

**Differentiation and Work:
Employment Patterns and Class Inequality at Two-Year and Four-Year Institutions**

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ABSTRACT

While much stratification research has focused on understanding the patterns and consequences of differentiation, previous studies have not considered similarly important variation in students' trajectories through higher education, and particularly their participation in the labor market. Results from the National Longitudinal Survey of Youth of 1997 (NLSY97) indicate that entering and succeeding in a differentiated system of higher education is related to students' employment patterns. Students with extensive commitment to the labor market during high school are more likely to begin their postsecondary journeys in community colleges as opposed to four-year institutions. Once in higher education, employment is more consequential for students attending community colleges: students in community colleges are more likely to work at high intensities as well as experience more negative consequences for extensive participation in the labor market. Employment also mediates some of the effects of family background on degree completion among community college students. These results highlight the importance of examining the relationship between differentiation and students' employment patterns for developing a comprehensive model of educational attainment.

Differentiation and Work:

Employment Patterns and Class Inequality at Two-Year and Four-Year Institutions

The expansion of higher education in most industrialized countries has been accompanied by differentiation (Shavit, Arum, & Gamoran, 2007). The most visible and debated aspect of differentiation in the U.S. is the rise and proliferation of community colleges (i.e., public two-year institutions).¹ Since the founding of the first community college in 1901, they grew rapidly to enroll approximately 50 percent of students in public higher education (NCES 2007). Community colleges have been praised for democratizing higher education by providing increased access, as well as criticized for diverting less advantaged groups of students from four-year institutions and bachelor's degrees (for a review see Dougherty, 2001).

While ample research has examined the patterns and consequences of differentiation, previous studies have often ignored another important trend in U.S. higher education: the growing variation in students' trajectories, and in particular their participation in the labor market. Most students in higher education today are not only students; they are also often workers. Approximately 80% of undergraduates work while enrolled in school, and half of those working are employed full-time (NCES 1998b, 2002). To what extent is variation in employment patterns related to access and attainment at two-year and four-year institutions? Moreover, to what extent can employment patterns explain class inequality in educational access and attainment across different institutional types?

¹ Researchers often use the terms "community colleges" and "two-year institutions" interchangeably. While two-year institutions include both public and private, only 5-6 percent of two-year students attend private institutions (NCES 2007, calculations range between 5 and 6 percent, depending on whether one includes non-degree granting institutions). The vast majority of two-year enrollments are thus in public two-year institutions (i.e., community colleges).

To address these questions, I use data from the National Longitudinal Survey of Youth of 1997 (NLSY97). The results indicate that entering and succeeding in a differentiated system of higher education is related to students' participation in the labor market. Students who are employed during high school, and particularly those working long hours, are more likely to enter community colleges as opposed to four-year institutions. Once in higher education, students in community colleges are more likely to work as well as work full-time. Moreover, extensive commitment to the labor market has negative consequences for degree attainment, and those negative consequences are more pronounced in community colleges. Employment also helps to account for some of the class gaps in degree completion among students attending community colleges. These results indicate that understanding success in higher education requires not only a consideration of students' entry into community colleges vs. four-year institutions but also an examination of students' participation in the labor market. Examining how structural differentiation of an educational system intersects with the complexity of students' pathways can provide a more comprehensive understanding of educational attainment.

LITERATURE REVIEW

Differentiation in U.S. Higher Education

Recent stratification scholarship has demonstrated that class inequality is not only manifested in students' likelihood of progression through the educational system but also in their likelihood of attending particular programs or institutional types (Breen & Jonsson, 2000; Lucas, 2001). In the U.S. context, Lucas (2001) showed that family background influences the specific type of education students obtain. He argued that at a given level of education, the "socioeconomically advantaged seek out whatever qualitative differences there are at that level and use their advantages to secure quantitatively similar but qualitative better education" (Lucas,

2001: 1652). This pattern of results has been termed “effectively maintained inequality” and has since been observed in other contexts (e.g., Ayalon & Shavit, 2004; Ayalon & Yogev, 2005).

U.S. higher education is no exception. Students from less advantaged family backgrounds are not only less likely to enter higher education; they are also less likely to attend more selective types of institutions (Baker & Velez, 1996; Karen, 2002). Part of the debate regarding differentiation in higher education has centered on the distinction between two-year and four-year institutions. Students from less advantaged family backgrounds are more likely to enter two-year as opposed to four-year institutions. For example, among the 1992 high school graduates who entered higher education, students whose parents had a college degree had 5 times the odds of entering four-year as opposed to two-year institutions, compared to individuals whose parents had no college experience (Roksa, Grodsky, Arum, & Gamoran, 2007). Moreover, there is at least some indication that inequality in access to four-year institutions has increased over time (Ellwood & Kane, 2000).

Numerous studies have examined the consequences of starting in two-year vs. four-year institutions for educational attainment, and in particular bachelor’s degree completion. The majority (approximately two-thirds) of students entering community colleges expect to transfer and earn bachelor’s degrees (Lee & Frank, 1990; NCES 2003; Roksa, 2006). However, most of them do not attain this goal. Among the 1992 high school graduates, only 20 percent of students who entered community colleges completed a bachelor’s degree by 2000 (NCES 2003). While the completion rates among students starting in four-year institutions may not be impressive either, they are substantially higher than those at community colleges.²

There are numerous reasons why students starting their educational journeys in community colleges may have lower rates of bachelor’s degree completion. Some authors have

² For example only slightly over 50% of students entering public four-year institutions earn bachelor’s degrees within six years (The Chronicle of Higher Education, 2008).

