Who Drops Out from College? A Study of Social Origin at a Midwestern Teaching University

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Abstract

Previous research has examined the degree to which social origins affect college completion, but few have studied the association of family background and high school neighborhood contexts with regard to the rate of four-year college dropouts. To fill this gap, this study utilizes rich administrative data on first-time, full-time freshman cohorts (2007-2014) from a four-year Midwestern teaching university which provide information on students' demographic characteristics, academic performance, and family background are combined with the secondary data on the high-school neighborhood characteristics. OLS and hazard models are estimated. Surprisingly, parental income is not significantly associated with student withdrawal. Rather, parental education is a significant predicator in persistence or attrition. Being a continuing-generation student, having a college-educated parent, reduces the likelihood of dropping out significantly and substantially and increases the odds of a student's continued enrollment. Being white and female are also associated with reduced likelihood of attrition. Conversely, being a first-generation student, not having a college-educated parent, is correlated with likelihood of withdrawal, as is being African American and male. Economic high school and neighborhood statuses, including percentage of students eligible for the Free and Reduced Lunch Program, as well as county unemployment and poverty rates, demonstrate no significant contribution to student withdrawal rates. Cumulatively, these results lend support for the transmission of cultural rather than economic capital. These findings are significant for higher education retention programs, providing empirical data on which to create targeted intervention for potentially at-risk freshman.

Keywords: *cultural capital; higher education; college withdrawal; parental academic transmission; first-generation students*

INTRODUCTION

Little dispute remains regarding the benefits of obtaining a college degree especially regarding upward mobility. College graduates are employed more and earn more in the labor market (Kim & Sakamoto, 2008), are more upwardly mobile (Bailey & Dynarski, 2011), have better health outcomes, and report greater degrees of happiness (Hout, 2012; Ross & Mirowsky, 1999) . Graduates are more likely to be civically engaged, to vote, to support constitutional freedoms and various non-traditional religious views (Hout, 2010; Kingston, Hubbard, Lapp, Schroeder, & Wilson, 2003). College degrees, therefore, seem to provide possible holistic improvement to the quality of the graduate's life relative to those who do not attain a college degree.

By all indications, college enrollment has been growing rapidly since the 1950s, but the growth has been exceptional in the last 40 years especially (NCES, 1993; Fry, 2009). However, simple descriptive statistics neglect to demonstrate the various continued and increasing stratifications in postsecondary attendance and completion. Increased enrollment reflects improved access to higher education (Bailey & Dynarski, 2011), but access and enrollment to college do not necessarily translate into a degree, especially for students from disadvantaged backgrounds. Family background and social organs necessarily include parental income and parental education (Coleman, 1988) and while these two predictors may operate differently between college attendance and college completion, educational stratification research uses both parental income and parental education as indicators. Blau and Duncan (1967) demonstrate that parental educational attainment affects the educational attainment of the children, but much debate exists regarding the prevailing mechanisms driving college attendance and success. Parental income is significant in college attendance and a widening gap exists for college

enrollment between students from families in higher and lower income quintiles (Kane, 2004; Alon, 2014), and children from families with lower incomes are less likely to complete college (Bailey & Dynarski, 2011). Reardon (2011), however, finds that parental education, rather than parental income, forecasts academic success for children. Students who did not have a parent attend college enroll in college at lower rates than students who have at least one parent who has graduated from college and these students also have lower persistence rates than continuing-generation students (Cataldi, Bennett, & Chen, 2018).

Questions remain, however, regarding the magnitude and length of social origins on educational attainment. Social researchers, like Torche (2011) and Mare (1980), have asked how long and to what degree family background matters for educational attainment. Torche (2011) finds that social origin impact diminishes dramatically with college attendance. Likewise, Mare (1980) argues that the longer students remain in school, the less impact family background has on their continued enrollment, and this question is central for this paper. Conversely, other research shows that social background, especially relating to parental education, matters substantially in terms of obtaining a college degree (Hansen & Mastekaasa, 2006; Coleman, 1988; Hout & Janus, 2011).

Given the known benefits of a college degree, having a better understanding of the circumstances under which students drop out of college is vital. A number of studies demonstrate the importance of family background on college completion, but very few examine the ways in which social origins characteristics, like parental education, family income, and neighborhood contexts, affect attrition rates and timing. To help rectify this dearth of information, this study aims to contribute to this understanding by using original admissions and Free Application for Federal Student Aid (FASFA) data from 8 first-time, full-time freshman cohorts at a low-

selectivity Midwestern four-yearteaching university to examine with a 83% acceptance rate (2017 cohort). From the university data, I use OLS and logit modeling to analyze demographic and family economic and educational statuses as they relate to persistence and attrition. In addition, I use secondary government data from the U. S. Census Small Area Income and Poverty Estimates (SAIPE), Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics, and National Center for Education Statistics (NCES) to supplement and analyze high school neighborhood characteristics and evaluate these contexts for correlations to student withdrawal. Additionally, I use time-to-event and hazard modeling to better understand who drops out and under what conditions students are most likely to drop out. Given the limited availability of this type of data, this study contributes new empirical evidence to understanding the patterns, trends, and timing of college attrition.

