enrolled (Contini et al., 2018). We explicitly link the two transition events by denoting timely first enrollment as a precondition for timely degree completion and characterize these linked events as constituting a journey (Levy & Bühlmann, 2016; Pallas, 2006) whose transitions may indicate different social selection patterns. In so doing, the results of this work innovatively show where and when social class factors play the largest role within the traditional college pathway.

Relating Social Class to Timely Degree Completion

In the life course literature, it is almost axiomatic that the transition to adulthood has lengthened considerably (Arnett, 2007; Bound et al., 2012; Schoon & Lyons-Amos, 2016). Over the last few decades, young adults have postponed to ever-older ages standard markers of autonomy such as moving away from one's parents, marriage, and family formation (Cherlin, 2010; Flynn, 2017; Furstenberg, 2010; Rabin, 2018). However, attainment of a college degree is one feature that does not appear to have been delayed to the same extent. The median age to complete a bachelor's degree was 23 in 2011 (Spreen, 2013), unchanged from 1960 (U.S. Census Bureau, 1963); over the same period, the median age

at first marriage rose from 21.6 to 1960 to 27.6 in 2011 (Cohn et al., 2011)[2] and the age at first childbirth climbed from 22.7 to 1960 (Kirmeyer & Hamilton, 2011) to 26 in 2011 (Williams et al., 2015).[3]

While this resistance to elongation is compatible with the finding noted above that less than half of students in 4-year programs may be finishing their degrees on time, it also calls attention to those collegegoers who took longer to finish their degree or did not finish at all. In fact, timeliness of degree occupies a special place in the discussion of the transition to adulthood because the college pathway stands apart from other events for its length. Unlike transitions that can happen with little advance preparation—including marriage, family formation, or leaving the parental home—earning a bachelor's degree is a time-consuming effort of credit hour accumulation and satisfactory performance that demands considerable focus, discipline, and productivity. This means other life roles are not typically compatible with the demands of the traditional, full-time educational career (Roksa & Velez, 2012; Goldrick-Rab & Han, 2011; Thornton et al., 1995). They are, instead, competing risks that can derail young adults and heighten their probability that a degree is finished late or not at all. (Bound et al., 2007; Roksa, 2011). Minimizing these risks therefore increases the ability to achieve the timely completion of a degree.

Even without these risks, though, the high costs of postsecondary education may be enough to discourage elongating the educational career. These costs come in two forms. First, students forego several years of wages that could have been earned if they had been in the labor force instead of school (Strohush & Wanner, 2015; Volkwein & Lorang, 1996). This is known as the opportunity cost of college, and it combines with the direct costs of higher education (in the form of tuition, books, and fees) into a considerable expense for many students and their families. Theoretically, collegegoers can rationalize these costs if the wage premium from the degree eventually compensates for foregone earnings (Strohush & Wanner, 2015).[4] It follows then that the economic return to degree is maximized if a student finishes on time, since delays are avoided in putting the degree to use in the labor market and tuition and other direct costs are minimized (Kramer, 1993; Taniguchi, 2005; Volkwein & Lorang, 1996). This can be especially relevant for students who take on debt in the present era of rapidly rising costs in higher education, as large amounts of debt delay the return on education (Despard et al., 2016).

Additionally, it is important not to underestimate the cultural expectation for the linear college pathway. The idealization of educational attainment as a continuous journey from kindergartner to college graduate has a particular hold in American society (Han et al., 2016; Keup, 2008; Silva & Snellman, 2018; Venezia & Jaeger, 2013). This can be seen not only by 4-year institutions that organize the academic calendar as cumulative sequences of courses that favor continual semesters of full-time enrollment (Goldrick-Rab, 2006), but also by the millions of high school students who look forward to college as a rite of passage into adulthood (Blumenkrantz & Goldstein, 2014). In fact, this widely shared desire for higher education, coupled with an enormous postsecondary system to meet the demand,

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[2] Figures are the pooled average for men and women: in 1960, the median age at first marriage was 22.8 for men and 20.3 for women; in 2011, the median ages were 28.7 and 26.5, respectively.

[3] Note that these median values are compatible with evidence that *mean* age at degree completion has increased in recent decades (e.g., Bound et al., 2012; Knight, 2004) if collegegoers on nontraditional trajectories are taking substantially longer than 5 years to graduate, thus pulling the mean time to degree above the median.

[4] There is ample evidence that, in the aggregate, college graduates earn more than high school graduates over the course of their careers (e.g., Altschul, 2012; Lobo & Burke-Smalley, 2018; Webber, 2016).

opens the door to economic stratification, as collegegoers with higher social class are better positioned to complete their degree requirements sooner. For example, they will be less likely to need to work while studying if they receive monetary transfers from their parents, freeing them from a time-intensive activity that could adversely affect their studies (Kalenkoski & Pabilonia, 2010; Roksa, 2011; Stinebrickner & Stinebrickner, 2003). And as family resources increase, so too does the ability to use those resources to improve the determinants of educational success prior to or after matriculation, such as home environment, parental support, type of school, health of the student, and access to educational resources (Barr, 2015; Carpiano et al., 2009; Erola et al., 2016; Lareau, 2003; Martens et al., 2014; Potter & Roksa, 2013; Webb et al., 2017). All these can be leveraged by students in ways that make the 4-year college pathway easier and quicker to complete.

Conceptual Model and Hypotheses

Our conceptual model for linking social class to timely degree completion relies on a key concept from the education attainment literature—the notion of *delay* or *interruption*. Given the reasons discussed above for finishing a degree on time, any deviation from the linear college pathway should count as an unwanted interruption or delay.[5] Whether they occur before enrolling for the first time or during the 4 years the collegegoer is expected to devote to completing degree requirements, delays and interruptions increase the risk that a degree is unnecessarily deferred or never attained. For example, enrollment delays significantly decrease the odds of earning a bachelor's degree (Bozick & DeLuca, 2005; Roksa, 2011; Roksa & Velez, 2012), while stop-outs (enrollment interruptions) have been shown to do the same (DesJardins et al., 2002, 2006). Even starting the college pathway on a part-time basis greatly reduces the chances of finishing a bachelor's degree on time (National Student Clearinghouse Research Center, 2019), suggesting that lighter course loads are risk factors for pathway elongation (Taniguchi, 2005).[6]

In Fig. 1, we present a model of the social class—timely degree relationship and the role of delays and interruptions. The traditional college pathway is denoted by its two transition events, timely first enrollment and timely degree completion [hereafter, *milestones*, following Calcagno et al. (2007)]. Social class, representing family socioeconomic status (Barr, 2015), predicts enrollment timing and ongoing course load. It also predicts delays/interruptions, which in turn predict the completion milestone, thus mediating social class's direct effect to some extent. An important feature of the model is the conditioning of the

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[5] We set aside in this discussion discretionary enrollment delays such as the so-called "gap year" between high school and the first semester of college. For some young adults, delays in college enrollment or graduation are advantageous because they make space for activities that improve success in college later (O'Shea, 2013). However, such individuals may be the exception to the rule; for example, in the (U.S.) National Education Longitudinal Study data, Goldrick-Rab & Han (2011) found that delays to college enrollment were far more frequently experienced by the least socioeconomically advantaged individuals and reduced the chances of eventually completing a degree.