highlighted the challenges presented by the structural features of community colleges and their ties to four-year institutions (Brint & Karabel, 1989; Dougherty, 1991, 2001), while others have explored the differences in individual characteristics between students attending two-year and four-year institutions. Students who enter community colleges are less advantaged (i.e., they tend to come from less advantaged family backgrounds or are members of racial/ethnic minority groups, particularly Hispanic). Moreover, community college students are not well prepared academically, and they are less prepared than their counterparts attending four-year institutions (e.g., Lee & Frank, 1990; Monk-Turner, 1995b; NCES 1998a; NCES 2003). For example, NCES report (2003) notes that of the 1992 high school graduates who entered community colleges, 44 percent were at or below the lowest level of reading proficiency, and 30 percent were at or below the lowest level in math proficiency.³ A third of the students did not complete even the basic high school curriculum and two-thirds were deemed either not qualified or minimally qualified to attend a four-year college. Given these patterns of academic preparation, the low rate of bachelor's degree completion among students attending community colleges may not be surprising. However, even after controlling for academic preparation and a host of other factors, including selection into two-year vs. four-year institutions, students who begin their educational journeys in two-year institutions have lower likelihood of bachelor's degree completion (Alfonso, 2006; Dougherty, 1992; Monk-Turner, 1995a; Whitaker & Pascarella, 1994).

³ Reported percentages refer to students who were at or below Level 1 of reading and math proficiency. Reading proficiency is divided into 3 levels. Level 1: simple reading comprehension including reproduction of detail and/or the author's main thought. Level 2: ability to make relatively simple inferences beyond the author's main thought and/or understand and evaluate relatively abstract concepts. Level 3: ability to make complex inferences or evaluate judgments that require piecing together multiple sources of information from the passage. Math proficiency is divided into 5 levels, ranging from simple arithmetical operations on whole numbers to proficiency in solving complex, multistep word problems and/or the ability to demonstrate knowledge of mathematics material found in advanced mathematics courses.

While much attention has been dedicated to understanding the patterns and consequences of differentiation, previous studies have often ignored a concurrent trend in U.S. higher education, which is that students are often combining school and work. As individuals stay in school longer and as more diverse groups of students enter higher education, students are following increasingly varied pathways. An important component of these diversified pathways is participation in the labor market. While some students are able to focus exclusively on their studies, many others are dedicating a substantial amount of time to the labor market, at times working full-time. If employment patterns are related to access and success in different institutional types, studying the relationship between employment and structural differentiation of the educational system will provide important insights into the process of educational attainment.

Combining School and Work

The majority of both high school and college students in the U.S. are employed. Over 60% of 12th graders work for pay (Mortimer, 2003), and approximately 80% of undergraduates work while enrolled in school (NCES 1998b, 2002). Although traditional-age college students (18-24 year olds who are enrolled full-time) are less involved in the labor market, approximately 50% of them are employed (NCES 2007). Moreover, college students demonstrate notable commitment to the labor market: they work an average of 32 hours per week during the school year, and even students who attend school full-time dedicate an average of 26 hours per week to the world of work (NCES 2002).

Participation in the labor market is consequential for students' educational outcomes. With respect to high school employment, hours worked appear to be negatively related to a range of outcomes, from grades to high school completion and postsecondary entry (e.g., Carr, Wright, & Brody, 1996; McNeal, 1997; Steinberg, Greenberger, Garduque, & McAuliffe, 1982). Marsh

(1991) conducted one of the most comprehensive analyses of employment, examining the relationship between hours worked and 22 high school and postsecondary outcomes, and found mostly negative relationships. While hours worked are often treated as a continuous variable, some studies have suggested an existence of “threshold effects” – working a limited number of hours in high school is not negatively related to educational outcomes, only when students work beyond a certain threshold do negative consequences become apparent (e.g., D'Amico, 1984; Steel, 1991).

These patterns are replicated in higher education, where research indicates that students' employment experiences are consequential for persistence and degree completion (for extensive reviews see Pascarella & Terenzini, 2005; Riggert, Boyle, Petrosko, Ash, & Rude-Parkins, 2006). In general, studies find a negative relationship between hours worked and academic outcomes. Several recent studies have also implied that this relationship is not linear and that only extensive participation in the labor market has negative consequences for persistence and attainment (Bozick, 2007; NCES 1998b; Orszag, Orszag, & Whitmore, 2001). Research on student employment thus suggests that work is a prevalent and consequential phenomenon in students' lives.

While the overall patterns of employment are well documented, previous research has paid scant attention to understanding how employment may be related to the structural differentiation of higher education (e.g., enrollment and attainment in two-year vs. four-year institutions) or to class inequality. A few studies, however, suggest that examining these relationships may prove to be beneficial. One of the attractions of community colleges is their flexibility, such as allowing part-time attendance and providing weekend and night classes. Indeed, of the students who attend school part-time, almost 70 percent are enrolled in two-year institutions. These flexible attendance patterns make community colleges more conducive to

combining school and work. While one-quarter of students attending four-year institutions work full-time, more than one half of students attending two-year institutions do so (NCES, 2002).

Moreover, there is at least some indication that different patterns of school and work engagement are related to family background. Descriptive information from the 1999-2000 cohort of undergraduates reveals that 48 percent of students whose parents did not attend college were employed full-time. At the same time, only 29 percent of students whose parents completed a bachelor's degree or higher reported this type of extensive commitment to the labor market (NCES, 2002). These patterns of class differences are replicated in multivariate analyses, net of a range of controls, including academic preparation (Cooksey & Rindfuss, 2001; Roksa & Velez, 2009 [in press]).⁴ Moreover, studies that have considered patterns of employment over time suggest that students from less advantaged family backgrounds are less likely to follow the steady employment pattern (working consistently at low intensity), which is associated with positive educational outcomes (Mortimer, 2003; Staff & Mortimer, 2007).

