Individualized Choices or Unequal Opportunity? A Comparison of School-to-Work Transition between GED and High School Graduates Using Innovative Sequence Analysis Approaches

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Abstract

Due to its "demographically dense" nature, transition to adulthood is widely studied to investigate de-/institutionalization of the life course in response to social changes. However, the de-institutionalized life course is less examined in the light of social inequality as opposed to the generalization of indiscriminate experience. Using NLSY97 data, this study compares the 15-year school-to-work sequences of two subgroups, i.e., GED and high school diploma holders to demonstrate whether a less institutionalized education qualification generates precarious labor market pathways. This study reports selected longitudinal and transversal characteristics of school-to-work sequences to showcase the differences in trajectories between these two groups. To move beyond descriptive level, this study employs two innovative sequence analysis techniques, i.e., discrepancy analysis of state sequences and implicative statistics of typical state. The results show that GED holders are more likely to fall into trajectories characterized by frequent state changes, instability and inactivity in labor market.

Keywords: school-to-work transition, life course, sequence discrepancy analysis

Introduction

Transition to adulthood is described as a "demographically dense" stage of the life course as it involves multiple transition events (e.g., getting a job, getting married and having child) (e.g., Buchmann & Kriesi, 2011). The institutionalized life course provides a template for understanding the timing and order of transition trajectories into adulthood in western countries. Since 1960s, such predictable sequencing has been challenged by the observation of expanding de-standardization in transition patterns in the context of global economy (Mills & Blossfeld, 2003). Transition to adulthood is characterized as an extended period full of complexity and even percarity (e.g., Furlong & Cartmel, 1997). The shift in temporal structure of transition to adulthood is widely reported, while the underlying mechanism is contested under the theoretical framework of individualization thesis. Concept such as "emerging adulthood" denotes the individualized transition as a process that young adults explore among expanded opportunities and such experience qualifies to be a new stage that offers "master narrative" (Arnett, 2017). On the contrary, the loosening connection between individual and institutions is not conceptualized in positive light. Instead of treating such structural shift as providing universal opportunities regardless of young adults social locations, life course researchers have contended that it differentially affects young adults according to their social origins (e.g., Mills, 2007) and largely reflect social inequality (Heinz, 2002, 2009). Empirical research also provides supportive evidence to the structured view of individualization (e.g., Worts et. al., 2013; Sironi, Barban & Impicciatore, 2015). Although these studies are conducted against different social contexts, it is agreed that individuals from disadvantaged background tend to fall into precarious life course trajectories, e.g., discontinuous working history.

School-to-work transition is critical to young adults' economic independence and greatly determines the rhythm of transitions in family sphere (e.g., Clarkberg, 1999). However, its complexity and risks are often masked under the celebration of individualized choices. As a matter of fact, youth unemployment and young adults' precarious integration to labor market have increased in flexible labor market in the United States (e.g., Kalleberg, 2011). Although the absolute rate of youth unemployment in the U.S. is lower than some European countries, the instability in early working history has adverse effect on economic return (Neumark, 2002). Thus, it is worthwhile to take a closer look at whether the school-to-work transition contains considerable instability among young adults who do not have post-secondary education.

This study attempts to investigate whether education credentials are associated with differentiated school-to-work trajectories. Rather than looking at a broad range of educational levels that certainly produce unequal employment outcomes, this study only examines subgroups that hold GED (General Educational Development) and high school degrees that are considered equal in qualification. As Heckman and colleagues (1993; 2010) suggested, GED does not provide equal labor market outlook for young school leavers. If significant differences are detected in GED and high school diploma holders' school-to-work transition trajectories, it can be supposed that, the more standardized education

credentials have protective effect on labor market integration and it reduces the heterogeneity within its corresponding group.

Data and Methods

This study used data from National Longitudinal Study of Youth 1997 (n=8,984), a nationally representative dataset that follows respondents born between 1980 to 1984 for 17 waves. To construct the comparable sequences, the author only used information that is available from age 16 to 30. Sequence analysis has provided a holistic approach to account for the longitudinal state changes and it compensate for "point observation" problem in traditional approaches such as event history analysis (Brzinsky-Fay, 2014). In this study, 5,517 complete school-to-work sequences composed of 15 annual states were constructed. Among the 5,517 respondents, 663 have GED and 2,279 hold high school diploma as their terminal degrees (i.e., highest degree earned). Six alternative states of school-to-work transition are considered for each age: (1) schooling, (2) school+work (i.e., work while attending school), (3) out of labor force, (4) employed, (5) unemployed, and (6) active force. Instead of examining only one state at a time, an individual sequence is employed as the basic unit of analysis. All the analysis was conducted using R packages TraMineR (Gabadinho, Ritschard, Müller, & Studer, 2011) and TraMinerExtras.