[6] Course load, also called enrollment intensity, is an important factor for timely completion of the college pathway (Huntington-Klein & Gill, 2020; Volkwein & Lorang, 1996). In the U.S., a 4-year program with a standard 120-credit-hour requirement is built around a full-time course load of 15 credit hours across 5 courses per semester, with two semesters (8 months) per calendar year. Often, U.S. colleges will permit 12 credit hours (4 courses) to count as full-time, but even this minor relaxation of course load risks extending time-to-degree (Huntington-Klein & Gill, 2020) if students are unwilling or unable to devote the summer interregnum to making up the 6-credit-hour shortfall.

enrollment milestone as "on time," as it implies linearity in an individual's educational trajectory: the completion milestone assumes no lengthy break between high school completion and the first semester of college (a key aspect of the traditional college pathway). This makes the model especially relevant to individuals who complete high school on time. Fortunately for our empirical analyses, this is the case for most U.S. high school graduates.[7]

All relationships among model components are positive, except for delays and interruptions, which are negatively associated with social class, the enrollment milestone, and enrollment intensity, *ceteris paribus*. Delays and interruptions have been shown as likelier among those in a lower social class (Bozick & DeLuca, 2005, 2011; Goldrick-Rab & Han, 2011) and, as noted above, are correlated with postponed college pathway transitions. From the conceptual model, then, we derive two main hypotheses. First, we expect that strong social class gradients exist for timely enrollment with full course load and timely degree completion. However, because enrollment as a transition event is qualitatively distinct from degree completion—not least because the several years separating the two events allow greater opportunity for interruptions to occur (Taniguchi, 2005)—we also expect the strongest risk factors for completing a degree on time to differ from those for enrollment, with emphasis on interruption-causing events.

Data and Methods

Data and Sample

Data were obtained from the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97), a prospective survey of young adults conducted by the U.S. Department of Labor. As a rich source of data on schooling, employment, and family formation events during the transition to adulthood (Cooksey, 2018; Horrigan & Walker, 2001), the NLSY97 is a valuable resource for exploring outcomes for the first wave of college-going Americans in the twenty-first century. The cohort comprises a nationally representative sample of 8984 individuals born between 1980 and 1984 (Cooksey, 2018). Cohort members were interviewed annually until 2011 and biennially thereafter; including the 1997 baseline year, the length of the NLSY97's single-year-interval data record is 15 years, encompassing the entirety of the college-going period for most members of the cohort.[8] The length of the data record is favorable because it reduces the person-years of information—e.g., whether a degree was earned, whether an enrollment interruption was experienced—lost to right-censoring (Wao, 2010).

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[7] In the 2017–2018 school year, for example, 85% of all U.S. public high school students graduated on time, with individual state rates ranging from 74% (New Mexico) to 91% (Iowa, New Jersey) (NCES, 2020).

[8] The individuals recruited into the survey in 1997 reached high school graduation age in the late 1990s and early 2000s; by the early 2010s, most collegegoers in the sample had had a decade or more to complete a bachelor's degree.
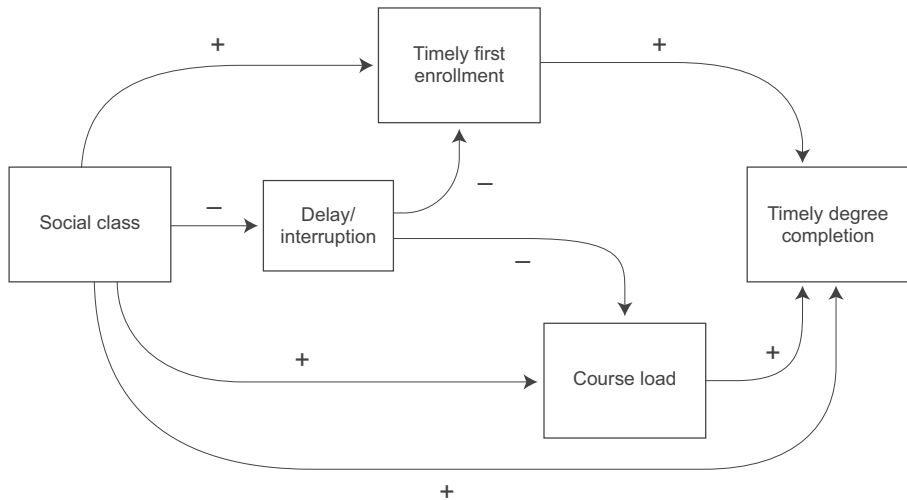
Fig. 1 Conceptual model for the role of social class on timely bachelor's degree completion. Expected relationships are marked positive (+) or negative (−). Timely first enrollment and course load mediate the social class effect on timely degree completion. Timely first enrollment is defined as matriculating with a full course load during the same calendar year as high school graduation, while timely degree completion occurs by the fifth calendar year from first full-time enrollment.

To create our sample, we restricted membership to individuals who earned a high school diploma on time (at age 18 or 19)[9] and identified with one of the three largest race/ethnicity groups (non-Hispanic white, non-Hispanic Black/African American, and Hispanic/Latinx of any race).[10] We also excluded individuals missing data on any of nine social class proxies or covariates (see below) or had ever failed to be interviewed annually by an NLSY97 survey-taker. Our analytic sample ultimately counted 3388 respondents eligible to matriculate during the observation period. From this sample, a subset of 1899 individuals had enrolled as full-time students at least once during the 14-year observation window (1998–2011), thus becoming at risk of finishing a bachelor's degree. Robustness checks showed that this analytic sample and subset were descriptively and analytically comparable to samples with alternate specifications, including larger samples with imputed data; we therefore opted to use the simpler specification.

To give an initial idea of the educational progress of the analytic sample, milestone survivorship is summarized in Table 1 by race/ethnicity. In the interest of a fuller picture of

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[9] Respondents who finished their secondary schooling with a General Educational Development (GED) certificate were excluded from our analysis. Apart from their small number relative to respondents who finished with a high school diploma, GED holders represent an outlier subset with regard to their nontraditional educational experience and lower rates of college success (e.g., Tyler & Lofstrom, 2010; Ewert, 2012a).

[10] Non-Hispanic whites are the largest race group in the sample by a considerable margin. As Blacks/African Americans and Hispanics are oversampled in the NLSY97 survey design, they comprise the only non-white groups with sufficiently large counts for statistical reliability. A total of 343 respondents (3.8% of the full NLSY97 cohort) did not identify with the three main race groups and were excluded from the analytic sample to avoid statistical reliability problems from small cell sizes. This approach is consistent with other users of NLSY97 data (e.g., Dwyer et al., 2013; Haas & Fosse, 2008).

attrition across time, all NLSY97 respondents meeting analytic sample eligibility criteria—save completion of a high school diploma—are included as an origin cohort and completion of a high school diploma is shown as a milestone. Attrition figures show a consistent pattern of greater survivorship for non-Hispanic whites than for Blacks or Latinx at each stage of the pathway, but patterns of clear racial/ethnic sorting are otherwise absent. For example, mean age at high school graduation (18.4 years) was identical for all three groups; for on-time degree completers, mean age narrowly ranged between 23.1 and 23.5 years. And while time to first full-time enrollment was only half as long for whites as for Blacks or Latinx, once enrolled, the difference in time to degree across groups was less than 1 year, whether or not degree completion occurred on time.

Also conspicuous in Table 1 is the relationship between interruptions and degree completion. Approximately 18% of all collegegoers in the analytic sample had experienced at least one interruption in their college pathway and still finished their bachelor's degrees by 2011—but when considering only those who finished on time, the proportion falls to just 3%.

Outcome Variables

Our two outcomes of interest were the milestone events *first full-time enrollment* and *on-time completion of a bachelor's degree*. Both were measured dichotomously. The enrollment milestone identified individuals in the year they first reported attending a postsecondary institution as a full-time student in a bachelor's (4-year) degree program for 3 months or more. This transition usually occurred during the same year as high school graduation, meaning individuals were either at the same age or 1 year older, depending on the location of the birthday on the academic calendar. Monthly college enrollment data was obtained from each annual NLSY97 interview; enrollment reported for 3 or more months in a calendar year was collapsed into an indicator variable for full-time status for that year, in keeping with the bachelor's degree's normative emphasis on full course loads (Dowd, 2004; Huntington-Klein & Gill, 2020; Payea et al., 2013). Meanwhile, the timely completion variable identified individuals in the year they first reported having a bachelor's degree, conditioned on doing so within 4 academic years after first full-time enrollment (equal to 5 calendar years to avoid truncating the fifth calendar year at the end of the fourth academic year).[11] This variable was generated from retrospective histories assembled by NLSY97 investigators and required no compilation by us.