THEORETICAL FRAMEWORK

Capital, social origins, and postsecondary education

A number of forms of capital intersect to make postsecondary education possible or inaccessible. Coleman (1988) explains that financial, human, and social capital all inform an individual's family background. Financial capital comprises the economic resources and commodities a family provides for a student's educational success. Human capital is roughly the parental education level and what parents can do to support learning in their offspring. Social capital is harder to identify, though Coleman (1988) loosely defines it as something that enables something else to happen that would not be possible in its absence. He also notes it has much to do with adult presence and absence in order for transmission to be successful and offers that a relationship between the parents and the children must exist for capital exchange. The presence and transmission of social capital is positively correlated with academic success. One of the

implications of this is, as Brand and Xie (2010) note, parental expectations for college attendance and completion based on social backgrounds.

In addition to family background and its various forms of capital, the cultural capital conveyed to children by their parents is also fundamental in understanding academic success (Brank & Xie, 2010). Bourdieu (1986) posits that the type of cultural capital transmitted by parents is highly dependent on the family's social class, which also links inextricably to social capital. When parents are able to transmit self-efficacy, making their children independent active agents, especially in educational institutions, those children are more able to operationalize the elements of their social background in forms like social or economic capital, to become successful in academics. A variety of current literature supports Bourdieu's supposition regarding family and academic achievement and is notably present in Lareau's work. Lareau (2011) demonstrates children of college-educated parents (with the inherent assumption of at least middle-class status) outperform children whose parents have not attended college, are more comfortable in academic settings, and are more able to advocate for themselves. Conversely, children whose parents are less educated (i.e., working class), are less comfortable in educational institutions, have had less experiences in educational settings and are, therefore, less likely to be able to demonstrate ways to negotiate in those situations, and by its absences, unable to support their children with the same kinds of capital that educated parents can. Tinto (2012) explains that first generation students do not come to college with an adequate understanding of what to expect and they must do to be successful. An understanding of college expectations can come directly from access to the social and cultural capital that children of college-educated parents have (Coleman, 1988). However, Monaghan (2017) shows, for mothers at least, even obtaining a

college degree after having children can improve the children's educational trajectories. Thus, the timing of the college degree may not matter so much as parents having one at all.

The pertinent question, then, is how long the influences of social origin remain regarding education. Mare (1980) argues that certainly social background matters, but as students transition academically, the less important social background factors are on academic achievement. As students progress in school, the cohorts should homogenize, and previous (origin) differences should matter less. Other research draws differing results. Kane (2011) posits that family income is significantly related to students enrolling in higher education, especially in four-year institutions. He finds that gaps between family income quintiles and student enrollment in higher education is increasing, partially because more higher income students are enrolling in postsecondary education than their less affluent peers. Hansen & Mastekaasa (2006) find that socioeconomic origins do matter, and those students who have the greatest access to cultural capital perform better than their peers. Interestingly, they found that students who have access to the most economic capital tended to not perform as well as those students with access to cultural capital, highlighting the importance of differentiating between cultural and economic capital. Tinto (2009:42) draws a different conclusion. In an analysis on bachelor degree completion at public universities, Tinto found that parental education as well as parental income impact graduation rates, further dismantling Mare's findings. Further, Tinto notes the results for students whose parents only had some college rather than obtaining a degree had the same graduation rates as students whose parents did not have a college degree.

In addition, despite opportunities for financial aid packages assistance for students from low-income families, this kind of support may not be enticement enough. Coark (2013:91) notes that students who come from less privileged socioeconomic backgrounds may not receive the

various capital transmissions they need to be successful in college, even if aid is offered them. Low income parents and those who themselves do not have college educations may be less able to provide various navigational support for their students through to degree completion, including completing Free Application for Federal Student Aid (FASFA). Multiple ways exist for which family background operationalizes to help students get in or works to keep them out of college. Thus, despite Mare's (1980) contention, it seems that family background is important for at least initial enrollment in college.

Vartanian & Gleason (1999) demonstrated the differing effects neighborhoods can have on white and African American students, finding that socioeconomic status of residents as well as family construction/disruption, and the prestige of residence can have influences on reducing high school dropout rates for African Americans and increasing the college graduation rates for whites. Owens (2010) also finds that neighborhood socioeconomic status matters in the probability of graduating from college. She, too, demonstrates that increased neighborhood income, job prestige, and having neighborhoods who have college degrees positively predict college graduation for students.

Attrition risk factors at a low-selectivity university

This study utilizes a large, unique data set for first-time, full-time freshman in the 2007-2014 cohorts at a Midwestern teaching university to examine the impact of social origins, including family income, parental education, and neighborhood characteristics on dropout probabilities during college. Drawing on previous research regarding college attainment based on family income, parental education levels, and neighborhood socioeconomic characteristics and using data from admissions applications as Free Application for Federal Student Aid (FASFA) I pose the following questions: Under what family and neighborhood economic conditions are

first-time, full-time students most likely to drop out? Does the amount of time these students persist vary with differing economic circumstances? Does attrition vary based on gender and race? Understanding the conditions under which students are more likely to drop out are important for universities for persistence and retention initiatives and as well as for the students themselves. Knowing who is at increased risk for—and what are those risks, like being African American and first-generation—for not completing college may help students in potential cost-benefit analysis, especially regarding the acquisition of taking out loans.

