Research Report

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Predicting Millennials' Disconnection

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RESEARCH REPORT

Doesn't Get Better With Age: Predicting Millennials' Disconnection

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Recent research has highlighted the critical problem of high rates of "disconnected youth"—youth and young adults who are neither employed nor in school. Practitioners, scholars, policymakers, and a range of stakeholders express mounting concern that disconnected youth are a societal burden that costs countries trillions of dollars. This phenomenon could threaten social cohesion and social development, in addition to costing large amounts of money in the forms of foregone labor productivity and tax revenues and increased incarceration and social services uptake rates. Whereas other studies explore disconnection among a cross-sectional sample of U.S. young adults, we set out to document the longitudinal education and employment pathways of a nationally representative cohort of U.S. millennial young adults from approximately age 16 to age 26. Our results highlight that both socioeconomic status (SES) and high school academic abilities are associated with disconnection from society at ages 18, 20, and 26. However, these associations diminish over time, and by age 26 SES is a weaker predictor of disconnection than having been on a college preparatory track (e.g., taking practice college entrance examinations) or having special educational needs in high school. At the same time, high school literacy and mathematics skills and grades are unrelated to disconnection at age 26. Prior disconnection remains one of the strongest predictors of disconnection at ages 20 and 26, highlighting the problem of repeated disconnection experienced by a small group of youth and young adults (only 0.6% of our full sample, or 11.1% of high school leavers). Finally, the odds of dropping out of the labor force—not seeking employment—are most strongly explained by gender and having dependent children, and to a lesser extent by race and high school region and urbanicity. Recommendations for supporting those most at risk of disconnection are discussed in relation to our findings.

Keywords Opportunity youth; disconnected youth; youth unemployment; education; NEETs; millennials; academic achievement; socioeconomic status; high school; labor market; higher education

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Emerging adulthood, the period from the late teens through the twenties (Arnett, 2000), is when adults explore and build their relationships, careers, and worldviews. The vast majority of young adults of this age are investing in their human capital by attending school or earning income, or both. Currently, many members of the millennial generation—adults born between 1980 and the early 2000s—are navigating the transition into adult roles. One cause for concern is that as a group they are taking longer to navigate this transition—taking more time to complete college and enter the workforce—than prior generations (Bound, Lovenheim, & Turner, 2012; Cramer, 2014; Pew Research Center, 2017; Vespa, 2017). Even more concerning is that a substantial proportion of millennials are not building their lives or navigating this transition. They are not enrolled in school or training courses that would prepare them for jobs and careers, and they are not earning income. Rather, they have become disconnected from society, and their disconnection represents a loss of economic opportunity for the nation and has drastic consequences for each disconnected individual and his or her family (Belfield, Levin, & Rosen, 2012).

Individuals in this situation are often referred to by U.S. researchers and policymakers as "opportunity youth" or "disconnected youth." In this study, we used nationally representative data from a longitudinal study of U.S. young adults (from their sophomore year of high school in 2002 through approximately age 26) to explore reasons that young adults become disconnected from society. Whereas most studies of disconnected youth used data from individuals aged 16–24 at a particular point in time, we used longitudinal data to track changes in education, employment, and disconnection status over time and to clarify how disconnection rates vary at approximately ages 18, 20, and 26. In an attempt to clarify the relative importance of factors associated with disconnection, we conducted analyses of data from the Education Longitudinal Study of 2002 (ELS:2002; https://nces.ed.gov/surveys/els2002/). The ELS:2002 follows a cohort of millennials

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who were high school sophomores (10th graders) in 2002, providing data on their demographic background and their educational and employment activities at the end of high school, at approximately age 18; 2 years later, at approximately age 20; and 6 years later, at approximately age 26.

This study can serve as a foundation for future efforts to identify solutions to the problem of youth disconnection. Given that prior studies of disconnected youth in the United States have primarily provided cross-sectional snapshots of disconnection rates (Burd-Sharps & Lewis, 2017; Hair, Moore, Ling, McPhee-Baker, & Brown, 2009; U.S. Department of Education, 2016), we also aim to contribute to an understanding of the extent to which young people transition into and out of disconnected youth status.