Social Class Predictors

Social class was the main explanatory effect of interest. Given that social class is often seen as an omnibus measure of relative (dis)advantage experienced during the life course (Mood, 2017; Savage et al., 2013) and as a fixed effect (Barr, 2015; Do, 2009; Ganzach, 2011), we used manifest variables of respondents' family background from the NLSY97 as proxies for social class. Following Goldrick-Rab & Han (2011), we aggregated responses to two or three levels to emphasize differences across extremes and facilitate the meaningful interpretation of the resulting coefficients. The main proxy was parental educational

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[11] For example, a 4-year program starting in the 2001–2002 academic year would not conclude until the 2004–2005 academic year and would span 5 calendar years (2001–2005).

Table 1 Attrition in the college pathway

	White	Black	Latinx	Total
(1) Origin cohort*				
n	2728	1173	965	4866
Mean age in 1997 in years	14.3 (1.5)	14.2 (1.5)	14.3 (1.5)	
(2) Completed HS diploma (analytic sample)				
n	2076	728	584	3388
% Retained from (1)	76.1	62.1	60.5	69.6
Mean age in years	18.4 (0.5)	18.4 (0.5)	18.4 (0.5)	
(3) Ever enrolled full-time at 4-year college				
n	1261	372	266	1899
% Retained from (2)	60.7	51.1	45.5	56.1
Mean years to first enrollment	0.9 (2.1)	1.7 (2.9)	1.9 (2.6)	
Mean age in years	19.3 (2.1)	19.9 (2.9)	20.2 (2.6)	
(4) Completed bachelor's degree on time[†]				
n	656	104	97	857
% Retained from (3)	52.0	28.0	36.5	45.1
% Retained from (1)	24.0	8.9	10.1	17.6
Mean years to first enrollment	4.2 (0.8)	4.4 (0.7)	3.9 (1.0)	
Mean age in years	23.1 (1.2)	23.1 (1.2)	23.5 (1.6)	
Enrollment interruptions				
n = 1	38	4	10	52
n = 2 or more	2	2	0	4
Total *n*	40	6	10	56
% of enrollees affected	3.2	1.6	3.8	2.9
(5) Completed bachelor's degree by 2011[‡]				
n	796	163	131	1090
% Retained from (3)	63.1	43.8	49.2	57.4
% Retained from (1)	29.2	13.9	13.6	22.4
Mean years to first enrollment	4.6 (1.4)	5.4 (1.9)	4.6 (1.9)	
Mean age in years	23.5 (1.6)	24.2 (2.0)	24.2 (2.0)	
Enrollment interruptions				
n = 1	176	69	46	291
n = 2 or more	25	7	10	42
Total *n*	201	76	56	333
% of enrollees affected	15.9	20.4	21.1	17.5

Source: NLSY97 (1998–2011, unweighted counts, weighted means)

Standard deviations in parentheses. White and Black are non-Hispanic

*Excludes respondents who did not identify with racial/ethnic categories shown or had missing covariate data

[†]On time is defined as 5 calendar years to avoid calendar-year truncation at the end of the fourth academic year

[‡]Includes all respondents who completed a degree by end of observation, whether on time or not

attainment, which, as an intergenerational transmitter of educational expectations, is an ideal measure of social class (e.g., Bourdieu & Passeron, 1990; Davis-Kean, 2005; Dubow et al., 2009). It has been shown as positively associated with children's success in college (Baum et al., 2013; Choy, 2002; Roksa & Potter, 2011) and is a widely used indicator of socioeconomic position (Erola et al., 2016; Hudson et al., 2013; Quon & McGrath, 2015; Wickrama et al., 2009). For this, we created an indicator variable denoting whether the highest level of schooling for a respondent's residential mother or residential father was at least 1 year of college. Household structure was also used as a proxy, as studies show that two-parent families are more commonly found among children with higher socioeconomic position (e.g., Amato, 2005; Cherlin, 2010; Schneider & Hastings, 2015) and intact families offer more support to children (Conley et al., 2007; Hao & Xie, 2002; Sandefur & Wells, 1999). We created a categorical variable to indicate whether a respondent was living with both biological parents, living with the biological mother (with or without a residential father), or living in some other arrangement in 1997.[12] Our third proxy variable was household net worth, another measure positively associated with social class (Connelly et al., 2020; Reeves et al., 2018) and often used to indicate access to resources (Elo, 2009). For this variable, we divided the analytic sample into terciles based on the log values of respondents' households' net worth as reported by the parents in 1997.[13] Tercile breakpoints were based on the distribution of net worth for non-Hispanic whites, being the majority economic group in the United States.

Control Variables

We identified four types of control variables, each representing a different kind of confounding effect on timely full-time enrollment and/or timely degree completion. The first type consisted of two time-varying delay/interruption risk factors for degree completion, both coded dichotomously. The first of these was part-time enrollment, indicating whether a student was enrolled with less than a full course load anytime during the calendar year. The second was interruptions in full-time enrollment, representing discontinuities that may or may not have been followed by a full-time re-enrollment before the degree was completed or observation ended after 2011. Causes of interruptions are not restricted to life events or part-time status and thus are not necessarily collinear with these predictors. We did not control for delay/interruption risk for timely full-time enrollment, since any delay in the transition would perfectly predict the outcome variable in the regression analysis described below. Identification of interruptions depended on determining whether a respondent was enrolled full-time in a given calendar year for 3 or more months (a period we equate to one semester at a college organized on a quarter system). The NLSY97 identifies a respondent's enrollment status for each calendar month without regard for holidays or breaks; by the same token, we treat the summer months as a period when a respondent was considered full-time enrolled if they happened to be enrolled full-time *only* during the summer months and no other month of the calendar year. Variability across colleges in the starting month of the academic year and in the number of semesters during the last academic year of a bachelor's degree program that fall within a given calendar year require us

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[12] Nonbiological children are not represented in this study owing to the limited availability of data in the NLSY97 and the very small number of respondents with nonbiological children in any given survey wave.

[13] Negative and zero values for net worth were recoded to $1 prior to taking the natural log.

to treat any calendar year with a single full-time semester or enrollment as full-time for the entire year. Discontinuities in full-time enrollment therefore occur only when a respondent has gone an entire calendar year without a 3-month period of NLSY97-coded full-time status.

For the second category of control variables, we controlled for the effects of life events with time-varying indicators for union status, parental status, and job commitment. Union status indicated if an individual had entered a marital or cohabiting union the previous year, and parental status indicated if an individual had become a parent (defined here as giving birth to a child, fathering a child, or raising any biological children at home) in the previous year. These roles have been shown to be incompatible with the college pathway (Bozick & DeLuca, 2005; Choy, 2002; Goldrick-Rab & Han, 2011; Kendig et al., 2014). Job commitment indicated if an individual worked for wages for 35 or more weeks of the previous year. Each variable was lagged by a year to reinforce these conditions as direct influences on enrollment and degree completion.

College-going culture and aptitude constituted another variable category, comprising three college propensity indicators to account for academic potential or peer exposure biases (e.g., Fletcher & Tienda, 2009). These were high school peers' intention to attend college, willingness to skip class, and ASVAB (Armed Services Vocational Aptitude Battery) score. College-going intention was an indicator variable for whether 75% or more of a respondent's peers planned to attend college when asked in 1997. Willingness to cut class was an indicator for any occurrence of intentional nonattendance, while ASVAB was a rank variable indicating the tercile category of the respondent's score.

