Different Paths, Different Destinations: A Life Course Perspective on Educational Transitions

BACKGROUND

While the proportion of high school graduates who continue on to postsecondary education has increased, rates of bachelor’s degree completion have remained steady over the past three decades (Adelman, 2004). Thus, the policy issue at hand is not only access, but persistence in post-secondary education. To understand persistence, it is key to carefully examine the different paths students follow through secondary and post-secondary education. Indeed, research shows that the “traditional” pathway to earn a bachelor’s degree has become the exception rather than the rule, and that deviating from this “traditional” route dramatically decreases students’ likelihood of completing a bachelor’s degree (Horn & Carroll, 1996; Carroll, 1989). A “traditional” pathway usually refers to entry into college immediately after the conferral of a high school diploma, full-time attendance at a four-year post-secondary institution, and continuous enrollment until graduation. Thus, students can deviate from the “traditional” pathway in a variety of ways: completing high school by alternative routes such as the General Educational Development (GED) certification, delaying entry into college, interrupting college enrollment once or more, and attending a post-secondary institution with an “open door” admission policy (Hearn, 1992; Dougherty, 1994; Jacobs & King, 2002; Horn et al., 2002; Bradburn & Carroll, 2002; Smith, 2003). Current research tends to study how each of these events, in isolation, affect students’ educational attainment. In this dissertation, I integrate all these events to focus on students’ trajectories through secondary and post-secondary education. I am concerned with the impact that different trajectories have on inequality of educational attainment, and in particular on the rates of bachelor’s degree completion by different socioeconomic groups.

RESEARCH QUESTIONS

In this dissertation I pose three sets of research questions: (1) What proportion of students follow “traditional” and “non-traditional” pathways in their secondary and post-secondary education? How do the trajectories that student follow to attain a post-secondary degree vary in terms of type, sequence, and timing? (2) How does students’ socioeconomic background (SES) affect the different pathways they pursue through secondary and post-secondary education? (3) How do cognitive and non-cognitive skills affect students’ pathways? Does the inclusion of these skills in the model reduce the previously unmeasured heterogeneity?

CONTRIBUTIONS TO THE FIELD

By addressing these research questions, I seek to fill three gaps in the literature. First, a proper analysis of educational pathways requires consideration of three factors: the type of educational experiences individuals have, the timing at which different transitions occur, and the sequence of events within educational levels. However, the standard sociological conceptualization of educational attainment, the educational transitions (ET) model, ignores these three issues both theoretically and empirically (e.g. Mare, 1980; Shavit & Blossfeld, 1993). Type, timing, and sequence are relevant for educational stratification because research indicates that deviating from the “traditional” pathway in each of these dimensions reduces students’ likelihood of post-secondary enrollment and degree completion. By examining the role these three dimensions play on educational trajectories, this dissertation addresses crucial aspects of inequality in educational attainment.

Second, given that the ET model ignores the current diversity of educational trajectories, further research is required to re-examine the effect of SES on educational attainment. Focusing exclusively on “traditional” trajectories, the ET model consistently shows that the effect of SES weakens as individuals progress through each consecutive educational stage (e.g. SES more strongly affects the completion of high school than college, given that students completed the immediately previous level of schooling). This dissertation assesses whether this pattern of declining SES effects holds for students who follow “non-traditional” pathways. It is well documented that on average, these students have lower SES than their “traditional” counterparts (Hearn, 1992; Goldrick-Rab, forthcoming). However, research indicates that among students who deviate from a “traditional” trajectory, those who complete a post-secondary
degree have a SES advantage (Carroll, 1989; Horn & Carroll, 1998; Hillmert & Jacob, 2004). These findings suggest that the effect of SES does not necessarily decline across post-secondary transitions for students who follow non-traditional pathways.

Finally, I address the main objection raised against the ET model, namely, unobserved heterogeneity. This problem refers to the distortion of estimates of SES effects, due to the influence of variables that affect school persistence, but are omitted from the analysis (Mare, 1993; Cameron & Heckman, 1998; Lucas, 2001). To deal with this problem, I incorporate recent findings from economics, sociology, and developmental psychology regarding the impact of both cognitive and non-cognitive skills on inequality of educational attainment. The conventional model of skill formation focuses exclusively on cognitive ability. However, research shows that behavioral traits (e.g. sociability and self-esteem), work habits (e.g. discipline and perseverance, and industriousness), and health conditions are also associated with schooling success (Conley & Bennett, 2000; Rosenbaum, 2001; Dunifon, Duncan & Brooks-Gun, 2001; Bowles, Gintis & Osborne, 2005; Entwisle, Alexander & Olson, 2005). Moreover, research relating to the GED program suggests that non-cognitive skills are particularly important to distinguish students who follow “traditional” from those who follow “non-traditional” educational pathways (Heckman & Rubinstein, 2001).

**METHODS**

I use a specific application of discrete-time event history analysis, namely multi-state hazard models, to describe the process by which individuals complete secondary or post-secondary education over their life-course. These models are an extension of two-state hazard models (Palloni & Sorensen, 1990; Hougaard, 2000). In both cases, the aim is to explain the occurrence and timing of events. In the simplest two-state model, the event is given by the transition from a single origin state to one absorbing destination state. Usually, when applied to educational attainment, this model estimates the likelihood that the transition from a state of school enrollment to a state of school non-enrollment (a “dropout” event) occurs within a given period of time (Willett & Singer, 1991; Singer & Willett, 2003). Multi-state models are better suited to describe “non-traditional” educational pathways, since they allow for multiple origin and destination states, including bidirectional flows between reversible states. Thus, these models offer a flexible approach to considering both the type of events (states) individuals experience and the timing of transitions between states that do not necessarily follow a linear sequence.