Prior to presenting the longitudinal study, we present background information on rates of disconnection among youth and young adults in the United States and abroad, the societal and individual impacts of disconnection, and risk factors for disconnection in order to provide a sense of the attention that society needs to devote to this challenge. Then we present a brief overview of our study and research questions, followed by our findings and answers to each question. We conclude with recommendations for further research and interventions addressing disconnection and reengaging disconnected youth and young adults.

Social Context

Youth Disconnection Rates

A statistic commonly cited by policymakers and researchers for over a decade now is that approximately five million U.S. youth and young adults are disconnected from society (Burd-Sharps & Lewis, 2017; Hair et al., 2009; U.S. Department of Education, 2016). This estimate translates to anywhere from 12% to 15% of the population of youth ages 16–24, depending on the year.[1] Youth disconnection rates have varied over time due to economic downturns and upturns. They may have crept as high as 15% to 17% during and just after the Great Recession (Belfield et al., 2012; Burd-Sharps & Lewis, 2017), when overall unemployment rates reached 10% (Federal Reserve Economic Data, 2018). As the U.S. economy improved and unemployment rates dropped, youth disconnection rates were estimated at 13% to 14% in 2012 (Carcillo, Fernández, Königs, & Minea, 2015; Lauff, Ingels, & Christopher, 2014) and 12% in 2015 (Burd-Sharps & Lewis, 2017).[2] However, a recent study by the Brookings Institution estimated only three million disconnected youth ages 16–24, 7.6% of the 2012–2014 youth and young adult population (Ross & Svajlenka, 2016).[3]

Although fewer disconnected youth is great news, the Great Recession (from December 2007 to June 2009) hit youth particularly hard. Since the economic recovery, the youth unemployment rate has remained low relative to the adult unemployment rate and lower than it was prior to the recession (Bureau of Labor Statistics, 2018). These challenging conditions may increase youth disconnection rates and even lead to longer periods of disconnection.

Chronic Disconnection Among Youth

Estimates of *chronic disconnected youth*—those who have been unemployed and out of school for a longer period of time—vary from approximately 5% to 10% of U.S. youth and young adults ages 16–24. Some estimates of chronic disconnected youth define "chronic" as disconnection for at least 1 year and find that 5% to 6% of U.S. youth meet this definition (Fernandes-Alcantara, 2015; U.S. Department of Education, 2016).[4] Other estimates define "chronic" as disconnection most or all of the time from ages 16 to 24. Multiple studies using data from the National Longitudinal Survey of Youth 1997 (NLSY97) estimated this longer term chronic disconnection rate at 8% to 10% of U.S. youth, depending on the age range studied (Belfield et al., 2012; Hair et al., 2009; Kuehn, Pergamit, Macomber, & Vericker, 2009).[5] These estimates of longer term chronic disconnection rates seem high compared to the estimated 15% to 17% youth disconnection rates for the same time period. It may be that a substantial proportion of disconnected youth are, in fact, disconnected for most of their years between ages 16 and 24. Our study uses a path model to explore this possibility by tracking changes in employment, schooling, and disconnection status from ages 16–18 to 20–26.

Global Youth Disconnection Rates

Youth disconnection is not just a problem in the United States; it is also an issue around the world. In 2015, the Organization of Economic Co-operation (OECD), an international organization of 35 developed and economically

emerging countries, reported that 18% of all OECD 16–29 year olds are disconnected (not in education, employment, or training [NEET]; Carcillo et al., 2015). While this global estimate is close to some estimates for the U.S. population of 16–24 year olds, country-level rates vary widely across developed and emerging economies. International youth disconnection rates for 16–29 year olds are as high as 35% in Turkey and Italy, 28% in Greece and Israel, and 23% in Mexico, and as low as 8% in Iceland and Luxemburg and 7% in the Netherlands (Carcillo et al., 2015). Thus, the United States falls somewhere near the middle of the range of OECD countries in terms of the extent of its youth disconnection problem.

Youth disconnection rates for the European Union (EU) as a whole are also similar to those found for the United States, although they are higher or lower in specific countries. Estimates of EU-wide disconnection rates are 12% for 15–24 year olds (Eurostat, 2016) and 15% for 15–29 year olds (Eurofound, 2012). Eurostat, an EU population statistics agency, reported slightly lower rates of EU disconnected youth than the OECD when including 15 year olds in its estimates (Eurostat, 2016). Thus, as in the United States, youth disconnection rates for EU countries vary depending on the data source or age range of study samples. Even so, we can conclude that the disconnection of millions of young people from a society, at a point when they are supposed to be solidifying their roles as productive citizens, can have powerful negative impacts on societies, as well as on the disconnected individuals and their families.