Finally, we controlled for sex, self-reported health, and race/ethnicity. Each of these attributes has been shown to have a meaningful association with education outcomes or social class. Regarding sex, men in the U.S. have lower matriculation and degree completion rates than their female peers (Klevan et al., 2016), as well as different risk relationships to life events such as parenthood (Cohen et al., 2011; Gerster et al., 2014; Guzzo & Hayford, 2020). And apart from its obvious implications for academic performance over the long term, self-reported health has attracted attention as a potential expression of socioeconomic position (Adler & Ostrove, 1999; Corna, 2013; Dowd et al., 2009; Jackson, 2010). To heighten the disparity in the self-reported health gradient, we dummy coded respondents reporting less than "excellent" or "very good" level of general health in 1997. But it is race/ethnicity that may be the most relevant of these individual characteristics, especially as an ascriptive confounder of social class in the U.S. where, broadly speaking, non-Hispanic whites are more socioeconomically advantaged than Blacks or Hispanics/Latinx (Hardaway & McLoyd, 2009; Sanchez & Garcia, 2012) and social class and race/ethnicity have been observed as closely linked (Bloome, 2014; Campbell & Kaufman, 2006; Manduca, 2018; Masterson et al., 2019; Williams, 1996). We attempt to accommodate this important relationship in our analysis.

Distributions of the analytic sample are given in Table A in the Supplemental Information for all levels of each social class proxy and covariate, disaggregated by race/ethnicity and college pathway milestone. (As in Table 1, we include completion of a high school diploma as an antecedent transition to give a more complete picture of pathway progress.) On almost all measures, proportions increase or decrease with each milestone, suggesting a social selection effect. For example, regardless of race/ethnicity, the proportion of respondents with at least one higher-educated parent continually climbs as one moves from origin cohort to degree completion. The same is true of the proportion of respondents in the top third of household net worth, while the opposite (a continual decrease) is seen for students in the bottom third. These and other patterns are discussed later in the paper.

Analytical Methods

To analyze the timeliness of college pathway milestones in a fuller manner, we implemented two different yet related empirical analyses. First, Cox proportional hazard regressions with type I censoring[14] were used to derive hazard ratios that compared a treatment group's risk (hazard) of experiencing an event of interest to the same risk incurred by an untreated (baseline) group at any point during observation (Cox, 1972; George et al., 2020). First full-time enrollment and bachelor's degree completion were the events of interest and social class strata were our groups, with baselines defined in the coding of each social class proxy. Hazards were adjusted for selected covariates to improve accuracy and statistical power (Jiang et al., 2008; Moore & van der Laan, 2009); specifically, we adjusted for sex and self-rated health after determining that neither covariate violated the proportional hazards assumption. We also plotted the models' failure functions to understand how many and how quickly individuals in each group were estimated to have experienced each milestone during the interval between the current and prior interview. These functions graphically depict the increase in the proportion of the at-risk group that "failed" (achieved a milestone) as time passed, allowing hazard rates (and ratios) to be visually understood. For comprehensiveness, we ran the models on sample data reweighted to adjust the members of the sample so that they better reflect the national composition of population born from 1980 to 1984.[15]

We then extended the analysis with discrete time logit (DTL) regression models to go beyond depictions of hazard rates and account for the relative influence of social class proxies and other covariates on the group-level probability of milestone occurrence. Specifically, we used DTL models to estimate the covariate-conditioned odds that a high school graduate matriculated on time (i.e., enrolled in a 4-year degree program in the same calendar year as high school graduation) with a full course load and that an enrollee completed a degree within 5 calendar years of that first enrollment. A discrete time logit model is an extension of the logit model that addresses the change across time in the underlying probability of an outcome being true (Allison, 1982). It does this by treating time as discrete units or intervals rather than a continuum, with each interval reflecting a different probability of event occurrence derived from the individuals present during that interval (Allison, 1982; Singer & Willett, 1993).[16] Event histories such as the NLSY97 are ideal data sources for discrete time analysis (Singer & Willett, 1993) because the regular recurrence of follow-up interviews not only defines the length of the interval but also allows measurements to be repeated on each person. Each set of repeated measurements enables the hazard for event occurrence during that interval to be updated. When the event of interest is nonrepeatable (such as finishing a bachelor's degree), individuals experiencing an

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[14] The proportional hazards assumption of the Cox model is the assumption that the effect size of a hazard is constant over observation time (Cox, 1972). It is a key presumption for the interpretation of model coefficients. Type I censoring is a bounded data technique denoting that the individuals of our longitudinal sample are observed until a predetermined year, i.e., 2011, at which point the outcomes for individuals who thus far avoided experiencing an event of interest remain unknown.

[15] NLSY97 person-weights are provided by the NLSY97 to aid in increasing the generalizability of our sample to the national population. We applied these weights in the Cox model for comprehensiveness, although the differences between weighted and unweighted results were negligible.

[16] In this paper, we use the calendar-year as the discrete interval. NLSY97 variables measured on a monthly or weekly basis were aggregated to this unit of time to conform to variables measured only once per year.

event become right censored, which means the hazard for each subsequent interval is further affected by the decreasing number of surviving individuals (Allison, 1982; Singer & Willett, 1993). This positions the discrete time model alongside survival analysis methods like Cox regression, but with specific advantages for handling time-varying regressors and right-censoring (Bahr, 2009; Roksa & Velez, 2012; Wao, 2010) and the discrete, repeated nature of longitudinal data (Richardson, 2010).

Our aim with discrete time models was to identify changes in size, significance, and/or interdependence across predictor effects as models were elaborated. For both milestone events, we estimated a baseline logit model comprising only social class proxies. (Delay/interruption risk factors were also included in the degree completion model set.) This was followed by models adjusting for college-going culture, life events, and demographic attributes. For the full model specification, interaction terms were included to capture differences in social conditions and life transitions that have been shown as gendered or racialized (Beutel & Axinn, 2002; Dwyer et al., 2013; Hogan & Astone, 1986; Ma & Liu, 2015). Model fits were evaluated with log-likelihood values and McFadden's pseudo R^2.[17] All work was performed in Stata version 16.0 (StataCorp, 2019a).

Results

Survival Analysis

Figure 2 shows the Cox proportional-hazards failure functions for both college pathway milestones.[18] The top row of panels (panels **a**, **c**, **e**, **g**) represent the cumulative probability of high school graduates ($n=3388$) enrolling full-time in college for the first time, while the bottom row (panels **b**, **d**, **f**, **h**) represent the cumulative probability of full-time enrollees ($n=1899$) finishing a bachelor's degree on time. Panels are vertically paired to facilitate the comparison of milestone achievements within the same sample grouping. Thus, panels **a–b** show the cumulative proportions of enrollment and completion for the unstratified sample, and panels **c–d**, **e–f**, and **g–h** show the same for the sample stratified on parental education level, tercile of household net worth in 1997, and household structure in 1997, respectively. The x-axes indicate the number of years since a high school diploma was awarded (top row of panels) or the number of years since the first full-time enrollment (bottom row of panels), with year 0 indicating the timely transition to college as well as the first calendar year of enrollment.[19] Stata's Cox regression-based likelihood ratio test

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[17] Computation of fit statistics for logit models in Stata is unreliable when survey weights are applied to the data. We calculated fits on unweighted logit models after determining the differences in model coefficients were substantively negligible. Larger log-likelihood values indicate better fit, as do larger values for McFadden's pseudo R^2.

[18] "Failure" in this context is a positive outcome, as it indicates achievement of a college pathway milestone.