This original data set can provide answers to these questions because of the depth and the temporal relevancy of the information gathered. As such and in response to the questions posed above, I contend the following: 1) that family economic background—that both the income of the parents and of the students separately—relate significantly to student persistence and time to dropout, namely that students who are more affluent, as determined by parental income, will persist longer in college than their less affluent peers. 2) That family cultural background, examining specifically parental education, relates significantly to the time a student persists in college, and students who have at least one parent with a college education operationalize that advantage to remain in college longer than students who have no parents who have attended college. 3) That college persistence rates vary significantly between men and women. Specifically I suggest that women persist longer than do men. And 4) that neighborhood characteristics, including high school and county poverty levels and county unemployment levels, relate to college dropout rates with a positive correlations that as poverty and unemployment rates increase, college dropout rates increase as well.

ANALYSIS STRATEGY

Data

The analysis uses administrative application and FASFA data from the 2007-2014 first-time, full-time freshman cohorts at a low-selectivity Midwestern teaching university with a Carnegie Classification of Master's College and Universities: Larger Programs. As of 2017, the university employed approximately 247 full-time faculty and boasted an undergraduate enrollment of approximately 3,600 students, who are predominantly white (70%) and under the age of 24 (88%). For this study, the university provided data which includes demographic and socioeconomic status information for students, including parental income, education, and marital status; household size and number of students in college; student income, marital, and dependency status; Pell eligibility, estimated family contributions (EFCs), and high school measures, including performance indicators. Data on courses attempted, courses passed, and college GPA for cohort members were provided as well.

I supplement the institution information with data drawn U. S. Census Bureau and the Bureau of Labor Statistics (BLS) to construct 4- year county level averages for unemployment, median income, and overall poverty rates. In addition, using basic high school information from the university application data then drawing data from the National Center for Education Statistics (NCES), I create a robust high school variable context, including poverty rates based on Free and Reduced Lunch Program eligibility, school demographics, and population ratios.

This dataset is relevant and substantial to the understanding of college dropout trends for a number of reasons. Independently, the unique application and FASFA data can provide some understanding of how college attrition functions at a regional state university based on demographic, family socioeconomic, and academic performance characteristics. However, taken holistically with the secondary information, these data provide for a rich and robust analysis of family and high school neighborhood contexts on college dropout rates and timing at this

particular intuition. Even more, these findings can provide insight on attrition patterns at similar universities across the country.

Key explanatory variables

Variables of interest. Through access to administrative data at SSU, I had obtained a variety of data for first-time, full-time freshman between 2007-2014. For this first part of the analysis of this study, the key variable of interest is students having at least one parent with a college education (4 year degree/BA), understanding that parental education status is often linked to parental income, neighborhood characteristics, and a number of student academic performance outcome measures.

For the second part of the analysis, the main dependent variable is length of enrollment. All cohort members are first time, full-time freshman at Sunflower State University, and students who have withdrawn or been administratively dropped from enrollment then subsequently reenrolled are not included in this data. While the terms withdrawal, drop out, and stop out all have relatively similar meanings, similar studies (see Murtaugh, Burns & Schuster, 1999) have used the term withdrawn to designate students who have stopped enrollment before graduation. I am electing to adopt this term as well. Each member of each cohort is tracked by consecutive semesters attended, including summer sessions, regardless of whether or not courses were actually taken over the summer. If, for example, a student enrolled and completed the spring 2009 semester and reenrolled for fall 2009, summer 2009 is counted as a consecutive enrollment semester. Computing enrollment times thus allows me to account for students for whom a summer session was the last semester of enrollment. The main dependent variable takes into account students who graduated, stopped enrollment, or were still enrolled at the close of the study, which is spring 2018.

Family measures. Admissions application and FASFA applications provided a rich data set that includes first generation status, estimated family contribution (EFC), parental adjusted gross income (AGI), student AGI, number of people in household, student dependency status, parental marital status, student marital status, parental education status (parent 1 and parent 2), number of students in household who are in college, family Supplemental Nutrition Assistance Program (SNAP) eligibility, high school Free/Reduced Lunch Program eligibility, independent student status with or without dependents, independent student status with or without dependents that are not children, and Pell Grant eligibility for each year of enrollment. I created a variable demonstrating the raw difference between parental income and their corresponding county 4 year median income.

Neighborhood measures. Student admission data includes high school city and state information, and from this I used NCES to obtain high school county names for members of the cohort for whom high school data were available. Drawing from the high school county, I gathered U. S. Census Small Area Income and Poverty Estimates (SAIPE) to construct a variable for the total mean county poverty average and mean county median income averages for a 4 year period—the 3 years prior to the student entering the cohort and the year she entered SSU. For estimation purposes, I divided the mean county median income by $1000.

Again using the high school county name, I gathered non-seasonally adjusted county level data from BLS Local Area Unemployment Statistics for each of the high school counties and created a mean unemployment rate for each county for a 4 year period—the 3 years prior to the student entering the cohort and the year she entered. In the neighborhood measure I also included two high school measures: one of the poverty level and the other of the Title 1 eligibility by school and district wide. First, NCES provides the number of students who are

eligible for participation in the Free and Reduced Price Lunch (FRLP) program. I computed the percentage of students eligible for this program based on the school population, then using the FRLP percentage data, I created a poverty index for the school using NCES standards to assign poverty levels to high schools which categorize low-poverty schools are public schools where 25.0 percent or less of the students are eligible for FRPL, mid-low poverty schools have 25.1 to 50.0 percent of the students eligible for FRPL. Mid-high poverty schools have 50.1 to 75.0 percent of the students eligible for FRPL, and high-poverty schools have more than 75.0 percent of students eligible for FRPL (NCES, 2018).