Societal Impacts of Disconnection

Disconnected youth cost countries large amounts of money in the form of foregone labor productivity and tax revenues, as well as increased incarceration and social services uptake rates (Belfield et al., 2012). Taxpayer costs for a disconnected youth have been estimated at $13,900 per year, and societal costs, which include costs associated with crime and lost productivity due to diminished spillover of skills within the workforce, have been estimated at $37,450 per year in 2011 dollars. Using their estimate of 6.7 million disconnected youth, Belfield et al. (2012) estimated an annual cost at $93 billion to taxpayers and $252 billion to society, in 2011 dollars. They further extended their estimate to the full lifetime of an entire cohort of disconnected youth, which could cost taxpayers $1.6 trillion and society $4.7 trillion.

These costs not only impact the overall U.S. economy, they have impacts on state and local economies. States shoulder more of the burden of the cost of disconnected youth in the short term, whereas federal costs are higher over the lifetime of a disconnected youth. For example, Belfield and Levin (2012) estimated annual state and local losses at $9,600 per disconnected youth, whereas federal losses total $4,840 per disconnected youth. Costs for all disconnected youth, using the estimate of 6.7 million youth, may total $61 billion at the state and local levels and $32 billion at the federal level, in 2011 dollars (Belfield & Levin, 2012). And costs imposed upon the EU by their 15- to 29-year-old disconnected youth (known as "NEETs") totaled approximately 120 billion euros, or 1% of European gross domestic product, in 2008 (Eurofound, 2012).

In addition to the enormous costs at all levels of government and society, disconnected youth also diminish the productivity of our future workforce. Our nation is currently facing a significant gap between the skills employers need and those provided by the current workforce (Bridgeland, Milano, & Rosenblum, 2011). Disconnected youth may exacerbate this skills gap for employers as the demand for educated workers continues to grow and they fail to earn the necessary degrees and credentials (Bridgeland et al., 2011; Sands & Goodman, 2018). By one estimate, almost two thirds of the jobs created since 2010 require at least some postsecondary education and fewer jobs are available for workers with a high school diploma or less (Carnevale, Smith, & Strohl, 2010). Yet we know that disconnected youth lag behind their peers in their completion not only of postsecondary degrees, but even of high school diplomas (Belfield et al., 2012; Bridgeland & Mason-Elder, 2012).

The estimates of taxpayer and societal burdens we mentioned above include costs for incarceration and the costs associated with crimes committed by disconnected youth. Disconnected youth are more likely to be involved in criminal activities and to be incarcerated, which accounts for some of the societal burden. One estimate concluded that 63% of all crime committed by youth ages 16–24 may be attributable to disconnected youth, and the social burden of this crime may total as much as $187.9 billion (Belfield & Levin, 2012). Our next sections detail the many risk factors faced by disconnected youth and the consequences of disconnection for them in the short and long terms, including impacts on their children.

Risk Factors for Disconnection

Disconnected youth are more likely to be from racial and ethnic minority groups (Belfield et al., 2012; Ross & Svajlenka, 2016). Rates of disconnection vary widely across U.S. metropolitan areas—by one estimate, in some localities, Black and Latino youth and young adults are up to 3–6 times more likely to be disconnected than White youth and young adults (Ross & Svajlenka, 2016). Moreover, millennials are the most diverse generation to date (Frey, 2018)—44% of millennials are members of racial and ethnic minority groups. It remains to be seen how this will influence the likelihood that minority youth become disconnected as they make their way from adolescence to adulthood.

Youth and young adults that end up disconnected tend to face a host of challenges that their connected peers may not. Disconnected youth are more likely to come from families with low incomes, to struggle in school, to suffer from mental health problems and/or substance abuse, to be involved in violence, and to be teenage parents (Hair et al., 2009). Other risk factors for disconnection may include institutional residence, incarceration, criminal activity, disability, and family caregiver responsibilities (Belfield & Levin, 2012). In fact, it is not only criminal activity among youth, but even more so criminal victimization of youth that may result in lifelong social and psychological costs related to the experience of victimization (Belfield & Levin, 2012). Those without health insurance and youth in the foster care system or living apart from their parents are also more vulnerable to disconnection (Bridgeland & Mason-Elder, 2012).