[19] Because of interval censoring, variability in the assignment of interview dates to survey years, and the non-alignment of the calendar year with the academic year, individuals who graduated high school and enrolled in college for the first time in the same calendar year (e.g., high school diploma in the spring and first semester of college in the fall) did not allow a full 12 months to pass between the two events and are counted as 0 years elapsed. For time to degree, the calendar year of first enrollment is treated as year 0 and subsequent years enrolled are based on the counting of calendar years; for example, first enrollment in the fall of 2000 and degree completion in the spring of 2004, representing four full academic years, would count as five calendar years.

showed no equality across failure functions within each social class proxy, allowing us to reject the null hypothesis of equal hazards across strata (Blossfeld et al., 2014; StataCorp, 2019b).

The first important finding is the proclivity of young adults to matriculate promptly as full-time students; an estimated 39% of all high school graduates in our weighted sample (unstratified but adjusted for sex and self-rated health) enrolled in the same year as recorded for high school completion (Fig. 2a). With each subsequent calendar year, high school graduates enrolled for the first time at much smaller and ever-decreasing rates: an additional 6% of all graduates enrolled one calendar year after finishing high school, another 4% enrolled 2 calendar years after, etc. Cumulatively, about half of high school graduates in the sample had their first full-time enrollment by the end of the second calendar year, and by the end of observation, approximately 60% of high school graduates had enrolled full-time at least once. With a hazard ratio (HR) of 2.1, the children of parents with college experience were twice as likely to matriculate promptly than children of parents with a high school education or less (Fig. 2c). This was only slightly less than the hazard for children from the upper third tercile of net worth relative to children from the bottom third (HR = 2.2, Fig. 2e). Meanwhile, children from the middle tercile were about 50% more likely to enroll (HR = 1.5). When stratified by household structure, children from households with both biological parents were distinctly advantaged, as coming from any other household type lowered enrollment odds by about one-third (HR ≈ 0.7, Fig. 2g). These results are consistent with studies finding, for example, prospective collegegoers with fewer socioeconomic advantages are likelier to postpone matriculation (Bozick & DeLuca, 2005; Niu & Tienda, 2013b).

Once enrolled, the social class advantage for risk of timely degree completion persisted. It is worth noting in Fig. 2b that the modal time to degree was a normative 5 calendar years (encompassing 4 full academic years), but only an estimated 26% of enrollees achieved this. If we include the small proportion of precocious students completing bachelor's degrees inside of 4 calendar years, approximately 35% of all enrollees followed the traditional college pathway, with another 15% overshooting the mark by 1 year. By the end of observation, approximately two-thirds of enrollees had finished a degree. However, the probability of finishing on time was considerably greater for students with more favorable social class indicators: 40% higher probability for students with college-educated parents or middle tercile net worth (HR = 1.4) (Fig. 2d, f, respectively), and three-quarters higher probability (HR ≈ 1.7) for students from the upper tercile (Fig. 2f). Collegegoers from non-traditional households were about as equally disadvantaged for timely completion as for timely enrollment (HR range = 0.6–0.7, Fig. 2h). Altogether, these survival analyses strongly support our hypothesis of social class gradients for timely enrollment and degree completion.

Logit Models

We summarize in Table 2 the results from discrete-time logit regression models estimating the probability of high school graduates (n = 3388) enrolling in college full-time the same year as they finished high school. Diagnostics showed model fit improved as covariates were added, with the best fit belonging to the full model with interactions. To facilitate interpretation, we exponentiated model coefficients into odds ratios (ORs). Robustness of predictor effects across model specifications was a common theme, and we therefore report only on full model (Model 4) results unless otherwise noted.
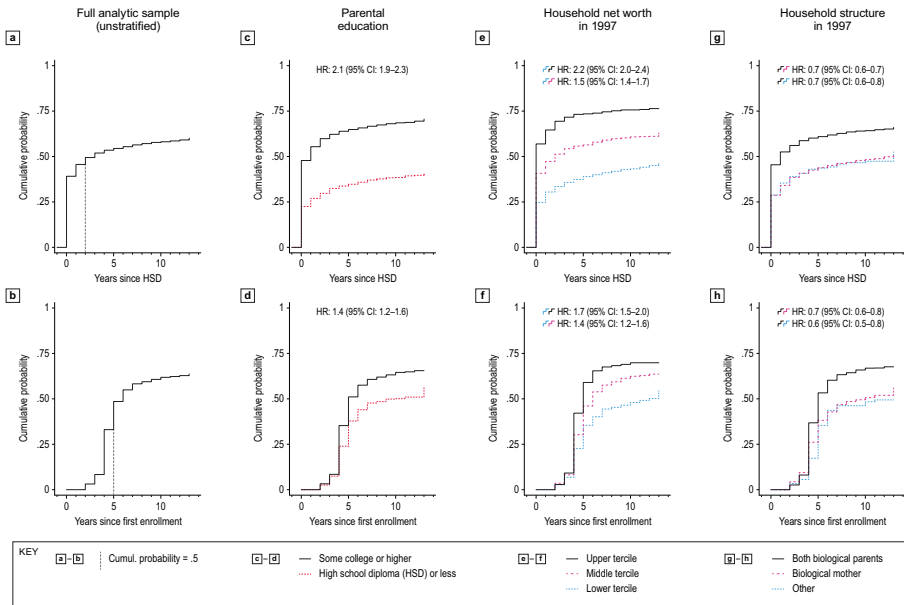
Fig. 2 Cox regression failure functions for college pathway milestones. Top row (panels **a**, **c**, **e**, **g**) = first full-time enrollment risk for full analytic sample (n = 3388); bottom row (panels **b**, **d**, **f**, **h**) = bachelor's degree completion risk for all full-time enrollees (n = 1899). Panels **a** and **b** show the cumulative proportions of milestone achievement for the unstratified sample. Panels **c–h** show the same for the sample stratified by parental education level, tercile of household net worth in 1997, and household structure, respectively. Vertical dashed lines in panels **a** and **b** indicate the number of years until half of the sample enrolled. All results are based on data conditioned for sex and self-rated health in 1997, reweighted using custom NLSY97 person-weights for the 1998–2011 observation window.

Social class regressors all showed a significant and normative pattern of socioeconomic advantage, with the children of college-educated parents twice as likely as those of lesser educated parents to matriculate on time [OR: 2.0, $p < 0.001$], *ceteris paribus*, while those from middle- or upper-tercile net worth households were half again as likely [OR: 1.5, $p < 0.01$] and nearly three times as likely [OR: 2.9, $p < 0.001$], respectively, for a same-year enrollment as lower-tercile high school graduates. Growing up with both biological parents was more favorable to a timely transition, as living with only the biological mother or any other arrangement were associated with nearly 40% lower odds.

As noted above, social class proxy and enrollment delay effects were largely unchanged by the inclusion of covariates, but the covariates themselves were also consistent in effect size and direction across models. Covariate effects largely conformed to expected college-going behavior. For example, willingness to skip classes in high school and to associate with peers with less inclination for college were both consistently linked to one-fifth to one-third lower odds of enrolling on time and having less than very good health lowered one's odds by over 40% [OR range: 0.57–0.59, $p < 0.001$]. Teenage parenthood all but guaranteed a timely enrollment would not happen [OR: 0.02, $p < 0.001$].[20] Conversely, scoring in the middle and upper parts of

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[20] Regarding other life events, being in a marital or cohabiting union was excluded from the model because this variable perfectly predicted the enrollment outcome, reaffirming the preference of contemporary young adults to postpone marriage while pursuing higher education goals (e.g., Kefalas et al., 2011).