Taken together, previous research suggests that family background is related to both attendance in two-year vs. four-year institutions and employment patterns. Moreover, employment may vary across institutional types, with students attending two-year institutions dedicating longer hours to the world of work. Although these findings emerge from disparate literatures, taken together, they suggest the usefulness of considering the relationship between structural differentiation of an educational system and work. Employment may be a key missing link in understanding educational success and class inequality in a differentiated system of U.S. higher education.

⁴ Bozick (2007) showed little relationship between social class and employment, although the cut-off for high vs. low intensity employment was 20 hours. Class distinctions seem to emerge at more intense levels of employment or when examining patterns over time.

DATA AND METHODS

To examine the relationship between students' employment and entry and attainment in two-year vs. four-year institutions, I rely on data from the National Longitudinal Survey of Youth of 1997 (NLSY97). NLSY97 is a nationally representative sample of individuals born between 1980 and 1984 (aged 12-16 years as of December 31, 1996). The baseline survey was administered in 1997 to 8,984 students in 6,819 households, who were selected using a multi-stage stratified random sampling design. Respondents have been re-interviewed annually, with the latest available follow-up conducted in 2005. In addition to data on students, NLSY97 includes parents' interviews conducted during the baseline survey year. This dataset is particularly conducive to the study of youth transitions as it provides detailed information on both schooling and labor market activities.

Two outcomes are investigated in this study: entry into four-year institutions vs. community colleges and bachelor's degree completion. Community colleges are *public* two-year institutions. A small proportion of students (less than 6 percent of students in two-year institutions in the sample) attended private two-year institutions – those students are excluded from analyses. Students in private two-year institutions differ along multiple dimensions from students in community colleges. Moreover, focusing on community colleges parallels the discussion about differentiation in the previous literature.

Following the educational transitions research, models are estimated conditional on the successful completion of the previous educational transitions (Mare, 1980, 1981). Entry into four-year institutions vs. community colleges is conditional on entry into higher education and is estimated using a logistic regression model as follows:

$$\Phi_i = \ln \left\{ \frac{P_i}{1 - P_i} \right\} = \alpha + \sum \beta_n \text{SOCIAL CLASS}_{in} + \sum \beta_m \text{WORK}_{im} + \sum \beta_p \delta_{ip}$$

where Φ_i presents the natural log of the odds that the i th individual will enter a four-year institution as opposed to a community college. The α term is a constant, and β 's are regression coefficients. SOCIAL CLASS $_i$ is a vector of family background characteristics (including parental education and income), WORK $_i$ is a vector of employment variables, and δ_i is a vector of control variables. The models are weighted and adjusted for clustering of individuals within families.

The next outcome of interest is bachelor's degree completion (conditional on entry into higher education), which is estimated separately for students who started in community colleges vs. four-year institutions. This model is estimated as a discrete time hazard model (Allison, 1984; DesJardins, 2003; Singer & Willett, 2003). Discrete time hazard model is preferred to simple logistic regression due to a large number of right censored cases and the importance of including time-varying covariates in estimation. In order to estimate this model, the data file is organized in a person-month format. The person enters the dataset at the point of entry into higher education, and remains "at risk" until they either experience the event (i.e., they complete a bachelor's degree) or exit the sample. The model thus estimates the risk of bachelor's degree completion in each month, called the hazard, which is the conditional probability that an individual would obtain a bachelor's degree in the time period j , given that she did not do so in an earlier time period. Background variables remain constant for each period while employment variables take on different values in different time periods.

The corresponding discrete time hazard model can be described as follows:

$$\text{logit } h(t_{ij}) = \alpha D_{ij} + \sum \beta_n \text{SOCIAL CLASS}_{nij} + \sum \beta_m \text{WORK}_{mij} + \sum \beta_p \delta_{pij}$$

where D_{ij} indexes dummy variables for distinct time periods, SOCIAL CLASS $_{ij}$ is a vector of parental education and income, WORK $_{ij}$ is a vector of employment variables, and δ_{ij} is a vector of control variables. Due to a large number of months included in the dataset (up to 100),

dummy variables were not included for each time period. Instead, baseline hazard is estimated using a piecewise constant function (Wu, 2003). This specification provides a better fit than either linear or polynomial (square and cubic) specification. The models are weighted and adjusted for clustering of students within families.

Predictor Variables

Presented analyses include two key predictor variables of interest: social class and work. Social class is measured by parental education and income. Parental education is coded as the highest level completed by either resident parent, and is represented by a series of dummy variables: high school or less (reference), some college, bachelor's degree, and graduate/professional degree. Income reflects the total household income, and due to the highly skewed distribution is divided into four quartiles, with the lowest quartile serving as a reference. Employment is divided into three categories: low intensity (up to 20 hours per week), moderate intensity (21-35 hours per week), and high intensity (over 35 hours per week), with students who are not working serving as a reference. For models of entry into community colleges vs. four-year institutions, work is coded during the 12th grade and is based only on weeks during the academic year.⁵ For bachelor's degree completion models, employment is coded for every month since entry into higher education.

