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## Adolescent Precursors of Pathways from School to Work

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### Abstract

Longitudinal data from the Youth Development Study is used to examine: (1) how young people establish work with self-identified career potential and how these patterns are linked to educational attainments; and (2) how adolescent achievement orientations, experiences in school and work, and sociodemographic background distinguish youth who establish themselves in careers and those who flounder during this transition. Multilevel latent class models reveal four school-to-work pathways from ages 18 to 31: two groups that attain careers through postsecondary education (via Bachelor's or Associates-Vocational degrees) and two groups that do not (distinguished by attempting college). Multinomial logistic regression models demonstrate that academic orientations, socioeconomic background, and steady paid work during high school help adolescents avoid subsequent floundering during the school-to-work transition.

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The school-to-work transition (STW) is a critically important juncture in the life course (Schoon & Silbereisen, 2009), with adolescence as the primary preparatory period (Shanahan, Mortimer, & Krüger, 2002). Socioeconomic attainment is a long-term process starting in adolescence, encompassing school-related orientations and achievements, the acquisition of educational degrees and other qualifications, and movement through the early occupational career (Warren, Hauser, & Sheridan, 2002). The individual's completed level of schooling and the point of entry to the labor force have long been recognized as fostering more or less rewarding occupational careers (Sewell & Hauser, 1975). Employment problems at this time of life may diminish job-related confidence, lower expectations, and lessen future prospects. Difficulties in becoming established in the labor market can result in lost opportunity for on-the-job training and other work socialization that enhances human capital, employment stability, and occupational attainment (Corcoran & Matsudaira, 2005; Hamilton, 1990).

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In this article, we use longitudinal data from the Youth Development Study (Mortimer, 2003) to describe how young people move into, and out of, lines of work with self-identified career potential during the transition to adulthood and how these patterns are linked to their acquisition of educational credentials. Because early labor market experience is often characterized by trial-and-error “floundering” between unrelated types of work (Hamilton & Hamilton, 2006), many young people make the distinction between “real jobs,” those that enable economic self-sufficiency, have long-term prospects, and “career potential,” and the shorter-term “survival” jobs they hold to support themselves as they attend school, pursue other objectives, or simply struggle to make ends meet while seeking more attractive options (Mortimer et al., 2008). By assessing the manner in which youth themselves evaluate their jobs with reference to their longer-term prospects, we distinguish the seemingly more successful STW pathways from those signifying “churning” or “floundering,” and link them to educational attainments via a multilevel latent class analysis (Amato & Kane, 2011; Oesterle et al., 2010; Vuolo, Staff, & Mortimer, 2012). Longitudinal data extending from ages 14 to 31 provide us with a strong basis for examining the interplay of school and work achievements from adolescence to adulthood in a recent cohort of young people. We then examine how social backgrounds, educational and economic orientations, and experiences in school and work during adolescence are related to the pursuit of more and less promising educational and occupational pathways.

## THE TRANSITION FROM SCHOOL TO WORK

The term “school-to-work transition” implies an orderly sequence by which full-time immersion in school is followed by similar full-time involvement in work. Among recent cohorts of youth, however, movement from school to work is likely to be delayed and disorderly, involving varying sequences of achievement-related states over a lengthy period of time. For instance, combining school and work is normative throughout the periods of secondary and postsecondary education (Horn, Peter, & Rooney, 2002; Mortimer, 2003), and many young people return to school after engaging in work full-time (Shanahan, 2000). As a result of these trends, postsecondary students are becoming older; 42% of students currently enrolled in degree-granting institutions in the U.S. are age 25 or older, and the percentage of older students is expected to increase over the next decade (U.S. Department of Education, 2011).

Researchers have used the term “floundering” to describe young people who have difficulties successfully navigating the increasingly lengthy transition from school to work (see Hamilton & Hamilton, 2006). Though the concept can be dated back to the thirties (Davidson & Anderson, 1937), floundering has more recently emerged as a term to describe ineffective sequences of activities during the STW transition—involving frequent movement between jobs, entries and exits from the labor force, and attempts at further education—which do not result in better employment (Osterman, 1980; Nambodiri, 1987; Neumark, 2002; Danziger & Ratner, 2010). STW transition difficulties faced by recent cohorts have been attributed to limited job opportunities for youth, rapid changes in the occupational structure, and increases in “nonstandard” employment relations that signify weakening ties between employer and employee (Danziger & Ratner, 2010; Kalleberg, Reskin, & Hudson, 2000). Impeded movement from school to work also reflects the weak institutional

connections between schools and employers in the U.S., at least in comparison to some other modern contemporary societies (Kerckhoff, 2003; Shanahan et al., 2002). High schools in Japan are linked to employers in the community, and recommend their students for the most desirable jobs in order of their academic performance (Rosenbaum, 2001). In Germany, young apprentices' schooling and employment are effectively coordinated as youth prepare themselves for entry to particular occupations (Mortimer & Krüger, 2000). In the U.S., by contrast, secondary schools are not vocationally specific and credentials are general (Kerckhoff, 2002). As a result, most young people in the U.S. enter the labor force without an educational credential that would signal to employers their capacity to pursue particular lines of work.

In this challenging context, most youth today attempt to obtain as much schooling as they can to situate themselves favorably in the labor market. In adolescence, attaining the next rung on the educational ladder assumes much greater priority than vocational preparation (Schneider & Stevenson, 1999). In fact, over ninety percent of high school seniors in the U.S. plan to go to college (Reynolds et al., 2006), and over 50% plan to attend graduate or professional school after college (Bachman, Johnston, & O'Malley, 2011). Yet, only 70% of youth succeed in entering two-year or four-year colleges following high school graduation, and only 57% of entering college students who plan to earn a four-year college degree do so within six years (Knapp, Kelly-Reid, & Ginder, 2010).

Little is known about what enables the many youth who do not go to four-year colleges, or do not succeed in obtaining bachelor's degrees despite some postsecondary education, to become established in occupational careers. Some obtain Associates degrees or vocational certification, credentials that have been relatively neglected by sociologists, and often underrated (Kerckhoff & Bell, 1998). The limited research on those attempting college and those earning Associates degrees shows substantial payoffs for those completing degrees; those completing some college receive more limited and near-equivalent wage returns at four-year or community colleges (Kane & Rouse, 1995; Grubb, 1997, 2002; Marcotte et al., 2005). Researchers do not typically examine the backgrounds and attitudes that distinguish those who succeed in establishing themselves in career-like work without attaining four-year college degrees, and those who flounder during this transitional period.

### **Predicting Pathways from School to Work**

Many studies have examined the adolescent precursors of achievement-related milestones, such as entry into college, post-secondary degree completion, wage attainments, and occupational prestige (Schoon & Silbereisen, 2009). High socioeconomic background fosters high parental educational and occupational expectations for their children (Lareau, 2003; Reardon, 2011), and families of higher socioeconomic status have more resources to enable their children to pursue higher education. Youth in two-parent families are similarly advantaged (Amato, 2010). Research also shows that adolescents who have more positive orientations toward school, greater confidence in their academic abilities, higher educational aspirations and grade point averages, more extensive involvement in volunteer and extracurricular activities, and fewer behavioral problems are more likely to complete high school, and matriculate or graduate from college (Ashby & Schoon, 2010; Beal & Crockett,

2010; Duncan & Magnuson, 2011; Johnson et al., 1998; Marsh, 1992; Reynolds & Johnson, 2011). Matriculating and graduating from college is, in turn, determinative of long-term occupational attainment (Sewell & Hauser, 1975). Orientations toward work are also important. Occupational aspirations in adolescence, intrinsic and extrinsic value judgments about future work, and the sense of economic self-efficacy are associated with more positive work outcomes above and beyond educational attainment (Grabowski, Call, & Mortimer, 2001; Johnson, 2001; Johnson & Elder, 2002; Haase, Heckhausen, & Koller, 2008; Staff et al., 2010; Koivisto, Vuori, & Vinokur, 2010).

Yet, little research has assessed how social backgrounds, educational and economic orientations, and experiences in school and work during adolescence influence the *pathways* young people in the U.S. take on the increasingly long road from school to work. For instance, parents who have more educational credentials and higher occupational status may not only foster high educational attainment of their children; they may also function as role models and constitute good sources of social capital when their young adult children enter the full-time labor market. Thus, high socioeconomic origins may help smooth the STW transition among recent college graduates, and may even reduce the odds of churning in the labor market among youth from more advantaged backgrounds who do not finish college. In contrast, for youth from underprivileged backgrounds, the risk of educational failure and erratic employment in the early career is especially high (Corcoran & Matsudaira, 2009; Edelman, Holzer, & Offner, 2006). Youth from low socioeconomic backgrounds may have difficulty establishing themselves in the labor market even when they have high educational credentials. Employer discrimination may also increase the risk of floundering for minority youth and those who were born outside the U.S., above and beyond their school achievements (Holzer, 1996; Perreira, Harris, & Lee, 2006; 2007). Moreover, the long-term socioeconomic benefits attached to high aspirations and positive work orientations may not be attributable exclusively to college attendance, which places youth in the pool of potential graduates. These psychological resources may also differentiate young people who attend college and later drop out from those who graduate. According to Heckhausen and Wrosch (2010), positive developmental outcomes in the life course reflect the selection of goals that are consistent with age-graded opportunities and the effective mobilization of resources in their pursuit.