Table 2 Discrete time logit models for timely enrollment

	Models (coefficients given as odds ratios)[†]			
	(1)	(2)	(3)	(4)
Social class proxies				
Parental education (ref = HS diploma or less)				
At least 1 year of college	2.729***	1.814***	1.831***	1.998***
HH structure in 1997 (ref=both biol. parents)				
Living with biological mother[‡]	0.666***	0.675***	0.636***	0.613***
Other household arrangement	0.582***	0.723*	0.681**	0.627*
HH net worth in 1997 (ref = <33rd pctile)				
33–67th pctile	1.728***	1.354***	1.412***	1.494**
>67th pctile	2.929***	2.112***	2.185***	2.872***
College-going culture and aptitude				
Percent of peers with college intent (ref = 75% or more)				
Less than 75%		0.807**	0.817**	0.800*
High school delinquency (ref = never skipped class)				
Skipped class one or more times		0.623***	0.667***	0.685***
ASVAB score category (ref = <33rd pctile)				
33–67th percentiles		3.397***	3.561***	5.472***
>67th percentile		9.692***	10.558***	20.739***
Life events				
Gave birth or parented in previous year		0.018***	0.016***	0.015***

Table 2 (continued)

	Models (coefficients given as odds ratios)[†]			
	(1)	(2)	(3)	(4)
Worked 35 or more weeks in previous year		0.863*	0.915	0.985
Individual characteristics				
Female (ref = male)			1.347***	2.777***
Race/ethnicity (ref = non-Hispanic white)				
Black/AfricanAmerican			2.597***	5.314***
Latinx			0.721**	1.961+
Self-rated health in 1997 (ref = excellent/very good)				
Less than very good			0.578***	0.569***
Interactions[†]				
Race/ethnicity × parental education				
Black × at least 1 year of college				0.639*
Latinx × at least 1 year of college				0.638+
Race/ethnicity × HH structure in 1997				
Latinx × living with biological mother[‡]				1.713*
Latinx × living in other HH arrangement				2.976*
Race/ethnicity × household net worth in 1997				
Black × 33rd–67th percentile				1.565*

Table 2 (continued)

	Models (coefficients given as odds ratios)[†]			
	(1)	(2)	(3)	(4)
Race/ethnicity × job commitment				
Latinx × worked 35 + weeks in previous year				0.401***
Race/ethnicity × ASVAB score category				
Black × 33–67th pctile				0.594*
Black × >67th pctile				0.460*
Latinx × >67th pctile				0.426*
Sex × household net worth in 1997				
Female × >67th pctile				0.590**
Sex × ASVAB score category				
Female × >67th pctile				0.510**
Model diagnostics				
Log-likelihood	− 4519	− 3967	− 3892	− 3845
McFadden's pseudo R^2	0.072	0.185	0.200	0.210

Source: NLSY97 (1998–2011 waves; weighted data; total person-years in each model = 24,747)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

[†]To facilitate comparison, odds ratios are presented in the same order of predictors as in Table 3, except for interaction terms. To save space, only significant odds ratios from the interaction terms are shown, and the sets of interaction terms across tables are mutually exclusive

[‡]May or may not be a single parent household

the ASVAB distribution greatly increased the odds of full-time enrollment—in the case of the highest scorers, odds were twenty times greater than for the lowest scorers [OR = 20.7, $p < 0.001$]. Such results are consistent with society's beliefs about what does (and does not) comport with the college pathway. Perhaps less expected were the dramatically higher odds of timely full-time enrollment for Blacks [OR = 5.3, $p < 0.001$] relative to non-Hispanic whites, which could suggest a strong selection effect among high-performing Black high school students (Fletcher & Tienda, 2010; Marsh et al., 2012; Stearns et al., 2013).

Clues to the ascriptive racial and gendered complexity of timely enrollment lie in the statistically significant interactions in the full model. For example, the enrollment advantage for individuals with more educated parents was partly mitigated in the case of Blacks, whose odds ratio for the race/parental education interaction was well below 1 [OR: 0.64, $p < 0.05$], but this mitigation effect was itself mitigated by Blacks' much higher odds of enrolling relative to non-Hispanic whites. Put another way, despite Black high school graduates being much likelier than their White peers to matriculate on time, having higher educated parents helped Black college applicants obtain this transition *less* than it helped White applicants, all else equal. Further complicating the picture, Blacks scoring in the upper two ASVAB terciles were 41–54% less likely to enroll on time [OR range: 0.46–0.59, $p < 0.05$]—indicating decreasing yields as academic skills increased—and only middle-net-worth Blacks were more likely to enroll [OR: 1.6, $p < 0.05$], relative to their low-net-worth non-Hispanic white peers.

Latinx-specific interactions, meanwhile, were more straightforward, if not equally complex. Latinx high school graduates from nontraditional family structures were considerably more likely to enroll on time [OR range: 1.7–3.0, $p < 0.05$], relative to non-Hispanic white peers from two-parent households. The marginally significant twice-higher enrollment odds for Latinx [OR: 2.0, $p < 0.1$] suggest there may be a true Latinx advantage that would reinforce the noteworthiness of the household effect. By contrast, the 60% lower odds of a timely enrollment transition for Latinx who worked 35 or more weeks in the previous year stands apart as a unique circumstance for this group, given the lack of direct racial effects on this variable. Studies find that employment during high school is a risk factor for educational attainment (e.g., Quirk et al., 2001; Bachman et al., 2011), and while the proportion of Latinx high school students who work is lower than for non-Hispanic whites (Child Trends, 2019), the type or intensity of employment may differ by race, to the detriment of Latinx students. The notably lower enrollment odds for Latinx with the highest ASVAB scores [OR: 0.43, $p < 0.05$], on par with the same category of Blacks, is also conspicuous. Lastly for Table 2, a large and significant positive effect was enjoyed by female high school graduates [OR: 2.7, $p < 0.001$], supporting evidence for the feminization of U.S. higher education (DiPrete & Buchmann, 2006; Ge & Yang, 2013) and, more specifically, a higher interest in college among women (Wells et al., 2011) despite some attenuation of effect for women in the highest ASVAB and household net worth terciles.

Table 3 gives the results from the logit model counterparts estimating the probability of college enrollees completing a bachelor's degree within 5 calendar years of their first full-time enrollment. At 1899 individuals, the at-risk sample was 44% smaller and the person-year count was 36% smaller than our cohort of high school graduates, in a clear indication of the high risk of pathway noncompletion. The full model specification included an enrollment interruption variable and interaction terms for same, plus an indicator for part-time course load. Diagnostics indicate that the reduced models fit the data better as more covariates were

added and were a slightly better fit than the full model. We thus report on all models as appropriate, including the full model, owing to the substantive significance of interaction effects.

Outcomes were mixed in terms of the continuation of patterns seen for full-time enrollment in Table 2. Social class proxies carried forward their expected influence on timely degree completion, but only in the baseline model, where effects were weaker and/or less significant. In fact, the only robust social proxy in the full model was the upper tercile of household net worth, which equated to two-and-a-half times greater odds of finishing on time relative to the lowest tercile [OR: 2.5, $p < 0.01$, Model 4]. Academic performance, measured by ASVAB category, also continued to consistently predict higher degree completion odds; while the effect was only a fraction as strong as for timely enrollment, the highest tercile of scorers on the ASVAB test were still almost six times more likely to finish a bachelor's degree on time as the lowest tercile [OR: 5.7, $p < 0.01$, Model 4]. Self-rated health also continued to exert a strongly negative effect, consistently reducing odds of completion by half [OR: 0.5, $p < 0.001$, Models 3 & 4].