In addition to these key variables of interest, all models include a range of control variables. I begin with including measures of basic demographic characteristics: gender (dummy variable for male), race/ethnicity (dummy variables for African American, Hispanic and other racial/ethnic minority groups), and age of entry into higher education (for completion models). In addition to family's socioeconomic standing, previous research has suggested that several other family characteristics are relevant to the study of educational attainment. Consequently, I

⁵ When information on employment was missing in 12th grade, information for 11th grade was used.

control for two aspects of household composition: number of children under 18 in the household and a two-parent household, both of which are coded when students were 16 years old. Finally, previous research has focused in particular on the extent to which students' educational success is related to their academic preparation. All models thus include several measures of academic preparation: test scores, grades, and high school track. Test scores are based on the Armed Services Vocational Aptitude Battery (ASVAB), which was administered to students between 1997 and 1998.⁶ I use the aggregate percentile of the mathematical knowledge, arithmetic reasoning, word knowledge, and paragraph comprehension tests. Grades are based on students' self-reports of their overall grades during high school. I include a dummy variable for students who reported earning B's and A's. Moreover, I include a dummy variable indicating whether a student was in an academic track in high school.⁷

Missing data on family background and control variables was dealt with in two steps. First, if the information was missing for a given year, data from the next year was used, not to exceed student's high school graduation (for entry into community colleges vs. four-year institutions) or higher education entry (for degree completion).⁸ The remaining missing data was dealt with using multiple imputation (Allison, 2002).⁹ The imputation procedure was based on creating five distinct datasets with imputed values, each of which was analyzed separately and

⁶ Test scores for a handful of students who graduated from high school before the test was administered are set to missing.

⁷ Grades and track were initially split into three categories, for grades: high (B's and A's), medium (B's and C's), and low (below a C), for track: academic, general and other (mostly vocational). However, there were not enough cases for reliable estimation in the lowest grade or other track categories among college entrants. Thus, for consistency, I included only dummy variables for high grades (B's and A's) and academic track in all analyses. It is worthwhile to note that NLSY97 includes a GPA recorded from high school transcripts. It should also be noted that NLSY97 includes a GPA recorded from high school transcripts, but that variable has a large number of missing cases. For example, almost 50% of students are missing the transcript-based GPA for 12th grade.

⁸ The exception was parental education, which was not asked every year. Parents reported on their education at baseline and students were asked to retrospectively report on their parents' education status five, six and seven years later. As a result, some students may have been in college during this time. However, this is the most accurate information available, and is thus used given the importance of parental education for student outcomes.

⁹ I do not impute data for gender and race. Gender had no missing cases and race was missing only a small number of cases among students with valid educational and employment data. Due to challenges of imputing categorical variables and the key role played by race in educational attainment, missing cases on race are deleted from analysis.

then combined into the reported parameter estimates. Descriptive statistics and parameter estimates for each imputed dataset were virtually identical.

RESULTS

Entry into Four-Year Institutions vs. Community Colleges

I begin by considering the association between employment patterns during high school and the likelihood of enrollment in four-year institutions vs. community colleges (conditional on entry into higher education). Model 1 presents the baseline and includes measures of family background and relevant controls. Students with highly educated parents (either bachelor's degree or higher) were significantly more likely to enter four-year institutions, even net of a range of controls, including academic preparation. Students whose parents held graduate/professional degrees had 2.4 times the odds of entering four-year institutions as did students whose parents had no college experience. The advantage of having parents with college degrees was lower, but still pronounced.

Income, on the other hand, did not appear to be consequential for enrollment into different institutional types: none of the income quartile coefficients were statistically significant. However, it is worthwhile to note that the null effects of income are partly a consequence of controlling for academic preparation. Without controlling for students' academic preparation in high school, income coefficients are of much larger magnitude and the coefficient for the fourth quartile is statistically significant. All three measures of academic preparation are strong predictors of entry into four-year institutions as opposed to community colleges. Students with higher test scores, those who earned higher grades, and those who were enrolled in academic track were more likely to enter four-year institutions. These measures of academic preparation

partially mediate the effects of parental education and fully explain the effects of family income on entry into four-year institutions vs. community colleges.

[Table 1 about here]

The second model in Table 1 considers whether employment during high school is related to enrollment in different institutional types. Even net of a range of controls, including family background and academic preparation, students who worked at medium or high intensities during high school were less likely to enter four-year institutions. For example, students who worked at high intensity (i.e., over 35 hours a week) during high school were 30 percent less likely to enter four-year institutions. Controlling for employment patterns, however, does not alter the effects of family background. The coefficients for parental education remain of similar magnitude and are statistically significant. Thus, while employment during high school shapes enrollment patterns, it does not explain class inequality in entry into four-year institutions vs. community colleges.¹⁰ Given the continuing significance of parental education for entry into four-year institutions, more subtle mechanisms, such as social and cultural capital (Lareau & Weininger, 2008; McDonough, 1997), may provide additional insights into how upper class families transmit advantages to their children.

From Entry to Bachelor's Degree Completion

Previous studies have shown that students' employment patterns during high school and college are related (Roksa & Velez, 2009 [in press]; Staff & Mortimer, 2007). Consequently, it would be expected that students at community colleges will dedicate more time to the world of work. Table 2 presents descriptive results of employment patterns for students attending four-year institutions and community colleges. At the point of entry into higher education, 62 percent

¹⁰ These models are conditional on entry into higher education. However, the same patterns are observed if entry into higher education is examined. Employment patterns shape whether students enter higher education but they do not mediate the effects of class background on entry.

of students in four-year institutions were not employed while only one third of students in community colleges were not working. The difference between students attending different institutional types is not only pronounced in whether students are working or not but also in the intensity at which they are participating in the labor market. A much higher proportion of students in community colleges were working at high intensity (over 35 hours per week) than students attending four-year institutions.

[Table 2 about here]

Over time, students in community colleges and four-year institutions became more alike with respect of whether they were employed or not. However, notable gaps remained in the intensity of employment. Forty-five months after enrollment, 76 percent of students in community colleges reported working as did 68 percent of students in four-year institutions.¹¹ However, the two groups did not invest the same amount of time in the labor market. While similar proportions of students in four-year institutions and community colleges worked at moderate intensity, there was a clear tradeoff between low and high intensity employment. Twice as many students in four-year institutions reported working at low intensity as did students in community colleges. The relationship is reversed for high intensity employment. While half of the students in community colleges were working at high intensity 45 months after enrollment, only one third of students in four-year institutions did the same.