The property of a single sequence provides useful descriptive information about the complexity of school-to-work transition. The *first step* of the analysis estimate two such measures, i.e., number of transitions and turbulence, to compare the level of complexity between GED and high school graduates. Number of transitions denotes the count of state change in a whole sequence, i.e., if an individual transitions from schooling to continuous employment, then the number of transitions is one. A larger number of transitions indicates greater state changes within a sequence. Since this study assesses school-to-work transition, the increase in number of transitions can reflect discontinuity in labor force participation. Turbulence is an alternative measure of the complexity of sequences. It accounts for the number of distinct states and durations (Elzinga & Liefbroer, 2007). In addition to the longitudinal characteristics mentioned above, transversal entropy[1] (Fussell, Grauthier, & Evans, 2007) at each position, i.e., age in this study, is also calculated to represent the diversity of states. The value of transversal entropy ranges between 0 and 1, lower value of entropy indicates a homogenous state distribution in an age group. The transversal entropies are plotted to represent the evolution of diversity of states over time (Gabadinho et. al., 2011).

The first set of analyses assess both longitudinal and transversal characteristics and results are summarized by education group. Although these results provide useful descriptions, we cannot tell whether the difference between groups is statistically significant. The traditional approac of sequence analysis using cluster analysis based on distance measures

1 $h(p_{1,\dots,}p_a) = -\sum_{i=1}^{a} p_i \log(p_i)$

of sequences fail to estimate the association between covariates and the typology of sequences due to the unaddressed problem of within-cluster heterogeneity (Studer, 2015). Due to this limitation, discrepancy analysis was conducted to estimate the "sequence-covariate link" and a pseudo-R^2 is yielded to tell how much discrepancy among sequences is explained by covariates (Studer et. al., 2011). In this study, the education group (GED VS. HS) is used as the covariate in discrepancy analysis. A regression tree displayed with sequence index plots demonstrates the differences in school-to-work trajectories between these two groups. The last step of the analysis adopted the implicative statistic approach to identify position-wise group-typical state for each subgroup (Studer, 2015). This step offers a qualitative interpretation about the relationship between the considered education level and school-to-work trajectories.

Results

Figure 1 represents the information generated by the first set of analyses. The number of transitions is higher among GED holders than high school graduates. If one transitions directly from school to work, the number of transitions should not be as large as 5 times. The boxplot in the middle compares the turbulence of school-to-work transition between the two subgroups under consideration; the GED holders still show higher degree of complexity. The transversal entropies figure presents age-specific entropies for each group. The transition activities peak around the age of graduation, approximately between 17- and 19-year-old. After this "busy" stage, transversal entropies for both groups decline. However, the curve for GED holders is steadily higher than high school graduates, evidencing the GED holders' hardship of entering stable employment status.