Adolescents' work investment during high school may also be an important source of vocational socialization and affect more or less successful pathways from school to work. Moderate, yet steady work predicts the receipt of four-year college degrees (Staff & Mortimer, 2007). Among those lacking the intellectual and financial resources to attend college, intensive investment in employment during high school may prepare adolescents for entry to the full-time workforce. High school students with less interest, involvement, and success in school are more likely to immerse themselves in paid work and to prefer work over school activities (Mortimer, 2003; Entwisle, Alexander, & Olson, 2000). More intensive work roles in adolescence increase the chances of employment, higher wages, and career acquisition in the years immediately following high school (Mortimer et al., 2008; Leventhal, Graber, & Brooks-Gunn, 2001; Carr, Wright, & Brody, 1996). Though intensive work hours during high school decrease the likelihood of college attendance and the

completion of four-year college degrees (Staff & Mortimer, 2007), intensive adolescent employment could reduce floundering in the labor market, shortening the time from school completion to career acquisition.

Gender may also influence educational attainment and career building at this time of life. Despite shifts in young women's aspirations and vocational identities in recent decades (Goldin, 2006; Johnson, 2002), as well as increases in the number of women attending and completing college (U.S. Department of Labor, 2012), it is still widely accepted that men will be the economic providers for their families (Johnson, Oesterle, & Mortimer, 2001). Thus, men may be more likely to find career-like jobs after the completion of school, whereas many women may view work as a more tentative and provisional pursuit, as they expect to "scale back" their school and work involvements as their family needs increase.

In this article, we examine the adolescent precursors (i.e., social background, achievement orientations, and prior experiences in school and work) of diverse STW pathways from age 18 to 31. We focus on two milestones: (1) obtaining postsecondary education via a Bachelor's degree or either an Associates or a Vocational-technical degree, and (2) subjective progress in becoming established in a career. Though in prior work we used event history models to examine the background factors that hasten or delay both acquisition of a Bachelor's degree (Staff & Mortimer, 2007) and initial attainment of a subjectively-defined career (Mortimer et al., 2008), here we use multilevel latent class analyses to examine the interplay between educational attainments and career acquisition over time. This more dynamic modeling procedure has several advantages. First, education and career progress are not independent; rather they occur in tandem over time. By identifying distinct trajectories reflecting the configurations of educational and career attainments, we can understand more clearly the experiences youth have in negotiating these two realms, as well as the nature of the floundering experience. This interplay is at the heart of our modeling procedure, described below. Second, our present modeling procedure allows us to estimate the probability of several levels of educational attainment over the life course, including Associates and Vocational-Technical degrees and "some college," that is, leaving higher education without credentials. Third, subjective career attainment is a reversible state. Thus, rather than focusing on only the first such career (Mortimer et al., 2008), the model permits respondents to move in and out of career jobs. Fourth, some jobs may provide skills for a career. Similar to education, we can include multiple categorical responses regarding whether young people view their job as a career, including the perception that one's current job provides skills that are relevant to their future career goals. Finally, little is known about the heterogeneous group of non-attainers of both educational and career outcomes, or the flounders. While scholars have focused on educational attainment and establishment in the labor force, the various ways that young people might flounder and the adolescent precursors leading to such trajectories have not been explored. Our dataset and model provide a unique opportunity to examine both successful and floundering pathways.

## DATA, MEASURES, AND METHODS

### Data

The Youth Development Study (YDS) began in 1988 with a randomly selected sample of 1,010 ninth graders (ages 14-15) who were enrolled in the St. Paul Public School District in Minnesota (Mortimer, 2003). While 64% of invited families responded favorably to the invitation to participate, those who provided consent did not differ from non-consenters on many census tract characteristics (Finch et al., 1991). Yearly questionnaires, administered in school from the ninth to twelfth grades, assessed early experiences in work, achievement-relevant attitudes, school performance, and educational and occupational plans for the future. If the teenagers were not attending school during the days of survey administration (due to illness or dropout), questionnaires were mailed to them at their homes. Parents were also surveyed in 1988 to obtain accurate information about family structure, parental education, and household income. In the years following high school (i.e., 1992 to 2005), respondents completed up to 12 detailed follow-up questionnaires regarding educational and career attainment, health and well-being, civic engagement, and family formation. U.S. Census data indicate that St. Paul was comparable to the nation as a whole with respect to several economic and sociodemographic indicators (Mortimer, 2003). The sample itself is also diverse with regard to such indicators. The initial panel was 74% white, 10% African-American, 5% Hispanic, and 4% Asian (the remainder identified themselves as “other” or of mixed race), while 8% were not born in the U.S. The average household income reported by the parents of the respondents was about \$27,000 in 1988 (\$53,000 in 2012). By 2005, when most respondents were 31 and 32 years old, 71% of the initial participants had been retained. Panel retention in the later years of the study is not associated with numerous indicators of socioeconomic origin and prior attitudes, although males, non-whites, and respondents without an employed parent at the beginning of the study have a higher risk of survey attrition (Mortimer, 2003; Staff & Mortimer, 2007).

### Measures

**Educational and Career Attainment**—Educational attainment, assessed each survey year after high school (wave 5 in 1992 through wave 16 in 2005), is represented by four categories: (1) high school or less; (2) some college (with no degree attained); (3) an Associate’s degree or a Vocational-Technical degree; and (4) a Bachelor’s degree or higher. Career attainment references the respondent’s understanding about how their current job relates to their careers. In each survey year after high school, respondents were asked, “how is your present job related to your long-term career goals?” The responses were: (1) “It is not linked to my long-term career objectives;” (2) “it provides skills or knowledge that will prepare me for my future work;” and (3) “it will probably continue as a long-term career.” Those who did not have a current job, including a small percentage of homemakers, were coded as not employed. These two variables also contain categories for those who respond “don’t know” and those who are missing. The latent pathways method described below allows inclusion of these categories.

## Adolescent Predictor Variables

To assess the adolescent precursors of STW pathways, we included indicators of gender, race, U.S. nativity, family household composition, parental education, and family income (the latter three family indicators were obtained from surveys administered to parents in 1988). We also included measures of grade point average, academic self-esteem, educational aspirations, time spent in extracurricular activities, and school problem behaviors (all measured in the ninth grade, 1988), and parents' educational expectations for their child. Work-related behaviors include the duration and intensity of high school work and whether the respondent volunteered outside of school (each assessed from the 10th to the 12th grade). Measures of occupational orientations included the stated importance of a career, a scale of economic self-efficacy, and measures of extrinsic and intrinsic work values (measured in the 9th grade, with the exception of economic self-efficacy, which was not measured until the 10th grade). A detailed description of each variable, along with its coding, is shown in Table 1.

## Methods

### Latent Pathway Model

Following recent research (Amato & Kane, 2011; Oesterle et al., 2010; Vuolo et al., 2012), we estimate a second-order hierarchical latent class model with a set of latent variables capturing the within-age configuration schema (that is, the combinations of occupational and educational states at each age) and a latent variable capturing the across-age pathway schema (that is, the patterns of movement between such configurations over time).

Following the notation of Macmillan and Eliason (2003), let  $X_{it}$  be the set of  $t = 1, \dots, T$  unobserved attainment configuration schema, and  $Y_i$  be the unobserved pathway schema. The latent pathway model can then be written as

$$Pr \{ R_{i11}, \dots, R_{iJ1}, X_{i1}, \dots, R_{i1T}, \dots, R_{iJT}, X_{iT}, Y_i \} = [Pr \{ R_{i11} | X_{i1} \} \cdots Pr \{ R_{iJ1} | X_{i1} \}] \cdots [Pr \{ R_{i1T} | X_{iT} \} \cdots Pr \{ R_{iJT} | X_{iT} \}] [\{ Pr \{ X_{i1} | Y \} \cdots Pr \{ X_{iT} | Y \} \} Pr \{ Y \}]$$

where the probability on the left-hand-side of the equal sign is the joint probability over the set of observed and latent variables, and where the conditional probabilities on the right-hand-side consist of (1) the product of the set of conditional probabilities for the observed attainments  $R_{ijt}$  given the latent attainment configuration schema  $X_{it}$  at times  $t = 1, \dots, T$  (given in the first two sets of brackets), (2) the product of the conditional probabilities of the latent attainment configuration schema  $X_{it}$  given the latent pathway schema  $Y$  (given in the third set of brackets), and (3) the unconditional probability of the latent pathway variable  $Y$  (given outside the last set of brackets).

Estimates of the conditional probabilities  $Pr \{ R_{ijt} | X_{it} \}$  give the degree to which the  $j$ 'th observed attainment at age  $t$ ,  $R_{ijt}$ , is embedded in, or constituent of, the age-graded latent attainment configuration schema  $X_{it}$ . Similarly, estimates of the conditional probabilities  $Pr \{ X_{it} | Y \}$  give the degree to which the latent attainment configuration schema  $X_{it}$  is embedded in latent pathway schema  $Y$ . By exploiting the person-period nature of the data,

we estimate the model in a single stage using a nonparametric multilevel latent class specification in Latent Gold (Vermunt & Magidson, 2005; Vermunt, 2003). The BIC statistic is used to guide model selection.

### **Multinomial Logistic Regression**

After estimating the latent pathways, we use modal assignment, based on the probability of belonging to a particular pathway, to classify each respondent into one of the STW pathways. We then use multinomial logistic regression models to assess the factors that channel or deflect adolescents into each STW pathway. In order to retain as many respondents as possible, we use chained multiple imputation via the “mi” procedure within Stata to impute missing data. Table 1 shows the number of cases imputed for each variable, which is quite low.