The fact that most predictors lost all or nearly all their statistical significance in this model series implies that completion of the 4-year college pathway was a very different kind of challenge. Main effects for parental educational attainment, college-going culture, sex, race/ethnicity, and union status were nonsignificant, indicating no meaningful variation in degree completion on these attributes among enrolled students. Notably, the effect of part-time enrollment on timely degree completion was at best marginally significant [OR: 0.53, $p < 0.1$, Models 2 & 3]. This may be attributed to enrollment interruptions conditioned on part-time enrollment predicting the timely completion perfectly. Other than self-rated health and the highest terciles of net worth and ASVAB score, the most meaningful effects involved two interactions: the near impossibility of finishing a degree on time for collegegoers who failed to maintain continual enrollment due to parenting responsibilities [OR: 0.07, $p < 0.05$, Model 4] and the dramatically higher odds of degree completion for Latinx with a college-minded high school peer group [OR: 3.3, $p < 0.05$, Model 4]. The first outcome is consistent with the enrollment model and lends strong support for the incompatibility of parenthood with the traditional college pathway. This support is seen especially in the way the separate interruption and childrearing effects in the reduced models are mitigated by their interaction effect in the full model. The second outcome potentially affirms mounting evidence that social support is important for college persistence among Latinx students (e.g., Gloria et al., 2005; Vega et al., 2015; Heredia Jr. et al., 2018), even if the reason for the strength of the relationship is unclear.

Altogether, the tendency for timely completion effects to be influential in extreme conditions or situations (e.g., distinctly favorable only for students in the highest tercile of family wealth or ASVAB scores, or especially unfavorable only for parents who also experienced enrollment interruptions) stand in sharp contrast to the wide array of factors that influence the probability of matriculating on time once finished high school. These results suggest that a large part of the advantage conferred by social class (or the resources that appertain thereto) after high school may involve getting students matriculated at traditional 4-year programs on time than getting them to finish those programs on time.

Discussion

Earning a bachelor's degree is a key goal for many ambitious high school students, but the timely attainment of that goal is far from assured. Although it is not necessary to begin or complete the college pathway expeditiously, it is culturally normative among high school

Table 3 Discrete time logit models for timely degree completion

	Models (coefficients given as odds ratios)[†]			
	(1)	(2)	(3)	(4)
Delay/interruption risk factors				
Any enrollment interruptions	0.154***	0.158***	0.157***	1.914
Enrolled part-time	0.598	0.530+	0.529+	0.542
Social class proxies				
Parental education (ref = HS diploma or less)				
At least 1 year of college	1.474*	1.149	1.173	0.814
HH structure in 1997 (ref = both biol. parents)				
Living with biological mother[‡]	0.703*	0.791	0.795	0.629+
Other household arrangement	0.434*	0.496*	0.480*	0.492
HH net worth in 1997 (ref = < 33rd pctile)				
33–67th pctile	1.324+	1.157	1.097	1.612
> 67th pctile	2.114***	1.771***	1.687***	2.503**
College-going culture and aptitude				
Percent of peers with college intent (ref = 75% or more)				
Less than 75%		0.881	0.906	0.782
High school delinquency (ref = never skipped class)				
Skipped class one or more times		0.773*	0.825	0.828
ASVAB score category (ref = < 33rd pctile)				
33–67th percentiles		2.057*	2.070*	2.254
> 67th percentile		5.108***	5.003***	5.735**
Life events				
Married or cohabiting in previous year		0.737	0.737	0.756
Gave birth or parented in previous year		0.202***	0.198***	0.269+
Worked 35 or more weeks in previous year		1.710***	1.703***	1.366+
Individual characteristics				
Female (ref = male)			1.232+	1.088
Race/ethnicity (ref = non-Hispanic white)				
Black/African American			1.100	0.402
Latinx			0.825	0.685
Self-rated health in 1997 (ref = excellent/very good)				
Less than very good			0.502***	0.499***
Interactions[†]				
Race/ethnicity × college-going culture				
Latinx × <75% of peers with college intent				3.278*
Sex × job commitment				
Female × worked 35 + weeks in previous year				1.557+
Any interruption × parenthood				
1 or more interruptions × raised child at home[‡]				0.065*
Any interruption × job commitment				
1 or more interruptions × worked 35 + weeks in prev year				0.333+
Any interruption × ASVAB score category				
1 or more interruptions × <33rd pctile				3.768+
Model diagnostics				

Table 3 (continued)

| | Models (coefficients given as odds ratios)[†] | | | |
	(1)	(2)	(3)	(4)
Log-likelihood	− 1683	− 1612	− 1603	− 1581
McFadden's pseudo R^2	0.054	0.094	0.099	0.111

Source: NLSY97 (1998–2011 waves; weighted data; total person-years in each model = 15,892)

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, + $p < 0.1$

[†]To facilitate comparison, odds ratios are presented in the same order of predictors as in Table 2, except for interaction terms. To save space, only significant odds ratios from the interaction terms are shown, and the sets of interaction terms across tables are mutually exclusive

[‡]May or may not be a single parent household

students and implicit in the structure of the higher education system to do so (Han et al., 2016; Goldrick-Rab, 2006). Our survival analyses show that timely enrollment and degree completion were the modal outcomes for high school graduates in the NLSY97, while the correlations between parenthood, delay/interruption, and milestone transition reinforce the notion of the traditional college pathway as a full-time, undistracted effort, supporting comparable findings by Roksa & Velez (2012). Given this, our evidence in this paper for a social gradient on the attainment of higher education milestones, in support of our conceptual model and first hypothesis, is an important corroboration of the existing research on the educational attainment advantage that stems from socioeconomic position (e.g., Bozick & DeLuca, 2011; Goldrick-Rab, 2006; Houle, 2013; Niu, 2017). But the evidence in support of our second hypothesis may be a more important contribution, as we show in this paper that the overall risk profiles for experiencing a timely matriculation at a 4-year college and completing a degree on time are dramatically different, not only regarding social class predictors but ascriptive and other characteristics too. Specifically, we show that the risks for failing to enroll into a 4-year degree program in a timely way are stronger and more numerous than for failing to complete the degree on time.

Several things are potentially implied by this finding. First, the keys to successfully finishing a degree on time in accordance with the traditional pathway are likely different from what helps high school students get admitted to college. A possible explanation is that college admissions and enrollment are more closely related to family background, while college completion is more connected to individual performance. College admissions are allocated on the basis of grades, test scores, application essays, letters of recommendation, and/or evidence of other achievements during high school. For students of higher social class, the quality of these elements may be improved by applying parental resources to acquire assets ranging from after-school and summer-break extracurricular activities to tutors and college admission consultants. Much of this support is no longer relevant, given the findings, after the student is accepted to college. The fact that the three remaining predictors for timely degree completion specifically describe only the most fundamental reasons for enrollment interruption—health, financial resources, and academic aptitude—suggest that

4 years of college have a way of rendering ineffectual some of the support enjoyed by more privileged students.[21]

Unfortunately, as appealing as the idea is that the traditional college pathway is meritocratic, to the extent that degrees are not awarded until program requirements are met, no matter how long that takes, the fact that timely enrollment in 4-year programs is a socially selective process undermines the conceit of the modern higher education system as an equal opportunity public good (Goldrick-Rab & Han, 2011; Lareau & Jo, 2017). Traditional 4-year colleges and universities are presented as the collective destination for the brightest students and the best candidates for success, but the definition of "best and brightest" is as much a function of applicants' parental resources as innate ability. Our finding for household net worth—a proxy for parental financial resources—being the only robust social class variable associated with both milestones reflects a direct cost of the traditional pathway that, when borne by the student's parents, is mitigated as an obstacle to graduating on time. Socioeconomically advantaged students are not only better positioned to exploit a formal education system that can identify the most promising students from an early age and cultivate their academic and extracurricular talents (Bourdieu & Passeron, 1990; Lareau, 2000; Tinto, 1975) but are conditioned and groomed to do so with matriculation as the goal (Johnson & Reynolds, 2013). By way of social selection, then, higher education may function not only as a device for social stratification (Baum et al., 2013; Zarifa et al., 2018) but for social reproduction (Bourdieu, 1987; Bourdieu & Passeron, 1990; Serna & Woulfe, 2017), with the 4-year college application and acceptance process acting as gatekeeper (Holland, 2014) to a credential that confers social status and opens the door to desirable, well-paid jobs and careers (Furstenberg, 2010).