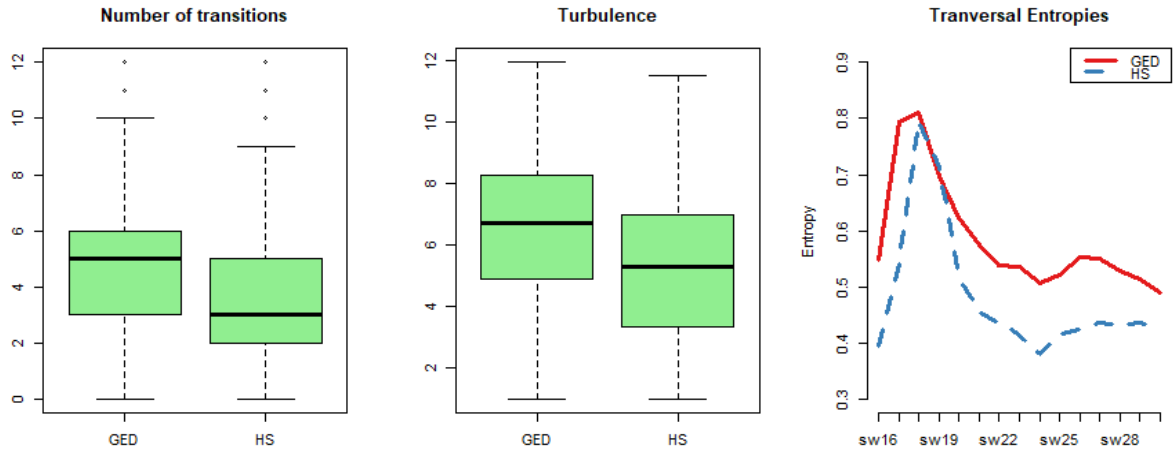

Figure 1. Selected Longitudinal and Transversal Characteristics for School-to-Work Sequences

The discrepancy analysis results show that the within-group discrepancy is larger in GED holders (6.98) than high school graduates (5.57), this difference is statistically significant. The pseudo-R^2 is 0.017 which can be interpreted as the education grouping accounts for

1.7% of the between-group discrepancy. The sequence index plots in the regression tree are sorted by first MDS (multidimensional scaling) factor. GED holders' work histories are interrupted by inactive spells, e.g., unemployed and out of labor force. Only a very small proportion of GED holders have continuous work history. The high school graduates whose schooling experience mixes with work (the sequences located at the bottom of sequence index plot for high school graduate) tend to have better outlook for stability in work after graduation. Joining military service is also more prevalent for high school graduates, which is argued to be a "career alternative" for disadvantaged young men (e.g., Sampson & Laub, 1996).