## **RESULTS**

### **School-to-Work Pathways**

Table 2 shows the BIC statistics for the model fitting procedure, showing the increasing value of the BIC after the sixth latent pathway (shown in bold font). That is, at the first level of the two-stage hierarchical model, there are 5 probabilistic combinations of career acquisition and educational attainment, which we refer to as attainment configurations. At the second level, the 6 latent pathways then describe how these configurations move through time, which we refer to as school-to-work pathways.

Though our focus is on the school-to-work pathways, we briefly present the first level of analysis, or the attainment configurations. Table 3 describes the probability of each attainment configuration (AC) across all years, the probability of each attainment state within each AC, and the probability of the ACs each year. Figure 1 shows the changing probabilities of each AC over time. Missing data are incorporated in the estimation procedure by including such cases as additional discrete categories. One attainment configuration (AC5 in Table 3) represents those with a high probability of being missing in any given post-high school year, and is not shown in Figure 1.

AC1 and AC2, with probabilities across all years of 26% and 24% respectively, represent attainment configurations with very high probabilities of not receiving a postsecondary educational credential. The probability that some college is the highest educational attainment is 94% for AC1, while the probability that high school or less is highest is 98% for AC2. For the career variable, the probability of not being in a career is highest (31%) for AC1 and the probability of being in a career is lowest (16%). Twenty-eight percent of respondents assigned to AC1, however, see their present jobs as providing skills for their careers. AC2 has the highest probability of not being employed (26%), while also remaining relatively low on both having a career and gaining skills for a career. Eleven percent of respondents in AC2 did not know how to identify their job in terms of its career potential. If such configurations lasted well past the early years of adulthood, a state of floundering would result.



AC3 and AC4, with probabilities across all years of 15 percent and 12 percent respectively, are those attainment configurations that have received postsecondary degrees. AC3 has a probability of nearly 100% of having a Bachelor's degree, while AC4 has a 98% probability of having an Associates or Votech degree. At 37% and 41% respectively, AC3 and AC4 have much higher odds of viewing their job as a career than the two configurations that do not have higher education credentials. They also have much lower probabilities of not being employed, as well as not considering their job a career. Thus, both configurations are indicative of a productive path to a career, with no evidence of floundering.

The probabilities of each of these configurations over time are shown in Table 3 and graphically in Figure 1. For the first three to four years after high school, AC1 and AC2 together account for as much as 80% of the sample. Beginning in 1997, six years after high school completion for most youth in this panel, there is a shift toward the configurations with postsecondary credentials and more likely career acquisition. By 2005, the most dominant non-missing configuration is AC3 (26%), with a high probability of a Bachelor's degree and career acquisition. The other non-missing configurations account for about equal probabilities (approximately 15%).

Next, we consider the latent school-to-work pathways, which represent varying probabilities, over time, of respondents' movement across the attainment configurations. Whereas the most likely AC can change with each year for each respondent, each respondent is assigned to one unique pathway over all years, providing a single indicator of the STW transition. Four pathways produced by the best-fitting model are given in Figure 2. For each graph in Figure 2, we show the probabilities of having a self-identified career, a job that provides skills leading toward a career, a job that is not a career, and not being employed. Figure 2 also shows the probabilities of receipt of either a Bachelor's degree or an Associates-Vocational degree, attending some college with no degree receipt, and having no postsecondary education. Two additional pathways, not shown in Figure 2, constitute those with high probabilities of missing data, discussed below.

The first STW pathway, or the "Bachelors into Career" (BC), is the most prominent. Though only representing 35.1% of respondents, this pathway represents the typical aspirations of high school students; that is, obtaining a four-year degree and moving into a career. The probability of acquiring a Bachelor's degree is high; about 90% of this group do so by 1999, seven years after high school. This modal pathway also exhibits a high probability of moving into a career shortly thereafter. While much less prevalent immediately after high school, this beneficial occupational state, together with having a job that provides skills for a career, has a probability of about 60 to 70% starting in 1997, when this cohort is likely to be out of college. Thus, an increase in the probability of a career or career-like job appears to occur shortly after the attainment of a Bachelor's degree. Note that the probabilities of being in a job unrelated to a career or not employed decrease substantially as this group acquires the Bachelor's degree. In this pathway, it is easy to see the shift from AC1 (some college, not in a career) to AC3 (Bachelor's degree, in a career) over time as the more dominant configuration embedded in this pathway.

The second STW pathway represents an alternative route to career acquisition through the receipt of an Associate's or Vocational-Technical degree (17.5% of respondents), referred to as the "Associates-Votech into Career" (AVC) pathway. The probability of attaining an Associate or Vo-tech degree peaks at over 90% about seven or eight years after high school, and then declines slightly due to survey attrition (not to increased odds of receiving a Bachelor's degree). Moreover, the probability of career acquisition increases shortly after the increase in the probability of receipt of the degree. Up to 60% of young people in this pathway consider themselves as occupying "career jobs" or "jobs that provide the skills for a career" from 1997 on and they have near zero probability of receiving a Bachelor's degree throughout. They also have diminishing probability over time of being not employed or occupying a job they consider as lacking career potential. Thus, two-year degrees represent a productive, often overlooked alternative pathway to career acquisition. Note that the probability of having a "stepping-stone type" job that provides skills for a career remains relatively stable at about .30 for the BC pathway and .25 for the AVC pathway.

The third and fourth pathways show two distinct and problematic STW transitions: pursuing higher education without degree receipt and never pursuing higher education. We call the former group the "Some College Floundering" (SCF) pathway. This is the more prominent way to flounder in our sample, characterizing 28.4% of respondents. In this pathway, the probability of having some college education, but never attaining a degree, increases to .80 in the later years. There is a slight probability of an Associates or Vo-tech degree at about .10, but a mostly zero probability of a Bachelor's degree. Throughout the observation period, the probability of career building (acquiring skills for a career) and acquisition remain stable (.26 and .17, respectively). Furthermore, the probability of working in a job that is not a career or not being employed approaches .50 for this pathway. This pathway is particularly problematic, as such adolescents are talented enough to gain entry into postsecondary education, but never achieve a credential. As the above AVC pathway demonstrates, there are gains to be made in pursuing alternatives to four-year colleges.

For the remaining 19.1% of respondents, another way to flounder is to never pursue any higher education. Therefore, we call this group the "High School Floundering" (HSF) pathway. As Figure 2 shows, there is an almost zero probability of post-secondary education across all waves of the survey. The probability of being in each career category is stable across the observation period, with not being employed as the highest at about .25. The other three categories are at about .20. Again, there is virtually no change in the low probability of career acquisition. There is about a .50 probability of either not being employed or not in a job labeled as a career.

Two remaining latent pathways (not shown, but available upon request) represent those with high probabilities of missing data. One pathway has a high probability of being completely missing, while the other pathway has an increasing probability of missing over time. Thus, the former represents those who attrited from the panel immediately after high school (14% of the total sample of 1,010), while the latter represents those who eventually attrited some time before the final observation in 2005 or participated intermittently (17% of total sample). In the analyses that follow, we exclude these pathways as missing data. When excluded, 69% of the sample is retained, similar to the 71% retention rate of the study in

2005 (the small discrepancy is due to the probabilistic modal assignment and intermittent participation). When the regression models below are estimated with the missing data included, the results do not change.

### Multinomial Logistic Regression

Table 4 shows the bivariate relationships between the adolescent predictors and the STW pathways. Particularly strong relationships appear for socioeconomic background, academic orientations, and several occupational orientation measures. For example, those with parents with a Bachelor's degree or higher are overwhelmingly likely to enter into the BC pathway (67.8%), while those whose parents have some college are more likely to be in the some college floundering pathway (41.8% vs. 18.8% for the highest educational origin group). Those entering the BC pathway also are highest on each of the measures of academic orientations (grade point average, academic self-esteem, and educational aspirations), separating those who complete Bachelor's degrees and those who do not and subsequently flounder. Interestingly, those who answered "don't know" to the educational aspirations question were least likely to pursue the BC pathway. The HSF group shows the lowest averages on the academic orientation measures. The BC pathway group spent the most time in high school in extracurricular activities and report the least involvement in problem behaviors. High parental educational expectations for their children are typical of those in the BC and SCF pathways, those who completed, and attempted to acquire, college degrees.

High school work patterns also appear to impact the pathway an adolescent takes. Steady work of high duration but low intensity increases the likelihood of the BC pathway (47.8%) and diminishes the chances of pursuing the HSF path (9.0%). Most invested (high duration, high intensity) workers are distributed about equally across three of the pathways, but are less likely to become high school flounders (18.9%). Adolescents who worked sporadically (low duration, high intensity) are clustered in the two floundering pathways (31.1% each). Volunteering during high school is associated with pursuit of the BC (44.6%) or the SCF (30.5%) pathways, both of which involve college attendance. Economic efficacy is highest in the BC pathway, and weakest in the HSF pathway. The pathways are also significantly differentiated in terms of their earlier extrinsic work values and in the importance they attached to their future careers. The pathways are not significantly related to intrinsic work values. Finally, there is little differentiation by the demographic variables, with the exception of nativity, though non-natives constitute a small percentage of the sample.