Working at high intensity in a given month may not be as important as working at high intensity for an extended period of time. Indeed, previous studies have shown that specific *patterns* of employment are related to student success (e.g., Mortimer, 2003; Staff & Mortimer, 2007). Thus, the last outcome considered in Table 2 is the cumulative number of months worked

¹¹ Month 45 was chosen for illustration because the largest proportion of students graduates in that month, which represents the traditional four-year graduation time period (i.e., if a student entered higher education in September 2000, May 2004 would represent 45 months since enrollment).

at different intensities within the first four years of enrollment. Here, again, we see a clear difference between students enrolled in four-year institutions and community colleges. During the first four years of enrollment, students in four-year institutions spent more time working at low intensity while those in community colleges spent more time in high intensity employment.

Although the descriptive results reveal a relationship between the structural differentiation of the educational system and employment patterns, the question remains whether employment influences completion rates at different institutions as well as whether employment explains any of the class gaps in degree attainment. Table 3 aims to address these questions by presenting discrete time event history models of bachelor's degree completion, separately for community colleges and four-year institutions. Running models separately by institutional type allows for an examination of how family background and employment patterns shape degree attainment within specific institutional contexts.

The first model presents the baseline, including family background measures and demographic controls, and reveals several notable findings. First, parental education is much more consequential for degree attainment at both community colleges and four-year institutions than parental income. There is only one significant coefficient for income: students from the top income quartile attending four-year institutions were more likely to graduate than students from the bottom income quartile. Furthermore, parental education is much more consequential for educational attainment at community colleges than four-year institutions. Community college students whose parents held graduate/professional degrees had 3.7 times the odds of earning a bachelor's degree compared to students whose parents had no college experience. The advantage for students in four-year institutions was much smaller: students with highly educated parents had only 35 percent higher odds of graduating.

[Table 3 about here]

Model 2 shows the crucial role played by academic preparation in the success of students attending four-year institutions. Four-year students who had higher test scores, earned high grades, and were enrolled in academic track in high school were more likely to complete bachelor's degrees. Notably, controlling for academic preparation decreases the coefficients for parental education in half and renders them statistically insignificant. The patterns in community colleges are quite different. Only grades earned in high school predicted success in community colleges: students with higher grades were more likely to complete bachelor's degrees. Neither test scores nor track seemed to matter in this context. Moreover, after controlling for academic preparation, the coefficients for parental education stayed virtually the same, with students from more educated families still having higher likelihood of graduating. Thus, it appears that family background plays an important role in sorting students into different institutional types. After that, and controlling for academic preparation, family background is not very consequential for success in four-year institutions. Having highly educated parents, however, continues to benefit students attending community colleges.

The final model in Table 3 examines the relationship between employment and degree completion at community colleges and four-year institutions. Employment at low intensity facilitates educational success at both types of institutions: students who worked at low intensity were more likely to complete their bachelor's degrees. In contrast, students who worked at high intensity were less likely to finish these credentials. Moreover, the magnitude of the coefficient for high intensity employment is higher at community colleges ($t=2.06$, $p<0.05$). Thus, while working at high intensity has negative consequences for degree attainment across the board, the effects are particularly pronounced at community colleges. This finding points to one of the key conundrums of community college education in the U.S. – community colleges allow for more flexible enrollment patterns, and they enroll a large proportion of students with extensive

commitment to the labor market. However, that commitment to the labor market hinders students' likelihood of completing bachelor's degrees.

The inclusion of employment in Model 3 decreases the magnitude of family background coefficients. Among students attending community colleges, the coefficient for parents with graduate/professional degrees decreases by approximately 30 percent while that for parents with bachelor's degrees decreases by almost 20 percent. Employment thus helps to partially mediate the effects of family background on degree attainment at community colleges. The family background coefficients decrease in the model for four-year students as well, however, those coefficients were already below the conventional significance level. In addition to the main effects of employment, I tested all possible interactions between family background and different employment categories. None of the tested interactions were statistically significant, indicating that employment is equally consequential for educational attainment of students from different family backgrounds.

CONCLUSION

As higher education systems expand and differentiate, they provide more opportunities for access but do so within a highly stratified system. While much stratification research has focused on understanding the consequences of differentiation (i.e., presence of different institutional types) for access and attainment, previous studies have not considered similarly important variation in students' trajectories through higher education, and particularly their participation in the labor market. Many students in American higher education today are not only students, they are also often workers. Moreover, students' commitment to the labor market has been increasing over time, both in terms of the percentage of students working and the number of hours spent in the labor market (Scott-Clayton, 2007). Students, thus, do not only

enter different institutional types, they also dedicate more or less time to the labor market, which can have important consequences for their educational outcomes.

Presented analyses reveal that differentiation and employment patterns are indeed related. Students with extensive commitment to the labor market during high school are more likely to begin their education in community colleges as opposed to four-year institutions. Moreover, once in higher education, students who work at high intensities are less likely to complete their degrees. Although observed in both institutional types, the negative consequences of high intensity employment are more pronounced at community colleges. Community colleges thus seem to embody a double disadvantage – students attending community colleges are more likely to work at high intensity, and at the same time working at high intensity has more negative consequences at these institutions. Employment also helps to mediate some of the effects of family background on degree completion at community colleges. Among students entering four-year institutions, family background does not have a significant influence on degree completion after controlling for academic preparation, which is a particularly powerful predictor of educational success in this context.