Second, Title 1 is a federal program which provides grants to local public schools which serve a high percentage of low-income students. These funds can provide support either for individual schools or for schools district wide. Because it is an economic measure, I have included it with the neighborhood variables (U.S. DoE, 2015).

Academic information and performance measures. For each student in the cohorts to the extent to which information was available, the admissions data for SSU provided high school grade point average (GPA), indication of the student was home schooled or completed a GED, composite ACT score, college credit hours attempted, college credit hours passed, college GPA, last term of enrollment, and graduation term (if applicable). High school GPA were standardized to a 4.0 scale. College credit hours attempted and passed were used to compute an additional variable of percentage of college courses passed. I computed binary variables for instate/out-of-state students and if other cohort members attended same high school.

For most public and some private schools, I used NCES to supplement additional high school information: grade spans served (10-12, 9-12, 7-12, and pk-12), locale, student/teacher

ratio, total school population, ratio of white, African American, and Hispanic students and ratio of female and male students.

Other Control Variables

For OLS and logit models, I control for students' binary gender categories (female and male), race/ethnicity (white, African American, Hispanic, others), age, and age-squared. Nontraditional students over the age of 24 were dropped from the sample. For survival analysis, gender and race/ethnicity were predictor variables as well.

Statistical Modeling

Drawing upon the findings from the OLS and logit models, I executed survival analysis and hazard modeling, which allows a closer examination of the predictors and timing of the withdrawal. Table 4 shows the coefficients for estimated probabilities of continued enrollment at years 1, 2, 4, and 6 based on Kaplan-Meier estimations. Figures 1 and 2 show KM curve estimations for the entire cohort and any by parental college degree attainment, respectively.

In the creation of Table 5, I utilized the following model of hazard function:

$$h(t)=h_0(t)\ \exp[\beta_1 X_1+\ldots\ \beta_p X_p]$$

The Cox proportional hazard model (1972) is used to predict the hazard that an event will occur (in this case, the event is dropping out of college) based on a set of predictors, with *t* representing the amount of time students persist and *h(t)* representing the hazard function. $\beta_{1\ldots}\ \beta_p$ represent the predictor coefficients of $X_{1\ldots}X_p$. Table 5 represents the univariate and multivariate hazard ratios for attrition. The greater the coefficient, the greater the chance of attrition.

Figure 3 is the assessment of proportional hazards using one parent with a college degree as the predictor. Figure 4 is a KM observed and Cox predicted curves for parental college degree status.

EMPIRICAL FINDINGS

This study examines family, neighborhood, and high school characteristics of 2007-2014 first-time, full-time freshman cohorts at a Midwestern teaching university. Table 1 provides an overview of the cohorts' characteristics. More than twice as many women graduated than did men, and men dropped out at an average greater rate (4.1%) than did women. Whites graduated at the highest rate (42.16%), while African Americans were least likely to matriculate (25.54%). Mean student income was approximately 16% lower for graduates than for dropouts, with the largest gap between graduate and those students who were still enrolled after year 4 but without attaining a degree. A smaller disparity exists between mean parental income for students who graduated versus dropout (10.56%) at $77270.06 and $69106.93, respectively. Similarly, students who were continuing-generation graduated more often and dropped out less frequently than those who were first-generation students. Not surprisingly, graduation rates were highest and attrition rates lowest for student for whom both parents attended college.

Analysis of the full OLS regression model (Table 2) when the dependent variable is continuous drop time shows a negative correlation between having one parent attend college and dropping out ($p<.05$). This correlation is absent when neighborhood measures and high school characteristics are analyzed separately but demonstrates slight significance in the full model. This is consistent with cultural capital theory and provides some evidence against the Mare model.

Being female is significant across all models in Table 2, though it is most significant in model 2, which include family measures. However, it just misses p<.01 significance by .001 in the full model. The results are consistent with research demonstrating women are more likely to persist in college than are men (see Hout, Rafferty, and Bell, 1993, for example).

In partial modeling (Model 3, Table 2), there is significant positive, though weak, correlation with county poverty averages and dropout time and county median income averages. Most predictive across all models in the OLS regression is being Hispanic, with significance at the p<.001 level. Thus, when controlling of a number of family, neighborhood, and high school characteristics, being Hispanic is the strongest predictor of dropping out of college. This is consistent with a variety of literature (See Tinto and Hout, for example) regarding race and college persistence.

As in OLS, in logit analysis (Table 3), being female is significant across all models, though the coefficient loses some magnitude in the full model. Again, these results are consistent with current trends in the gender gap in higher education: women are persisting longer than are men.

Unlike in the OLS regression, however, race is significant and predictive across all groups. Like with gender, however, the significance drop in the complete model. Still, being African American, Hispanic, or other is significant at the p<.05 level and predictive of dropping out of college. This result mirrors that of racial dropout patterns in higher education. Also unlike in the OLS regression, age is significant across three models, but it entirely loses significance in the full model.

Having had one parent attend college is highly significant across three models but drops to significance at the p. <05 level in the full model. This further supports the cultural capital

theory and further weakens the argument for the Mare model. In neither model do any of the high school measures demonstrate a relationship to students dropping out of college.

Most importantly, however, across all OLS and logit models parental adjusted gross income was not significant in terms of a student dropping out of college, *not even once*. What this implies is that economic capital does not alone play an affective role in college persistence for these cohorts. Rather, parents transmit something more culturally specific towards academics to their children that income alone does not explain. This is especially interesting considering the mean income between families in which neither parent has gone to college and families in which at least one has is nearly $20,000. This is consistent with Hansen & Mastekaasa (2006) findings regarding the decreased significance of access to economic resources and college achievement. However, this differs from what Tinto (2009) reports; he notes the significance of both parental education and income on college persistence. The relationship between parental income and college persistence warrants further consideration.