Table 5 shows the odds ratios from a multinomial logistic regression model. Higher socioeconomic background increases the odds of the BC pathway—a Bachelor's degree followed by a career. For instance, an increase of one on the ordinal scale of family income increases the odds of the BC pathway by 20% compared to the high school floundering pathway, while having a parent with a Bachelor's degree (vs. high school or less) increases those odds by about 4.6 times. Parental education also increases the odds of the BC path, compared to the AVC pathway, by 3.1 times for parents with some college and 7.4 times for parents with a Bachelor's degree, though income does not affect ones chances of succeeding in the BC pathway versus the AVC pathway. With a parent that completes a Bachelor's,

adolescents are 2.8 times more likely to enter the BC pathway relative to the SCF group. Thus, socioeconomic background distinguishes those who finish college (BC) rather than dropping out (SCF). Family income in adolescence also distinguishes youth in the AVC group compared to the HSF pathway, with adolescents' chances for the former increased by 26% for each unit increase in the income scale. The two types of floundering are also distinguished by socioeconomic background, with parental education associated with SCF, though interestingly the only parental education distinction is for parents with some college, whose children are 2.3 times as likely to enter the SCF pathway as the HSF pathway (family income is marginally significant,  $p = .052$ ).

Academic orientations are also positively associated with the BC pathway. Compared to high school flounders, the odds of entering the BC pathway improve with increases in grade point average (by 37% per unit increase), academic self-esteem (by 36% per unit increase), educational aspirations (6.3 times as high for those aspiring to a Bachelor's), and parents' educational expectations (by 66% per unit increase). Academic promise also distinguishes those who finish college, and therefore avoid floundering, with the odds of the BC versus the SCF pathway distinguished by higher grade point average, academic self-esteem, and parents' educational expectations. Thus, both earlier actual academic performance and self-perceived performance, as well as parental influence, predict which adolescents will finish college from those who will not and subsequently flounder in their careers. Only perceived performance via academic self-esteem, however, creates any distinctions between the academic orientations of the AVC and SCF groups, with those with higher academic self-esteem more likely to enter the latter floundering pathway. Comparing the two career pathways (BC and AVC), academic orientations are also a major distinguisher, with those entering the BC higher on most measures. Having aspirations for a bachelor's degree or higher during high school is especially important in distinguishing those who move toward careers via a bachelor's degree compared to an Associates degree or vocational certification. Those with Bachelor's degree aspirations are almost four times as likely as those with lower aspirations to go the BC route than the AVC route.

As also indicated by the bivariate results, the pathways show less association with adolescent economic orientations. However, high school work patterns strongly differentiate the two successful career pathways from the two floundering pathways. The findings suggest that steady (high duration, low intensity) work can help prevent entry into both of the less advantageous HSF and SCF pathways, particularly when compared to the sporadic (low duration, high intensity) work pattern, though other results emerge as well. Compared to steady workers, sporadic workers are 76% less likely to enter the BC pathway than the HSF pathway and 59% less likely to enter the BC pathway than the SCF pathway. Sporadic workers are also 57% less likely to enter the AVC than the HSF pathway, although this effect is only marginally significant ( $p = .057$ ). Other work patterns also appear to affect floundering. Occasional workers (low duration, low intensity) are 48% less likely to enter the BC pathway than the SCF pathway, while those who never worked during high school are 80% less likely to enter the AVC group compared to the HSF group. While no further comparisons for non-workers are significant, it is important to note that this group represents a relatively small group of respondents (6%); thus, our ability to detect significant

differences is limited. With a change of reference group, no other distinctions emerge as statistically significant for the remaining comparisons of high school work patterns. Thus, high school work patterns do not help to distinguish the two career pathways (BC and AVC) from one another nor the two floundering pathways (SCF and HSF) from each other. Overall, sporadic work during high school in particular does not appear to lead adolescents toward careers via vocational-technical education or by four-year college routes. Finally, whites are more likely than minorities to flounder via the HSF route rather than the SCF route.

## DISCUSSION

Adolescence is the primary preparatory period for increasing the probability of a successful transition from school to work (Shanahan et al., 2002). While past research has examined how the period of adolescence affects the acquisition of higher education or entry into the full-time labor force, we undertook a more dynamic examination of this process. In particular, little is known about those adolescents who eventually flounder in their career development and how such pathways unfold. In view of the prolonged and disorderly character of the STW transition among recent cohorts of youth, the interplay between educational attainment and career acquisition in the years immediately following high school deserves systematic scrutiny. Some young people may invest heavily in post-secondary education, delaying careers but heightening prospects for eventual economic return and other elements of occupational success. Other young people may leave work and return to full-time school even after establishing themselves in a career. Again, little is known about career acquisition for the increasing number of young adults who attend college but do not earn a degree. Unlike prior research, our multilevel latent class analysis allowed us to carefully examine the interrelationships of educational attainment and career establishment during the turbulent young adult years. We have thus been able to identify pathways that lead to timely productive career establishment from those pathways that do not.

Using multilevel latent class analysis, we identified two distinct routes to careers through higher education and two pathways of STW “floundering.” Approximately one third of young people were likely to arrive at a self-identified career or a job that provided skills for a career through the receipt of a Bachelor’s degree. An additional 17.5% of the youth were likely to establish themselves in a career, or at least work in a job that provided skills for a career, through the receipt of an Associates or vocational-technical degree. Thus, Associates or Vocational degrees, often overlooked credentials, represent productive alternatives to four-year college attendance (Kane & Rouse, 1995; Grubb, 1997, 2002; Marcotte et al., 2005). However, 47.5% of the young people in our sample had a relatively low probability of career acquisition by ages 31-32. The majority of these STW “flounders” had attempted college but failed to complete a degree. Clearly, our latent pathways indicate that the acquisition of a postsecondary degree is associated with career acquisition, even among youth who obtain the less valued Associates and vocational degrees, and that youth who fail to obtain such degrees are at increased risk of floundering. We have probably underestimated the number of youth who flounder in the STW transition because the

missing pathways did not provide sufficient measurements to track those individuals' educational and career progress.

Our combination of hierarchical latent models and multinomial logistic regression has allowed for a novel examination of the factors that influence the successful acquisition of a career through postsecondary education or, alternatively, result in floundering. The ability to identify the various pathways to both a career and floundering is a major advantage over our past analyses that focused on educational and career outcomes singly. Which background factors reduced the chances of floundering? Not surprisingly, youth from more advantaged socioeconomic backgrounds were more likely to follow the BC pathway relative to all other pathways. Thus, even among those attempting college, those from more disadvantaged backgrounds were more likely to leave college early and subsequently flounder. Socioeconomic advantage also distinguished the AVC pathway from the flounders who did not attempt higher education. The findings indicate the importance of developing positive orientations and behaviors among those from disadvantaged backgrounds, such as via high academic orientations or promising high school work patterns. Steady work in high school, relative to sporadic work, reduced the risk of entry into both floundering pathways. Promoting moderate, low intensity work patterns during high school, represented by steady work investment, rather than sporadic work, may be beneficial. Steady high school work increased the likelihood of the BC and AVC pathways even when socioeconomic background and academic promise were controlled.

Strong academic orientations also predicted entry into the BC pathway, relative to the less promising SCF pathway. The strongest students in high school are those that complete four year degrees and acquire a career. Importantly, given the large numbers of young people who start, but do not finish college (Knapp et al., 2010), we do not identify a "college dropout" to "career" pathway. Given high school students' overwhelming preference to go to college and to pursue four-year degrees, rather than to seek Associates' Degrees and occupational certification, it is particularly startling to find that the latter route leads more readily to a self-identified career than attending, but not finishing, college. The results strongly affirm an advantage with respect to career establishment that accrues to those who complete degrees over those who only achieve some education beyond high school (Grubb, 1997, 2002). This finding suggests the need to focus on those adolescents who perform well enough to enter higher education, but may not be at the top of their class. Fostering the elements of high academic promise, e.g., developing positive orientations toward school and one's own academic abilities, may deflect youth from a path of continual floundering in their twenties. For institutions of higher education, our analyses indicate that methods to retain potential dropouts or to influence them to continue at another institution could help deflect young adults from a pattern of floundering that occurs with terminating higher education. This result could be achieved, for example, by training undergraduate academic advisers, in their discussions with those who are considering dropping out, to emphasize the lack of career attainment among those who do not finish college. Lastly, given the career establishment advantage of the AVC group, guidance counselors at the high school level could encourage those not going on to a four-year college to consider acquiring an Associates or vocational degree.

Several factors that have been found to be implicated in socioeconomic attainment did not distinguish individuals who followed these diverse pathways from one another once socioeconomic background, academic orientations, and high school work patterns were controlled. For example, being male or U.S. born conferred no advantage, and we found no distinctions by gender. The latter points to a limitation in our study in that our sample size precluded us from estimating separate pathways and models for males and females. Similarly, race had little effect on the pathways, but our coding of race was crude (white vs. nonwhite) and our sample size limits our ability to assess significant differences by racial groups. Economic orientations and behaviors, other than high school work patterns, also mattered little for these contrasts. In the bivariate analyses, the former had relatively weak associations with the outcome, while the high school work patterns exhibited particularly strong effects. When entered together into a multivariate model, we see that steady high school work experience, in contrast to sporadic work investment, provides a more beneficial economic foundation for the adolescent, fostering the avoidance of floundering. Finally, we find little evidence that activities outside the classroom (volunteering or extracurricular participation) are protective with respect to the avoidance of floundering.