The negative consequences of high intensity employment, especially in community colleges may be unique to the U.S. The American context is characterized by weak links between educational institutions and the labor market (Kerckhoff, 2000, 2004), with very few programs that link students directly to work. Instead, students must construct an “individualized amalgam of school and work” (Mortimer & Kruger, 2000). In this context, work is rarely related to students’ academic pursuits or future career goals. The observed negative effects of employment may thus reflect this unique institutional context in which work is something performed in addition to, and not necessarily related to, schooling. Other contexts, particularly those with strong links between educational and occupational systems may present a very

different set of relationships. In these contexts, work, and particularly work at lower tier institutions, may be beneficial for degree attainment as well as transition into the labor market.

In addition to exploring variation across different contexts, future research may also consider the consequences of employment for other educational outcomes and transition into the labor market. The results of this study indicated that students in community colleges were working longer hours and that had negative consequences for bachelor's degree attainment. However, employment may facilitate completion of other credentials such as associate degrees or certificates. Moreover, employment may have positive consequences for transition into the labor market, particularly when it is related to educational pursuits and long-term occupational goals. Future research may also consider qualitative differences in employment – while class gaps in degree attainment at community colleges were partially mediated by the intensity of employment, they may be further explained by the type of work students engage in.

This study has shown the fruitfulness of considering the relationship between the differentiation of educational systems and students' participation in the labor market. Future research can advance our understanding of differentiation, and its consequences for student success, by further examining the numerous ways in which students' pathways through higher education become differentiated as well as stratified. Diversity of pathways often brings with it opportunities as well as costs. Existence of community colleges has dramatically expanded access to higher education, and the ability of students to combine school and work has opened doors to many who may not otherwise be able to attend. At the same time, these greater opportunities are provided through unequal pathways, some of which are less conducive to educational success. Studying the complexity of students' pathways can lead to a better understanding of educational processes and development of more effective policies aimed at facilitating success of students in higher education.

REFERENCES

- Alfonso, M. (2006). The Impact of Community College Attendance on Baccalaureate Attainment. *Research in Higher Education, 47*(8), 873-903.
- Allison, P. (1984). *Event History Analysis: Regression for Longitudinal Event Data*. Thousand Oaks, CA: Sage.
- Allison, P. (2002). *Missing Data*. Thousand Oaks, CA: Sage Publications.
- Ayalon, H., & Shavit, Y. (2004). Educational Reforms and Inequalities in Israel: The MMI Hypothesis Revisited. *Sociology of Education, 77*, 103-120.
- Ayalon, H., & Yogev, A. (2005). Field of Study and Students' Stratification in an Expanded System of Higher Education: The Case of Israel. *European Sociological Review, 21*, 227-241.
- Baker, T. L., & Velez, W. (1996). Access to and Opportunity in Postsecondary Education in the United States: A Review. *Sociology of Education, 69*(extra issue), 82-101.
- Bozick, R. (2007). Making It Through the First Year of College: The Role of Students' Economic Resources, Employment, and Living Arrangements. *Sociology of Education, 80*, 261-285.
- Breen, R., & Jonsson, J. O. (2000). Analyzing Educational Careers: A Multinomial Transition Model. *American Sociological Review, 65*(5), 754-772.
- Brint, S., & Karabel, J. (1989). *The Diverted Dream: Community Colleges and the Promise of Educational Opportunity in America, 1900-1985*. New York: Oxford University Press.
- Carr, R. V., Wright, J. D., & Brody, C. J. (1996). Effects of High School Work Experience a Decade Later: Evidence from the National Longitudinal Survey. *Sociology of Education, 69*, 66-81.
- Cooksey, E. C., & Rindfuss, R. R. (2001). Patterns of Work and Schooling in Young Adulthood. *Sociological Forum, 16*(4), 731-755.
- D'Amico, R. (1984). Does Employment During High School Impair Academic Progress? *Sociology of Education, 57*, 152-164.
- DesJardins, S. L. (2003). Event History Methods: Conceptual Issues and an Application to Student Departure from College. In J. C. Smart (Ed.), *Higher Education: Handbook of Theory and Research* (pp. 421-471). Boston, MA: Kluwer Academic Press.
- Dougherty, K. (1991). The Community College at the Crossroads: The Need for Structural Reform. *Harvard Educational Review, 61*, 311-336.
- Dougherty, K. (1992). Community Colleges and Baccalaureate Attainment. *Journal of Higher Education, 63*(2), 188-214.