There is another dimension, though, to our finding distinctly different risk profiles for traditional pathway milestones. It involves the ascriptive attributes of race/ethnicity and sex, which our results reveal to be consistent with the inequality literatures as well as conspicuously divergent. As a group, non-Hispanic whites performed better than Blacks or Latinx on almost all pathway progress indicators (Table 1), as well as all social class proxies and almost all covariates (Table A, Supplemental Information). The dramatically higher probability of timely enrollment for Blacks is thus especially striking, even after taking into consideration the attenuation of enrollment advantage for Black students with college-educated parents or possessed with academic aptitude. This outcome may be partly explained by an intensified selection effect for Black high school graduates in the NLSY97 sample, who were less likely to complete a high school diploma or enroll at a 4-year institution. However, the much higher probability of Black enrollment (five times that of non-Hispanic whites) is vastly disproportionate to the roughly 20% lower rates for the high school diploma and enrollment transitions. While our findings generally support evidence for Black overachievement once social class is controlled for (e.g., Merolla & Jackson, 2014; Niu, 2017), there likely exist strong motivation or efficacy elements among Black high school graduates uncaptured by our analysis. Because Blacks, in the main, have consistently received fewer rewards from any given position on the social class gradient than non-Hispanic Whites (Bumpus et al., 2020), the superior matriculation performance of Black high school graduates may reflect a heightened imperative within this segment (perhaps higher than for other racial/ethnic groups) to use the 4-year college pathway to maximize

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[21] Regarding the negative relationship between self-rated health and educational attainment specifically, our findings remind us that the college pathway is an *endurance* activity as susceptible to health-related misfortune as the enrollment transition (Haas & Fosse, 2008).

their life chances and position their future children for success. Moreover, if Black students who finish high school on time constitute a group with a higher average level of social class than their non-Hispanic White peers, the former may have held a greater ability or willingness than the latter to build the kind of cultural capital that facilitates integration into higher education (Bodovski, 2010; Lareau, 2003).

As for Latinx, for whom the preceding patterns largely did not apply, it is unclear what accounts for the strong compensatory effects of nontraditional family structures on timely enrollment. Research linking education outcomes and parental involvement from a Latinx perspective is limited (Bhargava et al., 2017), but evidence suggests that Latinx are not necessarily different from non-Hispanic whites in terms of the influence of different family structures on adolescent behaviors (e.g., Wagner et al., 2010) or perceived parental involvement in academic motivation (Henry et al., 2011), making this result a candidate for further investigation. Finally, regarding gender effects, our finding for much higher enrollment probabilities among female high school graduates, all else equal, contrasts sharply with the weakening of this main effect for women with the highest aptitude and from the wealthiest households. This is consistent with findings by Klevan et al. (2016) for diminishing female advantage in timely enrollment once social capital and academic performance are added into the model. This may be explained by greater female efficacy for enrollment at a given level of social capital (Klevan et al., 2016); in other words, only at higher levels of aptitude and wealth do men begin to matriculate at levels approaching women.[22] The lack of significant main or interaction effects in the completion model, though, stands in contrast to existing evidence for higher rates of female degree completion (e.g., Ewert, 2012b). Further research is needed to understand the complexities of these racial/ethnic and gendered discrepancies.

Looking forward, other opportunities exist to extend this line of social class inquiry. These include implementing a deeper characterization of the traditional college pathway, e.g., type or selectivity of college and choice of major, both of which have been shown as meaningful (Zarifa et al., 2018); accounting for the predictive effect of ongoing academic performance while in college (Yue & Fu, 2017); and addressing data limitations in the NLSY97.[23] Our results confirm the assertion by Roksa & Velez (2012) that competing life roles can directly influence educational outcomes and thus confirm as well that a life course approach is appropriate, if not vital, to understanding educational outcomes. We also consider the diminution of social class effects across college pathway milestones as deserving of further investigation. Attenuation in the relationship between earlier socioeconomic conditions and later outcomes, let alone attenuation as dramatic as seen in these results, is rarely encountered in the educational attainment literature. If the selectivity involved in an enrollment transition is sufficient to level the playing field for college freshmen, the elimination of all social advantages except (implied) financial resources during 4 years of college would indicate that affordability is a key to completion success. Mediational or causal analyses may help identify and verify how much of the social class effect on degree attainment only goes as far as to secure a college admission.

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[22] It is important not to interpret higher female predisposition to college as a necessarily negative situation for men; as Klevan et al. (2016) note, male collegegoers are better represented in degree fields that lead to well-paid employment. Higher female representation in college may reflect a gender-specific recognition from the long history of gender wage gaps that college degrees are especially important in securing individual economic wellbeing (Dwyer et al., 2013).

[23] As rich as the NLSY97 data are, many social, family, and economic indicators were collected only once, collected irregularly over time, and/or only obtained on subsamples of the cohort, with obvious implications for sample size, representativeness, and longitudinal accuracy.

Another important direction for further inquiry involves generalizing the research question. Categorizing all deviations from a 4-year, full-time college pathway is consistent with the classic economic interpretation of human capital development and is empirically expedient, but it may be an oversimplification. Delays and interruptions may not always be adverse or undesired events, nor may their occurrence necessarily correlate with socioeconomic position. Midstream changes in degree program or school are examples of such interruptions. Our study addresses an important subset of the young adult population, but as the transition to adulthood continues to evolve and the definition of acceptable college pathway diversifies, this research scope should be extended to include lateral movements between programs and institutions (Goldrick-Rab, 2006) and transitions that include the 2-year college pathway to a bachelor's degree (Calcagno et al., 2007; Monaghan & Attewell, 2015) or even substitute the 2-year pathway to an associate's degree with potentially greater relevance to career development than a traditional 4-year degree (Bozick, 2009; Kim & Tamborini, 2019). Given these evolutions in higher education, the NLSY97 data may represent a national student body that could be becoming less recognizable to present-day college-going cohorts. (New data sources will be required to evaluate this.) Nonetheless, the present study provides insight into the generational college-going behavior of a cohort of students who navigated a higher education system that in many ways remains today largely unchanged from previous decades, including academic calendars structured around 4-year programs. Indeed, as the costs of higher education continue to escalate, the individual economic rationale for timely degree completion will only increase too.

In closing, we note that the study of social class and educational attainment is inseparable from the investigation of social inequality. Empirical work such as this paper reaffirms what has already been established about educational outcomes but also clarifies at what point in the educational trajectory the advantages of social class are leveraged to greatest effect, which may be equivalent to the point when social class begins to propagate itself from one generation to the next. For the cohort of college-going Americans born in the early to mid 1980s, we show that a timely transition at both ends of the 4-year college-going pathway was the norm and that the all-important first transition strongly appeared to be a function of social class. This finding reminds us how 4-year institutions of higher education may contribute to inequality despite the widely perpetuated conceit that they represent the meritocratic gateway to social mobility (Goyette, 2008; Liu, 2011).

The ability to earn a bachelor's degree on time is not a frivolous concern: if the young adults best positioned to make timely transitions into and out of college are also the most socioeconomically advantaged, their advantages are reinforced by the lower direct cost of their degrees and the opportunity to put their degrees to work sooner, relative to those who must take on student loans or work while studying. Whether inequalities in social class manifest themselves more in the context of first enrollment than in degree completion, the resulting stratification is the same. Decades into the era of the massification of higher education, this study is a useful reminder that certain advantages imparted by higher social position remain in place.

Data Availability The datasets and code generated for this study are available in the figshare repository at https://figshare.com/articles/dataset/10_1007_s11162-022-09692-w/19624023.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interest to disclose.

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