Given that only about half of this panel of youth are found in the two successful STW pathways, why might career establishment be so elusive? Recent cohorts of young people have faced considerable difficulty in finding jobs with “career potential.” For instance, despite an increase in college enrollment, youth age 16 to 24 who were out of school were more likely to be experiencing employment difficulties (as indicated by unemployment, involuntary part-time work, or working full-time at a wage below the poverty level) in the mid-1990s (recall that most members of the YDS cohort graduated from high school in 1991) compared to their 1970s and 1980s counterparts (Halperin, 1998). As noted by Corcoran and Matsudaira (2009), this trend may reflect changes in the occupational structure and the decline in job opportunities for low-skilled workers due to deindustrialization, deunionization, and immigration. Stable career trajectories are becoming less prevalent for professional and managerial workers as well given increasingly rapid technological change, organizational restructuring, the use of non-standard employment contracts, and the movement of jobs and whole industries overseas (Fullerton & Wallace, 2007; Heinz, 2003; Skaggs & Leicht, 2005). Finally, variation over both space and time could influence the results of our analyses. The very goal of a career may be a largely middle-class orientation, as well as a unique phenomenon in the U.S. or similar countries. A dataset that oversamples disadvantaged youth or includes those residing in other countries could produce unique results with regards to both career acquisition and the precursors that influence particular pathways. Similarly, economic downturns, such as the most recent “Great Recession,” exacerbate the difficulties in moving from school to work. It is likely that a study of the high school graduating class a decade later, in 2001, would face much more serious challenges as they made their way through the transition from school to work.

Though we have established the precursors of floundering, a natural next question is identifying the long-term socioeconomic consequences of floundering during the STW transition. Whereas the two pathways to career attainment—though a Bachelor’s or Associates-Votech degree—both represent viable STW transitions, they likely have quite different socioeconomic outcomes in adulthood. Do floundering pathways impede the

subsequent acquisition of human and social capital in adulthood, and how do experiences in adolescence or the transition to adulthood mediate or moderate the effect of the pathways on such outcomes? The latent class pathways we identify in this paper may predict long-term socioeconomic success above and beyond educational attainment and subjective career experience. The character of the STW transition could also have enduring effects on financial self-reliance, relationship stability, and satisfaction. We intend to explore these questions with subsequent waves of data in the YDS.

In conclusion, though many have touted the benefits of occupational exploration that may come with an extended transition to adulthood (Arnett, 2000; Keith & McWilliams, 1999), others point out that problems in becoming established in the labor market can result in lost opportunity for on-the-job training and other valuable socialization experiences (Corcoran & Matsudaira, 2005; Hamilton, 1990; Staff et al., 2010). Our latent class analysis shows that there exists a fairly sizable group of young people for whom floundering during the STW transition is a continuing concern and that several dimensions of adolescent psychological orientation and experience affect this floundering. The benefits and potential “scarring” effects of these distinct STW pathways will be at the heart of our future research efforts

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## REFERENCES

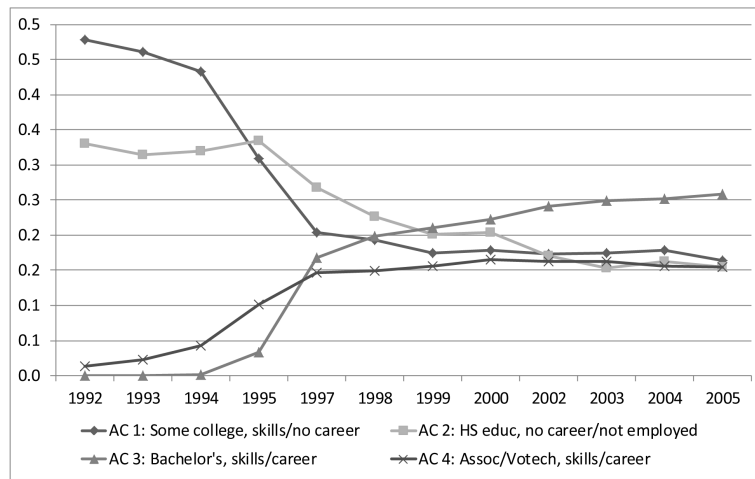
- Amato PR. Research on Divorce: Continuing Trends and New Developments. *Journal of Marriage and Family*. 2010; 72:650–666.
- Amato PR, Kane JB. Life-Course pathways and the psychosocial adjustment of young adult women. *Journal of Marriage and Family*. 2011; 73:279–295. [PubMed: 23188928]
- Arnett JJ. Emerging Adulthood: A Theory of Development from the Late Teens through the Twenties. *American Psychologist*. 2000; 55:469–80. [PubMed: 10842426]
- Ashby JS, Schoon I. Career success: The role of teenage career aspirations, ambition value and gender in predicting adult social status and earnings. *Journal of Vocational Behavior*. 2010; 77:350–360.
- Bachman, JG.; Johnston, LD.; O’Malley, PM. *Monitoring the Future: Questionnaire responses from the nation’s high school seniors, 2010*. Institute for Social Research; Ann Arbor: 2011.
- Beal SJ, Crockett LJ. Adolescents’ occupational and educational aspirations and expectations: Links to high school activities and adult educational attainment. *Developmental Psychology*. 2010; 46:258–265. [PubMed: 20053022]
- Carr R, Wright J, Brody C. Effects of high school work experience a decade later: Evidence from the National Longitudinal Study. *Sociology of Education*. 1996; 69:66–81.
- Corcoran, M.; Matsudaira, J. Is It Getting Harder to Get Ahead? Economic Attainment in Early Adulthood for Two Cohorts. In: Settersten, RA., Jr.; Furstenberg, FF., Jr.; Rumbaut, RG., editors. *On the Frontier of Adulthood: Theory, Research, and Public Policy*. University of Chicago Press; Chicago: 2005. p. 356-95.



- Corcoran, M.; Matsudaira, J. Is Stable Employment Becoming more Elusive for Young Men?. In: Schoon, I.; Silbereisen, R., editors. *The Transition from School to Work: Globalisation, Individualisation, and Patterns of Diversity*. Cambridge University Press; 2009. p. 45-66.
- Danziger S, Ratner D. Labor Market Outcomes and the Transition to Adulthood. *The Future of Children*. 2010; 20:133–158. [PubMed: 20364625]
- Davidson, P.; Anderson, HD. *Occupational Mobility in an American Community*. Stanford University Press; Stanford, CA: 1937.
- Duncan, GJ.; Magnuson, K. The Nature and Impact of Early Achievement Skills, Attention Skills, and Behavioral Problems. In: Duncan, GJ.; Murnane, RJ., editors. *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. Russell Sage; New York: 2011. p. 47-69.
- Edelman, P.; Holzer, HJ.; Offner, P. *Reconnecting Disadvantaged Young Men*. Urban Institute Press; Washington D.C.: 2006.
- Entwisle DR, Alexander KL, Olson LS. Early Work Histories of Urban Youth. *American Sociological Review*. 2000; 65:279–97.
- Finch MD, Shanahan MJ, Mortimer JT, Ryu Seongryeol. Work Experience and Control Orientation in Adolescence. *American Sociological Review*. 1991; 56:597–611.
- Fullerton AS, Wallace M. Traversing the Flexible Turn: U.S. Workers' Perceptions of Job Security, 1997-2002. *Social Science Research*. 2007; 36:201–221.
- Goldin C. "The Quiet Revolution that Transformed Women's Employment, Education, and Family." *American Economic Review*. 2006; 96:1–21.
- Grabowski LS, Call KT, Mortimer JT. Global and Economic Self-Efficacy in the Educational Attainment Process. *Social Psychology Quarterly*. 2001; 64:164–179.
- Grubb NW. The Returns to Education in the Sub-baccalaureate Labor Market, 1984-1990. *Economics of Education Review*. 1997; 16:231–245.
- Grubb NW. Learning and Earning in the Middle, Part I: National Studies of Pre-baccalaureate Education. *Economics of Education Review*. 2002; 21:299–321.
- Haase CM, Heckhausen J, Koller O. Goal Engagement During the School-Work Transition: Beneficial for All, Particularly for Girls. *Journal of Research on Adolescence*. 2008; 18:671–98.
- Halperin, S., editor. *The Forgotten Half Revisited. American Youth and Young Families, 1988-2008*. American Youth Policy Forum, Inc.; Washington, D. C.: 1998.
- Hamilton, SF. *Apprenticeship for Adulthood: Preparing Youth for the Future*. Free Press; New York: 1990.
- Hamilton, SF.; Hamilton, MA. School, Work, and Emerging Adulthood. In: Arnett, JJ.; Tanner, JL., editors. *Emerging Adults in America: Coming of Age in the 21st Century*. American Psychological Association; Washington, DC: 2006. p. 257-77.
- Heckhausen J, Wrosch C. A motivational theory of life-span development. *Psychological Review*. 2010; 117:32–60. [PubMed: 20063963]
- Heinz, WR. From Work Trajectories to Negotiated Careers: The Contingent Work Life Course. In: Mortimer, JT.; Shanahan, MJ., editors. *Handbook of the Life Course*. Springer; New York: 2003. p. 185-204.
- Holzer, HJ. *What Employers Want: Job Prospects for Less-Educated Workers*. Russell Sage; 1996.
- Horn, L.; Peter, K.; Rooney, K. *Profile of Undergraduates in U.S. Postsecondary Institutions: 1999–2000*. U.S. Department of Education. National Center for Education Statistics; Washington, DC: 2002. 2002
- Johnson MK. Change in Job Values during the Transition to Adulthood. *Work and Occupations*. 2001; 28:315–345.
- Johnson MK. Social Origins, Adolescent Experiences, and Work Value Trajectories during the Transition to Adulthood. *Social Forces*. 2002; 80:1307–41.
- Johnson MK, Beebe T, Snyder M, Mortimer JT. Volunteerism in Adolescence: A Process Perspective. *Journal of Research on Adolescence*. 1998; 8:309–322.
- Johnson MK, Elder GH Jr. Educational Pathways and Work Value Trajectories. *Sociological Perspectives*. 2002; 45:113–138.