Kaplan-Meier survivor function estimates in Table 4 show the probabilities of persistence at years 1, 2, 4, and 6. Students are most likely to persist if they are white females with at least one parent who has gone to college. In fact, the coefficients for being female and one parent with a college degree are nearly identical (.7451 and .7449, respectively). Conversely, though, the greatest single predictor of attrition in year one is being first-generation. In years 2, 4, and 6, however, being African American is the strongest predictor of attrition and having two parents who have gone to college the strongest predictor of retention.

Being female increases a student's probability of retention at the end of year one is 3.8% greater than that of men and that difference in probability of continued enrollment continues to grow. At the end of year 2, the difference increases to 6.3% and is 8.6% at the end of year 4. A

similar trend exists between whites and African Americans, where the differential gap is 3.1% at the end of year 1 but is 13.3% by the end of year 4. The probability gap between students who have two parents with education and those whose parents have no college degree is fairly constant, averaging about 10 penetrance points between year 1 and year 4. While the magnitude is smaller, the probabilities gap between students with one parent who has graduated college and those who do not have a parent who has graduated is similarly consistent across enrollment years at an average of 6%.

Being male, African American, and first-generation had strong magnitude coefficients in univariate hazard ratio modeling (1.232, 1.324, and 1.196, respectively), and all were statistically significate at the $p<.001$ level, as was being female and having one and both parents with a college degree. In multivariate analysis, being female and having both parents attend college were highly significantly significant at the $p<.001$ level, though both coefficients rose slightly in when controlling for the other factors. Conversely, the coefficients for being African American and Hispanic as well as for being a first-gen student reduced slightly, though being first-generation lost statistical significance entirely and significance for being African American went down to $p>.01$.

DISCUSSION AND CONCLUSION

Through analysis of original administrative data for the 2007-2014 first-time, full-time freshman cohorts at a Midwestern teaching university, I have demonstrated the continuing importance of social background on college persistence; however, it is in a more limited scope than expected. Parental education is the single most consistent family background measure on college retention or likelihood of withdrawal: first-generation students enrolled less frequently (33%) than their peers who had at least one parent complete college (47%). These students also

dropped out faster and at a higher rate (68%) than their peers who had at least one parent complete college (57%), thus continuing-generation students are less likely to withdrawal and are more likely to persist longer in college than their first-generation peers.

In educational literature, parental income is often the lynchpin for educational achievement. The preceding results do not support that assertion. Because parental income was not statistically significant, potential accessibility to financial and economic resources do not seem to relate to college persistence or attrition, which is contrary to other findings (Tinto, 2009). While students who have parents with college degrees live in counties with higher median incomes, neighborhood characteristics did not demonstrate statistical significance in full regression models. Other studies have demonstrated the importance of neighborhood characteristics on college outcomes (Owens, 2010; Vartanian & Gleason 1999) though analysis of this data does not support those findings. High school measures were not significant relating to college graduation either, neither singularly nor when controlling for other variables.

If, as this study has demonstrated, parental college graduation is significant in predicating college retention and attrition, yet parental income is not, what do college educated parents transmit to their children that is not economically related but makes them academically successful? This question poses some interesting possibilities for both policy and future research. First, is that unidentified transmission teachable? Could a program secondarily supplement what continuing-generation students receive from their families but first-generation students do not? Alternatively, is the something transmitted so implicitly cultural that external support may be insufficient? Monaghan's (2017) study would argue no, but this is an area that warrants further study. Second, to what degree does the timing of parental college completion matter most to foster academic success (i.e., college completion) in their children? Does the social background

influence cease once students reach a certain age? Again, this is an area educational sociologists will want to explore further, especially considering the widespread availability of on-line and part-time degree plans. Regardless of timing, however, it is clear that college degrees are beneficial both for parents and for their children.

Further Development

In the further development of this paper, I will utilize multilevel mixed-effect modeling to determine, in part, within cohort attrition patterns and further explore the impact of degrees of parental education on dropout rates. Further, I will create a more robust hazard model as well as add additional variables to OLS modeling, including interaction variables and a composite parental education index to better understand the relationship between types of parental educational achievement and student attrition.

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Table 1. Select descriptive characteristics of the 2007-2014 first-time, full-time freshman cohorts