- Dougherty, K. (2001). *The Contradictory College: The Conflicting Origins, Impacts, and Futures of the Community College*. Albany, NY: State University of New York Press.
- Ellwood, D. T., & Kane, T. J. (2000). Who Is Getting a College Education? Family Background and the Growing Gaps in Enrollment. In S. Danziger & J. Waldfogel (Eds.), *Securing the Future: Investing in Children from Birth to College*. New York, NY: Russell Sage Foundation.
- Karen, D. (2002). Changes in Access to Higher Education in the United States: 1980-1992. *Sociology of Education*, 75(3), 191-210.
- Kerckhoff, A. C. (2000). Building Conceptual and Empirical Bridges between Studies of Educational and Labor Force Careers. In A. C. Kerckhoff (Ed.), *Generating Social Stratification: Toward a New Research Agenda*. Boulder, CO: Westview Press.
- Kerckhoff, A. C. (2004). From Student to Worker. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the Life Course* (pp. 251-268). New York, NY: Springer Science+Business Media, LLC.
- Lareau, A., & Weininger, E. B. (2008). Class and Transition to Adulthood. In A. Lareau & D. Conley (Eds.), *Social Class: How Does It Work?* New York: Russell Sage Foundation.
- Lee, V. E., & Frank, K. A. (1990). Students' Characteristics that Facilitate the Transfer from Two-Year to Four-Year Colleges. *Sociology of Education*, 63(3), 178-193.
- Lucas, S. (2001). Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects. *American Journal of Sociology*, 106(6), 1642-1690.
- Mare, R. D. (1980). Social Background and School Continuation Decisions. *Journal of the American Statistical Association*, 75(370), 295-305.
- Mare, R. D. (1981). Change and Stability in Educational Stratification. *American Sociological Review*, 46(1), 72-87.
- Marsh, H. W. (1991). Employment During High School: Character Building or a Subversion of Academic Goals. *Sociology of Education*, 64, 172-189.
- McDonough, P. M. (1997). *Choosing Colleges: How Social Class and Schools Structure Opportunity*. Albany, NY: State University of New York Press.
- McNeal, R. B. J. (1997). Are Students Being Pulled Out of High School? The Effect of Adolescent Employment on Dropping Out. *Sociology of Education*, 70, 206-220.
- Monk-Turner, E. (1995a). Factors Shaping the Probability of Community vs. Four-Year College Entrance and Acquisition of the B.A. Degree. *The Social Science Journal* 32, 255-264.
- Monk-Turner, E. (1995b). Factors Shaping the Probability of Community vs. Four-Year College Entrance and Acquisition of the B.A. Degree. *The Social Science Journal*, 32(3), 255-264.

- Mortimer, J. T. (2003). *Working and Growing Up in America*. Cambridge, MA: Harvard University Press.
- Mortimer, J. T., & Kruger, H. (2000). Transition from School to Work in the United States and Germany: Formal Pathways Matter. In M. Hallinan (Ed.), *Handbook of the Sociology of Education* (pp. 475-497). New York, NY: Plenum.
- National Center for Education Statistics [NCES] (1998a). *Descriptive Summary of 1995-96 Beginning Postsecondary Students: With Profiles of Students Entering 2- and 4-Year Institutions (NCES 1999-030)*. Washington, D.C.: U.S. Department of Education.
- National Center for Education Statistics [NCES] (1998b). *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1995-1996, with an Essay on Undergraduates Who Work (NCSE 98-084)*. Washington, D.C.: U.S. Department of Education.
- National Center for Education Statistics [NCES] (2002). *Profile of Undergraduates in U.S. Postsecondary Institutions: 1999-2000 (NCES 2002-268)*. Washington, D.C.: U.S. Department of Education.
- National Center for Education Statistics [NCES] (2003). *Community College Students: Goals, Academic Preparation and Outcomes (NCES 2003-164)*. Washington, D.C.: U.S. Department of Education.
- National Center for Education Statistics [NCES] (2007). *Digest of Education Statistics*. Washington D.C.: U.S. Government Printing Press.
- Orszag, J. M., Orszag, P. R., & Whitmore, D. M. (2001). *Learning and Earning: Working in College. A Report Commissioned by Upromise Inc.* Newton, MA: Upromise Inc.
- Pascarella, E., & Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research*. San Francisco, CA: Jossey-Bass.
- Riggert, S. C., Boyle, M., Petrosko, J. M., Ash, D., & Rude-Parkins, C. (2006). Student Employment and Higher Education: Empiricism and Contradiction. *Review of Educational Research*, 76(1), 63-92.
- Roksa, J. (2006). Does Vocational Focus of Community Colleges Hinder Students' Educational Attainment? *The Review of Higher Education*, 29, 499-526.
- Roksa, J., Grodsky, E., Arum, R., & Gamoran, A. (2007). Changes in Higher Education and Social Stratification in the United States. In Y. Shavit, R. Arum & A. Gamoran (Eds.), *Stratification in Higher Education: A Comparative Study* (pp. 165-191). Stanford, CA: Stanford University Press.
- Roksa, J., & Velez, M. (2009 [in press]). When Studying Schooling is Not Enough: Incorporating Employment in Models of Educational Transitions. *Research in Social Stratification and Mobility*.

- Scott-Clayton, J. (2007). What Explains Rising Labor Supply Among U.S. Undergraduates, 1970-2003? Unpublished manuscript. John F. Kennedy School of Government, Harvard University.
- Shavit, Y., Arum, R., & Gamoran, A. (2007). *Stratification in Higher Education: A Comparative Perspective*. Stanford, CA: Stanford University Press.
- Singer, J. D., & Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. New York, NY: Oxford University Press.
- Staff, J., & Mortimer, J. T. (2007). Education and Work Strategies from Adolescence to Early Adulthood: Consequences for Educational Attainment. *Social Forces*, 85(3), 1169-1194.
- Steel, L. (1991). Early Work Experience among White and Non-White Youths: Implications for Subsequent Enrollment and Employment. *Youth and Society*, 22, 419-447.
- Steinberg, L. D., Greenberger, E., Garduque, L., & McAuliffe, S. (1982). High School Students in the Labor Force: Some Costs and Benefits to Schooling and Learning. *Educational Evaluation and Policy Analysis*, 4, 363-372.
- Whitaker, D. G., & Pascarella, E. T. (1994). Two-Year College Attendance and Socioeconomic Attainment: Some Additional Evidence. *Journal of Higher Education*, 65(2), 194-210.
- Wu, L. L. (2003). Event History Models for Life Course Analysis. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the Life Course* (pp. 477-502). New York, NY: Springer Science+Business Media, LLC.