- Johnson MK, Oesterle S, Mortimer JT. Adolescents' Anticipations of Work-Family Conflict in a Changing Societal Context. *Advances in Life Course Research*. 2001; 6:233–61.
- Kalleberg AL, Reskin BF, Hudson K. Bad Jobs in America: Standard and Nonstandard Employment Relations and Job Quality in the United States. *American Sociological Review*. 2000; 65:256–278.
- Kane TJ, Rouse CE. Labor-Market Returns to Two- and Four-Year College. *American Economic Review*. 1995; 85:600–14.
- Keith K, McWilliams A. The Returns to Mobility and Job Search by Gender. *Industrial and Labor Relations Review*. 1999; 52:460–77.
- Kerckhoff, AC. The Transition from School to Work. In: Mortimer, JT.; Larson, R., editors. *The Changing Adolescent Experience: Societal Trends and the Transition to Adulthood*. Cambridge University Press; New York: 2002. p. 52-87.
- Kerckhoff, AC. From Student to Worker. In: Mortimer, JT.; Shanahan, MJ., editors. *Handbook of the Life Course*. Kluwer Academic/Plenum Publishers; New York: 2003. p. 251-67.
- Kerckhoff AC, Bell L. Hidden Capital: Vocational Credentials and Attainments in the United States. *Sociology of Education*. 1998; 71:152–174.
- Knapp, LG.; Kelly-Reid, JE.; Ginder, SA. U.S. Department of Education. National Center for Education Statistics; Washington, DC: 2010. Enrollment in Postsecondary Institutions, Fall 2008; Graduation Rates, 2002 & 2005 Cohorts; and Financial Statistics, Fiscal Year 2008 (NCES 2010-152).
- Koivisto P, Vuori J, Vinokar AD. Transition to Work: Effects of Preparedness and Goal Construction on Employment and Depressive Symptoms. *Journal of Research on Adolescence*. 2010; 20:869–92.
- Lareau, A. *Unequal Childhoods: Class, Race, and Family Life*. University of California Press; Berkeley: 2003.
- Leventhal T, Graber JA, Brooks-Gunn J. Adolescent Transitions to Young Adulthood: Antecedents, Correlates, and Consequences of Adolescent Employment. *Journal of Research on Adolescence*. 2001; 11:297–323.
- Macmillan, R.; Eliason, SR. Characterizing the Life Course as Role Configurations and Pathways: A Latent Structure Approach. In: Mortimer, JT.; Shanahan, MJ., editors. *Handbook of the Life Course*. Kluwer Academic/Plenum Publishers; New York: 2003. p. 529-554.
- Marcotte DE, Bailey T, Borkoski C, Kienzl GS. The Returns of a Community College Education: Evidence from the National Education Longitudinal Survey. *Educational Evaluation and Policy Analysis*. 2005; 27:157–175.
- Marsh HW. Extracurricular Activities: Beneficial Extension of the Traditional Curriculum or Subversion of Academic Goals? *Journal of Educational Psychology*. 1992; 84:553–562.
- Mortimer, JT. *Working and Growing Up in America*. Harvard University Press; Cambridge: 2003.
- Mortimer, JT.; Krüger, H. Transition from School to Work in the United States and Germany: Formal Pathways Matter. In: Hallinan, M., editor. *Handbook of the Sociology of Education*. Kluwer Academic/Plenum Publishing Company; New York: 2000. p. 475-497.
- Mortimer JT, Vuolo M, Staff J, Wakefield S, Xie W. Tracing the Timing of 'Career' Acquisition in a Contemporary Youth Cohort. *Work and Occupations*. 2008; 35:44–84. [PubMed: 18542713]
- Namboodiri K. The Floundering Phase of the Life Course. *Research in the Sociology of Education and Socialization*. 1987; 7:59–86.
- Neumark, David. Youth Labor Markets in the United States: Shopping Around vs. Staying Put. *Review of Economics and Statistics*. 2002; 84:462–482.
- Oesterle SJ, Hawkins D, Hill KG, Bailey JA. Men's and women's pathways to adulthood and their adolescent precursors. *Journal of Marriage and Family*. 2010; 72:1436–1453. [PubMed: 21113316]
- Osterman, P. *Getting Started: The Youth Labor Market*. MIT Press; Cambridge, MA: 1980.
- Perreira KM, Harris KM, Lee D. Making It in America: High School Completion by Immigrant and Native Youth. *Demography*. 2006; 43:511–536. [PubMed: 17051825]
- Perreira KM, Harris KM, Lee D. Immigrant Youth in the Labor Market. *Work and Occupations*. 2007; 34:5–34.

- Reardon, SF. The Widening Academic Achievement Gap between the Rich and the Poor: New Evidence and Possible Explanations. In: Duncan, GJ.; Murname, RJ., editors. *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. Russell Sage Foundation; New York: 2011. p. 91-115.
- Reynolds JR, Johnson MK. Change in the Stratification of Educational Expectations and their Realization. *Social Forces*. 2011; 90:85–109.
- Reynolds J, Stewart M, Sisco L, MacDonald R. Have Adolescents Become Too Ambitious? High School Seniors' Educational and Occupational Plans, 1976 to 2000. *Social Problems*. 2006; 53:186–206.
- Rosenbaum, JE. *Beyond College for All: Career Paths for the Forgotten Half*. Russell Sage; 2001.
- Schneider, B.; Stevenson, D. *The Ambitious Generation: America's Teenagers, Motivated but Directionless*. Yale University Press; New Haven: 1999.
- Schoon, I.; Silbereisen, RK., editors. *Transitions from School to Work: Globalisation, Individualisation, and Patterns of Diversity*. Cambridge University Press; New York: 2009.
- Sewell, W.; Hauser, R. *Education, Occupation, and Earnings: Achievement in the Early Career*. Academic Press; New York: 1975.
- Shanahan MJ. Pathways to Adulthood in Changing Societies: Variability and Mechanisms in Life Course Perspective. *Annual Review of Sociology*. 2000; 26:667–92.
- Shanahan MJ, Mortimer JT, Kruger H. Adolescence and Adult Work in the Twenty-First Century. *Journal of Research on Adolescence*. 2002; 12:99–120.
- Skaggs BC, Leicht KT. Management Paradigm Change in the United States: A Professional Autonomy Prospective. *Research in the Sociology of Work*. 2005; 15:123–149.
- Staff J, Harris A, Sabates R, Briddell L. Uncertainty in Early Occupational Aspirations: Role Exploration or Aimlessness? *Social Forces*. 2010; 89:659–84.
- Staff J, Mortimer JT. Educational and Work Strategies from Adolescence to Early Adulthood: Consequences for Educational Attainment. *Social Forces*. 2007; 85:1169–94.
- U.S. Department of Education. *Digest of Education Statistics, 2010*. National Center for Education Statistics; Washington, D.C.: 2011.
- U.S. Department of Labor. *America's Young Adults at 24: School Enrollment, Training, and Employment Transitions between Ages 23 and 24*. Bureau of Labor Statistics; Washington, D. C.: 2012.
- Vermunt JK. Multilevel Latent Class Models. *Sociological Methodology*. 2003; 33:213–39.
- Vermunt, J.; Magidson, J. *Technical Guide for Latent GOLD 4.0: Basic and Advanced*. Statistical Innovations Inc.; Belmont, Massachusetts: 2005.
- Vuolo M, Staff J, Mortimer JT. Weathering the Great Recession: Psychological and Behavioral Trajectories in the Transition from School to Work. *Developmental Psychology*. 2012; 48:1759–1773. [PubMed: 22059449]
- Warren JR, Hauser RM, Sheridan JT. Occupational Stratification across the Life Course: Evidence from the Wisconsin Longitudinal Study. *American Sociological Review*. 2002; 67:323–346.



**Figure 1. Probabilities for the Latent Attainment Configurations (AC) over Time**  
*Note:* Missing configuration (i.e., AC5) is not shown.