	Total/averages across cohorts	**Graduated**	**Last enrolled in 1st year**	**Last enrolled in years 2-4**	**Last enrolled after year 4**
Control Measures					
Gender					
Female	3248	68.95%	25.37%	24.94%	5.73%
Male	2031	31.05%	29.05%	30.23%	9.06%
Race					
White	4070	42.16%	26.46%	25.60%	5.77%
African American	278	25.54%	29.50%	35.97%	8.99%
Hispanic	341	27.27%	28.15%	28.74%	15.84%
Other	590	32.37%	26.95%	31.19%	9.49%
Family measures					
Parental income in $ (mean)	73624.14 (161553.2)	77270.06 (46193.48)	65900.85 (47627.11)	78171.75 (302986.4)	63248.19 (40693.41)
Student income (in $) (mean)	5960.56 (11007.44)	5570.09 (11352.85)	6212.804 (9455.836)	5784.041 (10978.49)	7879.159 (14684.25)
No parental college and/or other education	1826	32.48%	30.18%	28.26%	9.09%
One parent college	2731	42.59%	25.38%	26.07%	5.97%
Both parents college	1265	47.04%	21.03%	26.56%	5.38%
Neighborhood measures					
County unemployment average 4 yr % (sd)	5.733 (1.302)	5.689 (1.28)	5.766 (1.34)	5.754 (1.309)	5.777 (1.22)
County poverty average 4 yr % (sd)	13.274 (4.627)	12.78 (4.64)	13.4112 (4.446)	12.547 (4.7)	14.553 (4.574)
County median income average 4 yr % (sd)	48574.34 (11219.2)	49489.95 (11585.26)	47848.87 (10871.9)	48744.87 (11046.47)	45350.69 (10269.57)
High school poverty percent	.417 (.173)	.397 (.172)	.43 (.172)	.424 (.175)	.455 (.163)
Academic performance measures					
College GPA (sd)	2.604 (1.078)	3.353 (.413)	1.724 (1.*257*)	2.419 (.871)	2.484 (.635)
High school GPA (sd)	3.12 (.741)	3.457 (.641)	2.947 (.784)	3.136 (.682)	2.887 (.835)
Composite ACT (sd)	21.948 (3.896)	22.955 (3.714)	20.98 (3.75)	21.55 (3.84)	21.12 (4.291)

Table 2. Ordinary Least Squares regression by continuous drop time (academic years 1-7)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Controls					
Female	-.154 (.063)*	-.284 (.099)**	-.149 (.065)*	-.131 (.066)*	-.275 (.107)*
African American	.136 (.121)	.038 (.255)	.054 (.135)	.233 (.155)	.164 (.320)
Hispanic	.618 (.113)***	.6 (.202)**	.554 (.122)***	.519 (.125)***	.788 (.232)***
Other	.22 (.104)*	.253 (.17)	.128 (.111)	.171 (.111)	.389 (.187)*
Age	-.107 (.061) ǂ	.498 (1.45)	-.087 (.07)	-.073 (.069)	-.910 (1.676)
Age squared	.002 (.001) ǂ	-.014 (.037)	.001 (.001)	.001 (.001)	.024 (.043)
One parent college	-.005 (.063)	-.218 (.101)*	-.022 (.066)	.011 (.16)	-.241 (.109)*
Family Measures					
Parental income		-.000 (.000)			-.000 (.000)
Student income		-.000 (.000)			-.000 (.000)
Parents divorced		-.169 (.141)			-.121 (.153)
Parents single		-.101 (.25)			.020 (.278)
Parents widowed		.499 (.431)			.883 (.555)
Above poverty threshold		.201 (.187)			.239 (.202)
Household size		-.005 (.041)			-.002 (.045)
Neighborhood Measures					
County unemployment average (4 yr percent)			-.051 (.027)		-.046 (.047)
County poverty average (4 yr percent)			.048 (.013)***		.039 (.025)
County median income average (4 yr dollars)			.000 (.000)***		.025 (.010)*
Attended a Title 1 high school			.089 (.092)		-.066 (.142)
High school poverty percentage			.042 (.056)		.178 (.107)^^
High school measures					
Percent white				4.427 (4.452)	-5.096 (8.758)
Percent African American				4.124 (4.442)	-5.517 (8.758)
Percent Hispanic				4.850 (4.459)	-5.838 (8.744)
Percent other				2.726 (4.352)	-7.611 (8.641)
Student teacher ratio				-.014 (.009)	-.005 (.015)
Total population				.000 (.000)	.000 (.000)
High school locale				.013 (.010)	.006 (.017)
Cohort member				-.033 (.088)	.105 (.146)
Cons	3.683 (.0765)	-1.994 (14.062)	2.103 (.98)	-1.038 (4.568)	14.297 (18.403)
$\mathbf{R^2}$	.0149	.0276	.0224	.0259	.0506

Note: estimates in parenthesis indicate standard deviations.
^p≤.1 *p≤.05, **p≤.01, ***p≤.001

Table 3. Logit regression for dropout status

	Model 1	Model 2	Model 3	Model 4	Model 5
Controls					
Female	-.456 (.066) ***	-.379 (.098)***	-.437 (.069)***	-.464 (.070)***	-.337 (.107)**
African American	.647 (.147) ***	.695 (.319)*	.509 (.158)***	.663 (.179)***	.806 (.370)*
Hispanic	.528 (.136) ***	.468 (.229)*	.422 (.146)**	.543 (.148)***	.495 (.250)*
Other	.466 (.118) ***	.398 (.183)*	.375 (.123)**	.428 (.124)***	.514 (.201)*
Age	.542 (.085) ***	-3.957 (2.507)	.477 (.097)***	.505 (.097)***	-3.993 (2.711)
Age squared	-.008 (.001) ***	.114 (.067)	-.007 (.002)***	-.007 (.002)***	.114 (.072)
One parent college	-.325 (.066) ***	-.179 (.101)	-.319 (.068)***	-.337 (.069)***	-.231 (.109)*
Family Measures					
Parental income		-.000 (.000)			-.000 (.000)
Student income		-.000 (.000)			-.000 (.000)
Parents divorced		.209 (.144)			.094 (.154)
Parents single		.301 (.281)			.082 (.298)
Parents widowed		-.242 (.406)			-.753 (.466)
Above poverty threshold		-.269 (.205)			-.177 (.215)
Household size		.055 (.041)			.025 (.045)
Neighborhood Measures					
County unemployment average (4 yr percent)			-.016 (.028)		-.037 (.047)
County poverty average (4 yr percent)			.030 (.014)**		.028 (.025)
County median income average (4 yr dollars)			.008 (.006)		.014 (.011)
Attended a Title 1 high school			.175 (.090)		-.008 (.139)
High school poverty percentage			.038 (.057)		.027 (.106)
High school measures					
Percent white				-.596 (4.907)	-7.327 (7.527)
Percent African American				-.825 (7.887)	-7.871 (7.500)
Percent Hispanic				-.324 (4.910)	-7.357 (7.540)
Percent other				1.769 (4.763)	-5.827 (7.334)
Student teacher ratio				-.007 (.010)	-.011 (.018)
Total population				-.000 (.00)	-.000 (.000)
High school locale				.001 (.010)	-.019 (.017)
Cohort member				.083 (.089)	.039 (.143)
Cons	-6.351 (1.092)	35.094 (23.462)	-6.399 (1.318)	-5.302 (5.083)	42.455 (26.420)