Another advantage of multi-state hazard models is that they easily allow the inclusion of covariates that vary over time. The use of at least one time-varying covariate has been proposed as a strategy to respond to the major criticism of the ET model (Cameron & Heckman, 1998). Lucas (2001) argues that time-varying covariates provide the necessary information to identify the predictive model for each educational transition.

**DATA**

I use data from the National Longitudinal Survey of Youth 1979 (NLSY79), a nationally representative sample of men and women ages 14 to 21 as of December 31, 1978. So far, individuals have been interviewed 20 times between 1979 and 2002, capturing a substantial part of individuals’ educational trajectories. NLSY79 is uniquely well-suited for event history analysis because in each wave respondents provided information on their enrollment status and highest educational degree attained, as well as the dates at which they occurred. Moreover, this dataset contains detailed and reliable measures of all covariates required for the analysis.

**ANALYTIC STRATEGY**

I divide the quantitative analysis in three analytic chapters, each corresponding to one of the research questions. The first chapter estimates the multi-state hazard model displayed in Figure 1, where each box corresponds to a state, and each arrow represents a transition between states. I estimate each of these transitions simultaneously using CTM, a maximum-likelihood software designed to estimate generalized continuous hazard models. To answer the first research question, I calculate crude probabilities of transitions between states and select a specification of the baseline hazard, testing the sensitivity of the estimates to the functional form selected.
In the second chapter, I answer the second research question by analyzing the effect of SES on the transitions between states. I include indicators of family SES and time-varying household income, controlling also for respondents’ individual characteristics (i.e. gender, race and ethnicity, whether the respondent was born in the U.S., and whether a language other than English was spoken at home during childhood).

In the third chapter I address the third research question by analyzing the effect of cognitive and non-cognitive skills on the transitions between states (skills indicated by AFQT scores, locus of control, self-esteem, and sociability, and body mass index). I introduce these measures into a model that already includes individual characteristics and SES. I use statistical tools available in CTM, to detect (a) whether the inclusion of cognitive and non-cognitive skills significantly reduces unobserved heterogeneity, and (b) whether the main parameters of the model (estimates of SES, cognitive and non-cognitive skills) are sensitive to different parametric or non-parametric representations of unmeasured heterogeneity. Finally – to incorporate Lucas (2001) call to make probabilities rather than logit coefficients the focus of researchers’ presentation — I use the parameters estimated in the full model to calculate predicted probabilities. In particular, I calculate the probability of attaining a bachelor’s degree by ages 25, 30, and 35 for a person with low and high SES background, with low and high cognitive skills, and high low and high non-cognitive skills.

**IMPORTANCE OF FINDINGS FOR POLICY**

Despite the substantial educational expansion throughout the twentieth century, disparities among students from different socioeconomic backgrounds have persisted (Hout, Raftery & Bell, 1993; Mare, 1995). Furthermore, in the last decades, the socioeconomic gap in college graduation has become more consequential because of the increase in the labor market premium associated with having a bachelor’s degree (Morris & Western, 1999). “Non-traditional” trajectories through secondary and post-secondary education may either exacerbate or reduce pre-existing inequalities between advantaged and disadvantaged social groups. On one hand, these trajectories may increase educational stratification, since following “non-traditional” pathways reduces students’ chances to complete a bachelor’s degree. On the other hand, “non-traditional” trajectories may provide opportunities for post-secondary education some students would not have if their only alternative were a “traditional” educational pathway. As “non-traditional” pathways through secondary and post-secondary education are likely to continue growing in the foreseeable future, it is critical to understand the impact these trajectories have on the socioeconomic stratification of higher education.

This study focuses on three main explanatory factors: SES, cognitive skills, and non-cognitive skills. Students’ standing on all these factors is under the reach of policymakers. Research shows cognitive and non-cognitive skills are highly trainable components of human capital accumulation, and especially so if the development of these skills takes place during childhood (Carneiro & Heckman, 2003; Heckman, & Krueger, 2004). The educational system cannot “manipulate” students’ SES background. However, secondary and post-secondary educational institutions need to be attuned to the specific needs of students from disadvantaged backgrounds in order to design programs that best support them.

By describing the whole range of trajectories students follow through secondary and post-secondary education, findings from this study reveal which enrollment patterns – in terms of type, timing, and sequence of events — are more likely to lead students to the attainment of a bachelor’s degree. By investigating the factors associated with students’ college degree attainment this study provides valuable information to policy makers who seek to improve retention outcomes for students from lower SES backgrounds. Even more, because I analyze the time when these factors have a stronger influence, findings form this study may contribute to the design and implementation of programs targeted specifically at different stages of students careers. These time-sensitive policies are likely to be more effective at mitigating the adverse consequences that “non-traditional” educational trajectories have on post-secondary degree completion.
FIGURE 1: Proposed model of “traditional” and “non-traditional” educational trajectories

<table>
<thead>
<tr>
<th>Secondary Education</th>
<th>Post-secondary education</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Diploma</td>
<td>Bachelor’s degree</td>
</tr>
<tr>
<td>GED Certificate</td>
<td>Associate degree or certificate</td>
</tr>
<tr>
<td>Non-enrollment</td>
<td>Non-enrollment</td>
</tr>
</tbody>
</table>

- Four-year college
- Two-year college
REFERENCES