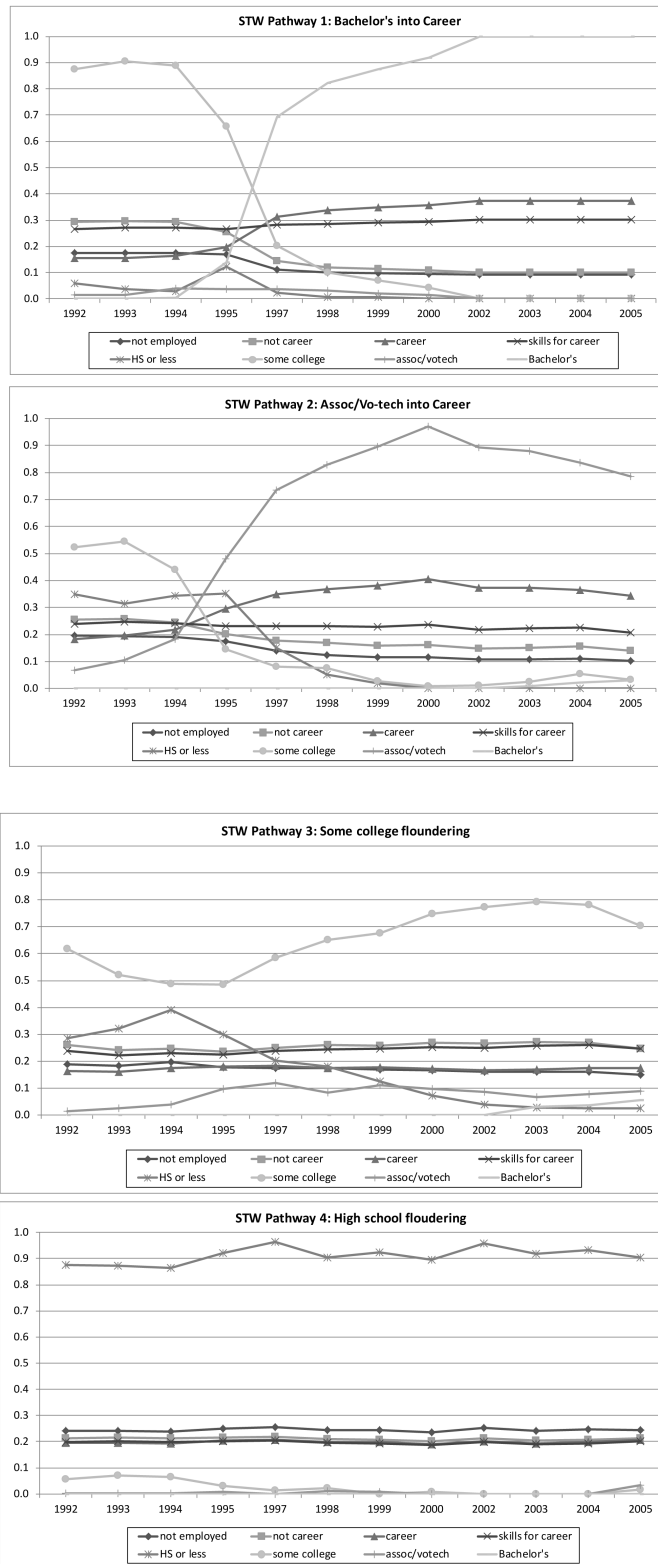


Figure 2.

Latent School-to-Work Pathways of Subjective Career Status and Educational Attainment for the YDS cohort 1992-2005

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Table 1

## Variable Descriptions and Coding

	Description	Coding or range	Cases imputed
<i>Demographics</i>			
Gender	What is your sex?	0 = female; 1 = male	0.0%
Race	Recoded version of: How would you describe yourself? (Choices: White, Black, Hispanic, Southeast Asian, Other Asian, Native American, Mixed Race, Other)	0 = nonwhite; 1 = white	2.2%
Nativity	Were you born in the United States?	0 = non-native; 1 = US native	2.2%
Household composition	Recoded version of: Whom do you live with? (2 parents represents mother and father by birth or adoption vs. all other responses)	0 = other; 1 = 2 parents	0.3%
<i>Socioeconomic background</i>			
Family income	Thirteen-level ordinal scale, ranging from under \$5,000 to \$100,000 or more	range: 1-13	2.9%
Parental education	Recoded eight-level scale for highest educational credential of either parent, ranging from "less than high school" to "PhD or professional degree"	0 = HS or less; 1 = some college; 2 = Bachelor's or higher	6.1%
<i>Academic orientations</i>			
Grade point average	Numerical GPA, ranging from 0 = "F" to 11 = "A"	range: 0-11	3.3%
Academic self-esteem	CFA of three questions capturing the individual's self-evaluation regarding intelligence, reading ability, and general ability in school, in comparison with other students of the same age	range: 2.9-14.3	1.9%
Educational aspirations	Recoded highest education that respondents think they will finish	0 = less than Bachelor's; 1 = Bachelor's; 2 = don't know	0.7%
Extracurricular time	Hours of extracurricular activities reported, logged due to skewness	range: 0.0-4.7	1.3%
School problem behaviors	Additive scale of how frequently respondents get in trouble at school and are sent to the principal's office (ranging from 1 = "never" to 5 = "more than 10")	range: 2-10	1.3%
Parents' educational expectations	Parent(s) response to level of education they felt their child would achieve (eight point ordinal scale ranging from "less than high school" to "professional degree")	range: 1-8	6.3%
<i>Occupational Orientations</i>			
HS work pattern	Cross-classification of high school work patterns during the school year by duration of months worked (split by the median in 24 months of observation) and intensity of hours per week (split by more or less than 20 hours): steady (high duration, low intensity), occasional (low duration, low intensity), sporadic (low duration, high intensity), most invested (high duration, high intensity)	0 = steady; 1 = no work; 2 = occasional; 3 = sporadic; 4 = most invested	4.0%
Economic self-efficacy	CFA of estimated future chances of: "having a job that pays well"; "being able to own your own home"; and "having a job that you enjoy doing?"	range: 4.0-14.4	1.6%

	Description	Coding or range	Cases imputed
Volunteering	Whether the respondent reported any volunteering activity	0 = no; 1 = yes	4.0%
Extrinsic work values	CFA of importance of: "good pay"; "a steady job with little chance of getting laid off"; "good chances of getting ahead"; and "a job that people regard highly" (each on four-point scale from 1 = "not at all" to 4 = "extremely" important)	range: 10.4-26.3	2.0%
Intrinsic work values	CFA of importance of: "be helpful to others or useful to society"; "to work with people rather than things"; "to make my own decisions at work;" "to learn a lot of new things at work;" "a job where I have a lot of responsibility"; and "a job that uses my skills and abilities" (each on four-point scale from 1 = "not at all" to 4 = "extremely" important)	range: 8.2-24.8	1.9%
Importance of career	Response to how important their occupations or careers would be to them when they become adults (ranging on a four-point scale from 1 = "not at all" to 4 = "extremely" important)	range: 1-4	0.4%

*Note:* CFA = Confirmatory Factor Analysis.

*Note:* All measures are from the freshman year of high school, with the exception of high school work patterns and years volunteering, which use information across the 10<sup>th</sup> to 12<sup>th</sup> grades, and economic self-efficacy, which was not measured until the sophomore year of high school.



**Table 2**

Model Selection Criteria for Latent School-to-Work Pathways

Y latent pathway schema	X latent attainment configuration schema	LL	BIC	No. parameters
1	1	-39894.9	79874.43	9
	2	-34361.5	69005.1	30
	3	-32628.2	65735.88	51
	4	-32480.4	65637.80	72
	5	-32344.2	65562.78	93
	6	-32241.3	65554.59	114
	7	-32207.5	65684.34	135
2	1	-39894.9	79883.83	10
	2	-32208.1	64820.46	43
	3	-29657.0	60028.53	76
	4	-28899.2	58823.32	109
	5	-28519.8	58374.74	142
	6	-28425.2	58495.76	175
3	1	-39894.9	79893.24	11
	2	-31803.5	64133.57	56
	3	-28222.7	57395.14	101
	4	-27337.9	56048.51	146
	5	-26392.2	54580.28	191
	6	-26307.5	54834.10	236
4	1	-39894.9	79902.64	12
	2	-31633.9	63916.57	69
	3	-27934.4	57053.55	126
	4	-26190.9	54102.56	183
	5	-25281.8	52820.16	240
	6	-25175.3	53143.16	297
5	1	-39894.9	79912.04	13
	2	-31583.4	63937.72	82
	3	-27689.7	56799.17	151
	4	-25919.8	53908.25	220
	5	-24688.6	52094.61	289
	6	-24419.7	52205.50	358
6	1	-39894.9	79921.44	14
	2	-31534.2	63961.64	95
	3	-27560.3	56775.37	176
	4	-25695.6	53807.63	257
	5	<b>-24448.8</b>	<b>52075.68</b>	<b>338</b>
	6	-24184.5	52308.72	419

<i>Y</i> <i>latent</i> <i>pathway</i> <i>schema</i>	<i>X</i> <i>latent</i> <i>attainment</i> <i>configuration</i> <i>schema</i>	LL	BIC	No. parameters
7	1	-39894.9	79930.85	15
	2	-31486.7	63988.90	108
	3	-27508.4	56906.63	201
	4	-25498.5	53761.45	294
	5	-24226.0	52090.88	387
	6	-24015.9	52545.05	480

**Table 3**

Probabilities for the Latent Attainment Configurations (AC)

	<i>AC1</i>	<i>AC2</i>	<i>AC3</i>	<i>AC4</i>	<i>AC5</i>
<i>P(AC)</i>	<i>Probability of each attainment configurations (AC)</i>				
	26.0%	23.7%	15.3%	11.9%	23.2%
<i>P(career AC)</i>	<i>Probability of career acquisition within each AC</i>				
not employed	18.1%	25.8%	9.4%	11.7%	0.0%
not a career	30.7%	21.8%	10.0%	16.2%	0.0%
career	16.0%	20.7%	37.3%	41.0%	0.0%
skills for career	28.1%	20.3%	30.0%	24.0%	0.0%
don't know	6.5%	10.9%	4.8%	6.6%	0.0%
missing	0.6%	0.6%	8.6%	0.5%	100.0%
<i>P(education AC)</i>	<i>Probability of educational attainment within each AC</i>				
HS or less	3.1%	97.9%	0.0%	0.0%	0.2%
some college	94.2%	0.0%	0.0%	1.0%	0.0%
Assoc/Votech	1.5%	0.0%	0.0%	98.3%	0.1%
Bachelor's	0.0%	0.0%	99.8%	0.0%	0.0%
missing	1.2%	2.1%	0.2%	0.7%	99.7%
<i>P(AC year)</i>	<i>Probability of each AC over time</i>				
1992	47.8%	33.0%	0.0%	1.3%	17.9%
1993	46.0%	31.4%	0.0%	2.2%	20.3%
1994	43.3%	32.0%	0.1%	4.3%	20.3%
1995	30.9%	33.5%	3.4%	10.2%	22.1%
1997	20.4%	26.7%	16.7%	14.7%	21.4%
1998	19.3%	22.7%	19.9%	14.9%	23.3%
1999	17.4%	20.1%	21.1%	15.6%	25.7%
2000	17.8%	20.4%	22.2%	16.6%	23.1%
2002	17.3%	17.1%	24.1%	16.2%	25.4%
2003	17.5%	15.4%	24.9%	16.2%	26.2%
2004	17.9%	16.2%	25.2%	15.6%	25.1%
2005	16.3%	15.4%	25.8%	15.5%	26.9%