Note: estimates in parenthesis indicate standard deviations.
*p≤.05, **p≤.01, ***p≤.001

Table 4. Estimated probabilities of continued enrollment

	1 Year	2 Years	4 Years	6 Years
Gender				
Female	0.7451	0.6226	0.4844	0.2882
Male	0.7072	0.5593	0.3984	0.2263
Race ethnicity				
White	0.734	0.6042	0.4681	0.291
African American	0.7029	0.5326	0.3349	0.1641
Hispanic	0.716	0.6006	0.4228	0.2262
Other	0.7284	0.5874	0.4089	0.1923
Parental Education				
No college	0.6959	0.557	0.4042	0.2271
One college	0.7449	0.6184	0.4729	0.28
Both college	0.788	0.6653	0.5078	0.2829

Figure 1. Kaplan-Meier curve for all sample members

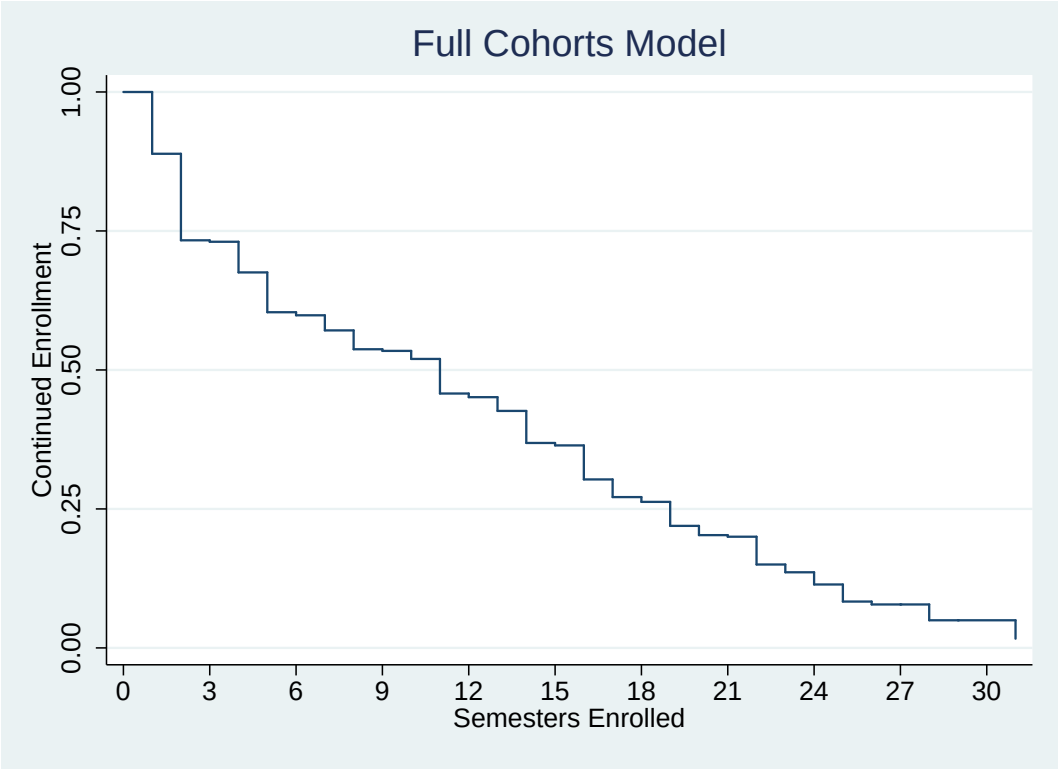


Figure 2. Kaplan-Meier curve for all sample members by parental education status