Table 1. Logistic regression model estimating entry into four-year institutions vs. community colleges

	Model 1	Model 2
Employment during High School		
Low intensity		-0.071 (0.112)
Medium intensity		-0.281* (0.113)
High intensity		-0.362* (0.146)
Family Background		
<i>Parental Education</i>		
Some college	0.085 (0.103)	0.077 (0.103)
Bachelor's degree	0.548** (0.121)	0.535** (0.121)
Graduate/professional degree	0.878** (0.132)	0.852** (0.132)
<i>Parental Income</i>		
Second quartile	-0.123 (0.140)	-0.124 (0.140)
Third quartile	-0.016 (0.138)	-0.008 (0.137)
Fourth quartile	0.140 (0.139)	0.145 (0.139)
Demographic and Academic Controls		
Male	0.008 (0.080)	0.013 (0.080)
African American	0.698** (0.119)	0.681** (0.119)
Hispanic	-0.196 (0.123)	-0.210 (0.123)
Other non-white	0.033 (0.172)	0.003 (0.173)
Two parent household	0.155 (0.101)	0.157 (0.101)
Number of children in the household	-0.056 (0.039)	-0.056 (0.039)
Test score	0.021** (0.002)	0.021** (0.002)
Earned A's and B's in high school	0.854** (0.084)	0.841** (0.084)
Academic track	0.643** (0.081)	0.641** (0.081)
Intercept	-1.838** (0.193)	-1.666** (0.210)

*p<0.05, **p<0.01 (robust standard errors in parentheses).

Note: N=4,464. Models are weighted and adjusted for clustering within families.

Table 2. Employment patterns in four-year institutions and community colleges

	Attending community colleges	Attending four-year institutions
Employment (%)		
<i>Month 1</i>		
Not employed	0.367	0.621
Low intensity	0.116	0.181
Medium intensity	0.253	0.121
High intensity	0.264	0.077
Employment (%)		
<i>Month 45</i>		
Not employed	0.241	0.316
Low intensity	0.071	0.158
Medium intensity	0.188	0.189
High intensity	0.500	0.337
Employment (months)		
<i>Cumulative by Month 45</i>		
Low intensity	4.097	8.319
Medium intensity	9.645	8.137
High intensity	17.234	10.075

Table 3. Discrete time event history models of bachelor's degree completion, for students starting in community colleges and four-year institutions

	Model 1		Model 2		Model 3	
	Community College	Four-Year	Community College	Four-Year	Community College	Four-Year
Employment (cumulative)						
Low intensity					0.030*	0.041**
					(0.014)	(0.005)
Medium intensity					0.022	0.008
					(0.013)	(0.006)
High intensity					-0.043**	-0.017**
					(0.012)	(0.004)
Family Background						
<i>Parental Education</i>						
Some college	1.011**	0.025	0.999**	-0.047	0.811*	-0.135
	(0.357)	(0.125)	(0.352)	(0.129)	(0.365)	(0.129)
Bachelor's degree	0.998*	0.268*	1.072*	0.144	0.860*	0.000
	(0.438)	(0.123)	(0.428)	(0.126)	(0.426)	(0.127)
Graduate/professional degree	1.304**	0.300*	1.348**	0.142	0.969*	-0.036
	(0.420)	(0.123)	(0.417)	(0.129)	(0.424)	(0.132)
<i>Parental Income</i>						
Second quartile	-0.152	0.197	-0.233	0.143	-0.166	0.119
	(0.338)	(0.133)	(0.344)	(0.135)	(0.370)	(0.133)
Third quartile	-0.381	0.168	-0.404	0.106	-0.310	0.075
	(0.341)	(0.129)	(0.342)	(0.130)	(0.350)	(0.133)
Fourth quartile	-0.046	0.346**	-0.065	0.299*	0.141	0.235
	(0.336)	(0.127)	(0.346)	(0.127)	(0.340)	(0.132)
Demographic and Academic Controls						
Male	-0.241	-0.265**	-0.133	-0.219**	0.040	-0.109
	(0.251)	(0.078)	(0.248)	(0.079)	(0.245)	(0.084)
African American	-1.280**	-0.398**	-1.210*	-0.165	-1.177*	-0.219
	(0.471)	(0.121)	(0.476)	(0.127)	(0.479)	(0.136)
Hispanic	0.367	-0.595**	0.410	-0.395*	0.202	-0.405*
	(0.337)	(0.168)	(0.319)	(0.158)	(0.323)	(0.158)
Other non-white	-0.049	0.062	-0.179	0.122	-0.443	0.112
	(0.575)	(0.164)	(0.619)	(0.167)	(0.655)	(0.174)
Age at entry into higher education (months)	-0.017	-0.015**	-0.015	-0.005	-0.006	-0.002
	(0.012)	(0.006)	(0.013)	(0.006)	(0.013)	(0.006)
Two parent household	-0.038	0.370**	-0.099	0.327**	-0.262	0.340**
	(0.265)	(0.113)	(0.269)	(0.119)	(0.272)	(0.118)
Number of children in the household	0.069	-0.051	0.048	-0.041	0.091	-0.071
	(0.089)	(0.034)	(0.086)	(0.036)	(0.074)	(0.037)
Test score			-0.002	0.009**	-0.003	0.007**
			(0.005)	(0.002)	(0.005)	(0.002)
Earned A's and B's in high school			1.052**	0.549**	1.009**	0.437**
			(0.254)	(0.095)	(0.255)	(0.096)
Academic track			0.086	0.317**	0.141	0.278**
			(0.256)	(0.084)	(0.265)	(0.086)
Intercept	-5.234**	-3.341**	-6.184*	-6.637**	-7.973**	-7.029**
	(2.760)	(1.284)	(3.063)	(1.366)	(3.001)	(1.409)

*p<0.05, **p<0.01 (robust standard errors in parentheses).

Note: For community college models N= 88,405 person-months. For four-year models N=123,123 person-months. Models are weighted and adjusted for clustering within families.