Table 4

## Descriptive Statistics and Bivariate Tests of Independence by Modal School-to-Work Pathways

	Mean (St. dev.)	Bachelor's into career	Assoc/ Votech into career	Some college floundering	High school floundering	Test of independence
<i>School-to-Work Pathways</i>		35.1%	17.5%	28.4%	19.1%	
<i>Demographics</i>						
Gender						$\chi^2=5.8$
Female	56.5%	34.5%	20.1%	30.5%	14.9%	
Male	43.5%	35.9%	17.6%	25.5%	21.0%	
Race						$\chi^2=6.5$
White	78.6%	36.5%	19.1%	26.4%	18.1%	
Other	21.4%	31.1%	18.2%	37.1%	13.6%	
Nativity						$\chi^2=12.5^{**}$
Non-native	6.4%	58.7%	13.0%	21.7%	6.5%	
U.S. native	93.6%	33.7%	19.2%	29.1%	18.0%	
Household composition						$\chi^2=4.7$
2 parent	71.0%	37.4%	18.5%	27.0%	17.1%	
Other	29.0%	30.0%	20.8%	32.8%	17.5%	
<i>Socioeconomic background</i>						
Family income	5.99 (2.34)	6.97	5.88	5.93	5.06	F=20.6***
Parental education						$\chi^2=183.1^{***}$
High school or less	39.5%	14.9%	31.5%	24.5%	29.1%	
Some college	31.8%	28.9%	15.9%	41.8%	13.5%	
Bachelor's or higher	28.7%	67.8%	7.4%	18.8%	5.9%	
<i>Academic orientations</i>						
Grade point average	6.65 (2.38)	8.34	6.30	6.49	5.62	F=64.0***
Academic self-esteem	9.96 (1.79)	11.09	9.35	9.95	9.16	F=54.1***
Educational aspirations						$\chi^2=111.0^{***}$
Less than Bachelor's	17.9%	5.6%	29.0%	24.3%	41.1%	
Bachelor's or higher	68.4%	44.7%	15.9%	28.9%	10.6%	
Don't know	13.7%	16.9%	25.8%	31.5%	25.8%	
Extracurricular time (log)	1.59 (1.15)	1.83	1.38	1.62	1.48	F=5.6***
School problem behaviors	4.06 (2.27)	3.22	4.40	3.76	4.71	F=17.5***
Parents' educ. expectations	4.57 (1.84)	5.96	3.96	4.64	3.35	F=91.1***
<i>Occupational Orientations</i>						
High school work patterns						$\chi^2=67.2^{***}$
Steady	27.1%	47.8%	17.4%	25.9%	9.0%	
No work	6.0%	46.2%	7.7%	20.5%	25.6%	
Occasional	23.4%	41.3%	15.0%	32.5%	11.3%	
Sporadic	18.0%	17.9%	19.8%	31.1%	31.1%	
Most invested	25.4%	23.9%	28.9%	28.3%	18.9%	

	Mean (St. dev.)	Bachelor's into career	Assoc/ Votech into career	Some college floundering	High school floundering	Test of independence
Economic self-efficacy	12.07 (2.26)	12.79	11.98	11.88	11.35	F=13.5***
Volunteering						$\chi^2=19.8^{***}$
No	72.2%	30.8	21.7	27.5	20.0	
Yes	27.8%	44.6	13.2	30.5	11.7	
Extrinsic work values	22.56 (3.36)	22.99	22.74	22.64	21.70	F=4.1**
Intrinsic work values	19.62 (3.27)	19.90	19.42	19.78	19.28	F=1.3
Importance of career	3.60 (0.59)	3.65	3.55	3.67	3.50	F=3.1*

**Table 5**

Multinomial Logistic Regression Estimates (Odds Ratios) of STW Pathways (N=693)

	<b>Bachelor's into career vs. HS floundering</b>	<b>Assoc/Votech into career vs. HS floundering</b>	<b>Some college floundering vs. HS floundering</b>	<b>Bachelor's into career vs. Some college floundering</b>	<b>Assoc/Votech into career vs. Some college floundering</b>	<b>Bachelor's into career vs. Assoc/Votech into career</b>
	<b>OR (SE)</b>	<b>OR (SE)</b>	<b>OR (SE)</b>	<b>OR (SE)</b>	<b>OR (SE)</b>	<b>OR (SE)</b>
<i>Demographics</i>						
Gender: Male (vs. Female)	0.76 (0.32)	0.70 (0.30)	0.74 (0.29)	1.03 (0.25)	0.94 (0.27)	1.09 (0.30)
Race: White (vs. Other)	0.54 (0.44)	0.58 (0.42)	0.41* (0.38)	1.32 (0.33)	1.42 (0.33)	0.93 (0.40)
Nativity: US Native (vs. Non-native)	0.39 (0.85)	0.48 (0.88)	0.65 (0.82)	0.61 (0.50)	0.74 (0.62)	0.82 (0.64)
Household composition: 2 parent (vs. Other)	0.63 (0.38)	0.65 (0.33)	0.60 (0.32)	1.06 (0.30)	1.09 (0.30)	0.97 (0.35)
<i>Socioeconomic background</i>						
Family income	1.20* (0.09)	1.26** (0.08)	1.16 (0.08)	1.03 (0.06)	1.09 (0.07)	0.95 (0.07)
Parental education: Some college (vs. HS)	2.20* (0.39)	0.72 (0.34)	2.25** (0.32)	0.98 (0.32)	0.32*** (0.30)	3.06** (0.35)
Parental education: Bachelor's (vs. HS)	4.63** (0.49)	0.62 (0.49)	1.67 (0.47)	2.77** (0.36)	0.37* (0.42)	7.44*** (0.42)
<i>Academic orientations</i>						
Grade point average	1.37*** (0.09)	1.09 (0.08)	0.98 (0.08)	1.40*** (0.08)	1.11 (0.07)	1.26** (0.09)
Academic self-esteem	1.36** (0.11)	0.95 (0.10)	1.15 (0.09)	1.18* (0.08)	0.82* (0.09)	1.43*** (0.10)
Educ. aspirations: Bachelor's (vs. Less)	6.30*** (0.56)	1.68 (0.34)	2.36* (0.35)	2.67 (0.54)	0.71 (0.32)	3.75* (0.55)
Educ. aspirations: DK (vs. Less than Bachelor's)	2.42 (0.66)	1.18 (0.42)	1.50 (0.43)	1.61 (0.64)	0.79 (0.43)	2.05 (0.65)
Extracurricular time (logged)	1.22 (0.14)	0.90 (0.12)	1.02 (0.12)	1.20 (0.11)	0.88 (0.11)	1.36* (0.13)
School problem behaviors	1.02 (0.08)	1.05 (0.06)	0.95 (0.07)	1.07 (0.07)	1.10 (0.06)	0.97 (0.08)
Parents' educational expectations	1.66*** (0.12)	1.15 (0.11)	1.33** (0.11)	1.25* (0.09)	0.87 (0.09)	1.44*** (0.11)
<i>Occupational Orientations</i>						
HS work patterns: No work (vs. Steady)	0.50 (0.68)	0.20* (0.78)	0.38 (0.64)	1.29 (0.57)	0.51 (0.77)	2.52 (0.79)
HS work patterns: Occasional (vs. Steady)	0.50 (0.46)	0.66 (0.45)	0.95 (0.42)	0.52* (0.31)	0.69 (0.35)	0.75 (0.38)
HS work patterns: Sporadic (vs. Steady)	0.24*** (0.50)	0.43 (0.44)	0.58 (0.42)	0.41* (0.41)	0.75 (0.39)	0.56 (0.47)
HS work patterns: Most invested (vs. Steady)	0.61 (0.44)	0.87 (0.40)	0.82 (0.40)	0.74 (0.33)	1.05 (0.33)	0.70 (0.37)
Economic self-efficacy	1.12 (0.08)	1.12 (0.07)	1.02 (0.06)	1.10 (0.06)	1.10 (0.06)	1.00 (0.07)
Volunteering	1.13 (0.36)	0.98 (0.35)	1.74 (0.32)	0.65 (0.25)	0.57* (0.29)	1.14 (0.32)
Extrinsic work values	1.11 (0.05)	1.09 (0.05)	1.05 (0.05)	1.06 (0.04)	1.04 (0.04)	1.01 (0.05)
Intrinsic work values	0.90 (0.06)	0.95 (0.05)	0.97 (0.05)	0.93 (0.04)	0.98 (0.05)	0.95 (0.05)
Importance of career	0.83 (0.28)	0.83 (0.24)	1.22 (0.25)	0.68 (0.23)	0.68 (0.23)	1.01 (0.26)
(Intercept)	0.00*** (1.88)	0.21 (1.67)	0.04 (1.63)	0.00*** (1.49)	4.91 (1.48)	0.00*** (1.69)

\*  
p < .05

\*\*  
p < .01

\*\*\*  
p < .001 (two-tailed)

Note: Standard errors are for the unexponentiated coefficients.