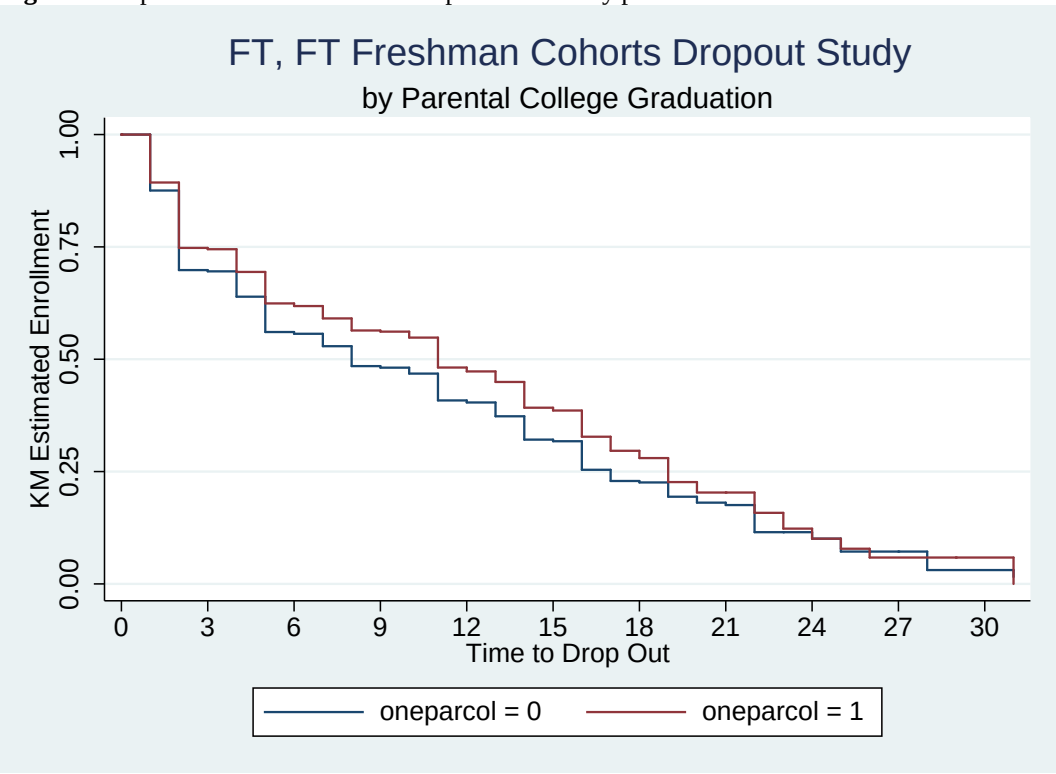
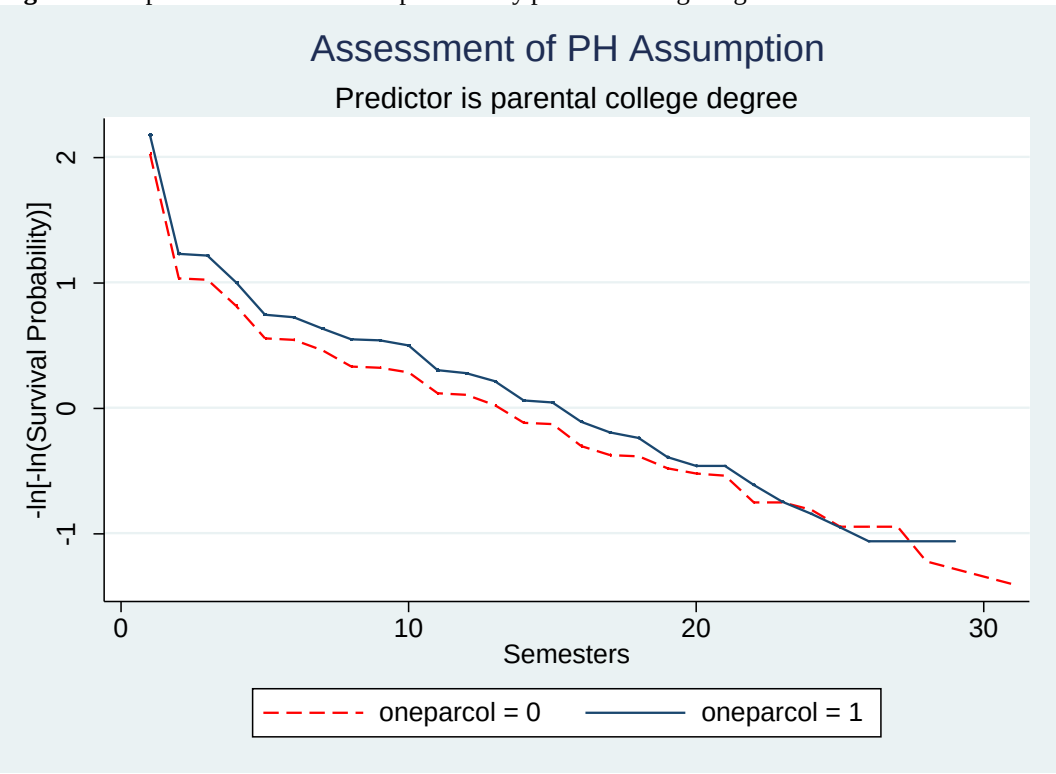


Table 5. Hazard of dropping out

	Univariate	**multivariate**
Gender		
Female	.812 (.029)***	.829 (.032) ***
Male	1.232 (.044)	-- -- --
Race ethnicity		
African American	1.324 (.097)***	1.25 (.094)**
Hispanic	1.127 (.076)	1.034 (.074)
Other	1.174 (.0637)*	1.181 (.076)**
Parental Education		
No college	1.196 (.048)***	1.076 (.049)
One college	.835 (.032)***	-- -- --
Both college	.778 (.035)***	.816 (.042) ***

Figure 3. Proportional Hazard assumption for by parental college degree



Note: adjusted for female and race

Figure 4. Kaplan-Meier observed and Cox predicted curves for parental college degree status