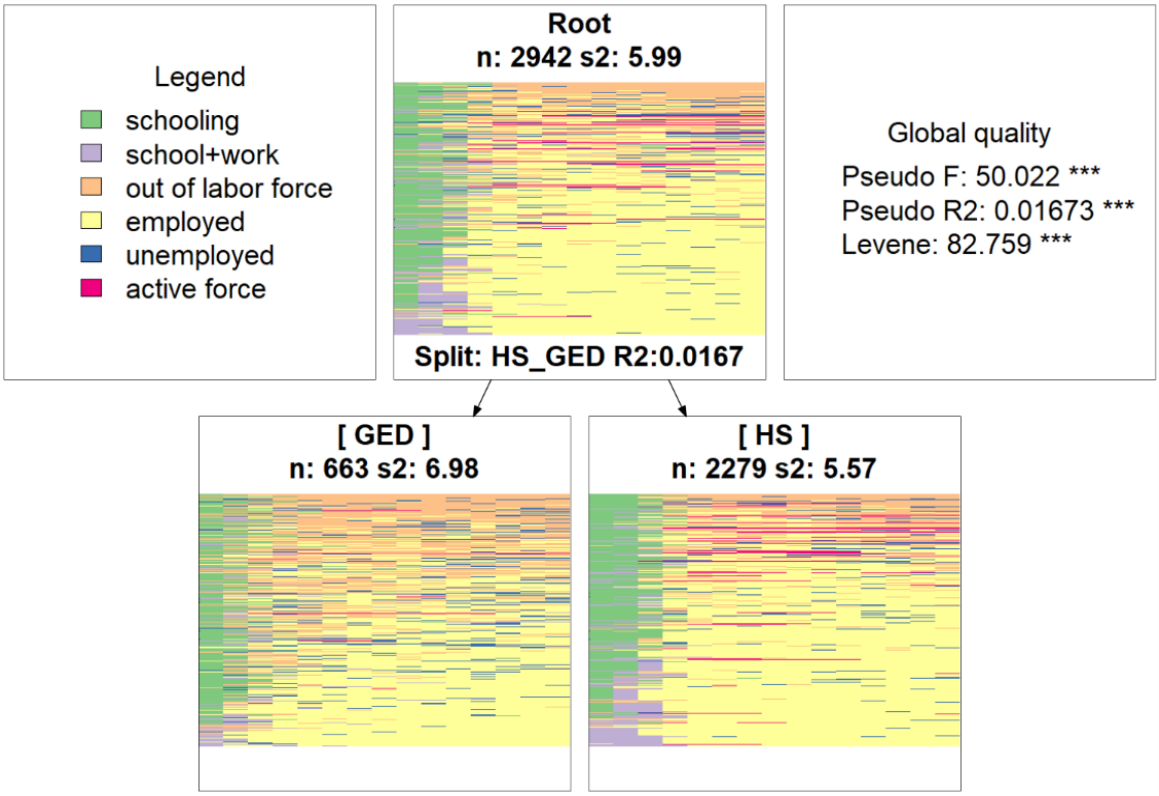

Figure 2. Regression Tree with Sequence Index Plots Sorted by first MDS Factor

Figure 3 shows the implicative statistics of the two groups under consideration. The figure on the left can be read as "being a GED holder (instead of a HS graduate) implies being in state x at age t", x is the distinct state and t in the case is age. At all ages, being in GED group implies being in the state of out of labor force at the confidence level of 99%; similarly, it also implies being in the state of unemployed at the confidence level of 95% until age 29. Being a high school graduate presents more desirable labor market outcomes. Before age 20, the typical states for high school graduates are schooling and "school+work" and they are followed by the typical states of "employed" and "active force". Interestingly, before age 18, GED holders show more employment activities. Such early work experience may hinder academic achievement of young adults from disadvantaged family background (e.g., Staff & Mortimer, 2008). After age 20, the GED holders are more likely to be in school-

related states. This less age-graded trajectory also speaks to the less-institutionalized nature of qualification obtained from GED path.

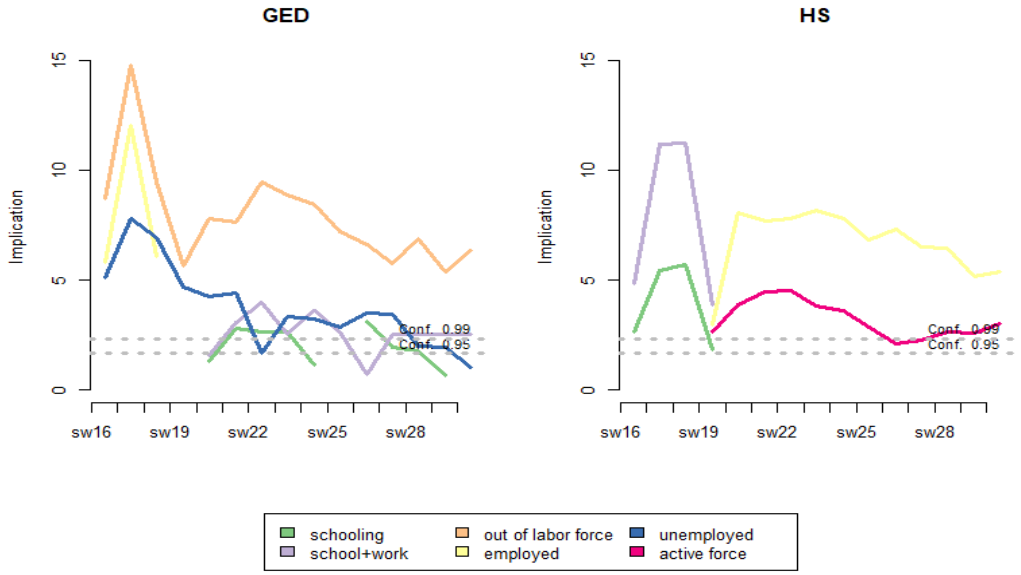

Figure 3. Position-wise Group Typical States for GED Holders and High School Graduates

Discussion

Using non-cluster-based approaches of sequence analysis, this study portrays differentiated school-to-work transition trajectories between GED holders and high school graduates. Comparing to high school graduates, the GED holders undergo precarious trajectories characterized by frequent state changes and longer spells in inactive employment status, i.e., unemployment and out of labor force. The transversal entropy plot also confirms that it is more difficult for GED holders to enter stable work throughout their early career. Although only univariate discrepancy analysis is conducted, the results are not without significance. The larger discrepancy within GED group supports the idea that more precarious heterogeneity in school-to-work transition dwells in less institutionalized group, even if "equivalent" education categories are examined. The illustration of implicative statistics also provides further evidence that the GED group is more likely to struggle with non-productive economic statuses in young adulthood. By applying innovative approaches of sequence analysis, this study contributes to the understanding of the difference of school-to-work transitions by examining two educationally "equivalent" groups. It contests the proposition of benign individualization that benefits young adults and provides insights into the disconnection between school and work among the less institutionalized education group.

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