As we know, education is also profoundly important for later outcomes. Parental educational attainment is a predictor of disconnection (Carcillo et al., 2015), as are an immigrant background, being a child of divorce, and parental unemployment (Eurofound, 2012). Another important influence is the educational attainment levels of the youth themselves; lower educational attainment increases the likelihood of disconnection (Eurofound, 2012; Fernandes-Alcantara, 2015; Lauff et al., 2014; Radford, Fritch, Leu, Duprey, & Christopher, 2018), and lack of a high school credential is particularly bad for later employment and income outcomes (Julian & Kominski, 2011). Disconnected youth are at particular risk of faring poorly in the job market because they have often left high school without a diploma (Bridgeland & Mason-Elder, 2012).

Youth and young adults living in rural areas may also be more at risk than their peers in urban areas (Burd-Sharps & Lewis, 2017; Eurofound, 2012). Average disconnected youth rates may be as high as 22% in rural counties, in comparison to 14% in urban counties and 12% in suburban counties (Burd-Sharps & Lewis, 2017). Rural counties in the southern region of the United States have a particularly high youth disconnection rate of 24% (Burd-Sharps & Lewis, 2017). Furthermore, high county-level rates of unemployment, child poverty, children in single-parent households, teen births, and lower levels of educational attainment are associated with higher county-level rates of disconnected youth (Givens, Gennuso, Jovaag, & Willems Van Dijk, 2017).

Disconnection may be more likely when youth are in their early twenties than in their teenage years. One study found that the disconnection rate for those ages 16–19 is far lower at 4.6% than the disconnection rate for those ages 20–24, which is estimated at 11.2% (Ross & Svajlenka, 2016). Our study was designed to further clarify the importance of age for the likelihood of disconnection by exploring disconnection rates at the specific ages of 18, 20, and 26 for U.S. millennials who were high school sophomores in 2002.

Individual Impacts of Disconnection: Long-Term and Generational Outcomes

Decisions made during the critical years between adolescence and adulthood can have far-reaching and long-lasting impacts. Ironically, given the many risk factors faced by those who become disconnected youth, disconnection itself is likely to have long-term, negative impacts on their life outcomes and even perpetuate the cycle of poverty by diminishing opportunities for the children of disconnected youth. As we noted above, disconnected youth tend to have far lower educational attainment rates. Accordingly, their incomes tend to be low once they reach adulthood (Belfield et al., 2012; Hair et al., 2009), if they ultimately return to the labor force. They are at risk for long spells of unemployment, substance abuse, criminal behavior, and incarceration (Hair et al., 2009; Ross & Svajlenka, 2016). Those with a criminal record face significant challenges to employment and may earn less in the jobs available to them. Also ironically, youth with health conditions that lead them to opt out of the labor market may be unable to obtain a job that provides the health insurance they need (Hair et al., 2009). Perhaps most importantly, disconnected youth and young adults have an increased likelihood of raising children who may fare similarly (Belfield et al., 2012; Hair et al., 2009).

Not surprisingly, disconnection has more profound impacts the longer it lasts. Youth disconnected for 3 years or more face lower incomes for the long term, as well as a lack of health insurance and increased unemployment rates (Hair et al.,

2009). Young women disconnected for 3 years or more are more likely than their connected peers to obtain welfare support and food stamps (Hair et al., 2009). Youth who are disconnected for most of the years between ages 16 and 24 are even more likely to rely on welfare and other government support payments and to have limited earnings if they do enter the labor market.

As if these challenges were not enough, disconnected youth and young adults may also be more affected by downturns in the economy than their connected peers. The Great Recession disproportionately affected young workers in general and young men in particular (Carnevale, Hanson, & Gulish, 2013). Young workers who enter the workforce during periods of high unemployment may settle for positions that do not match their qualifications, which can result in lower earnings and reduced employment stability even 10–15 years later. Moreover, unemployment itself is associated with negative impacts on mental and physical health (Carnevale et al., 2013), which may further impede the likelihood of successfully obtaining stable employment and, accordingly, reduce earnings.

Thus, disconnected youth are often caught in a cycle of risk factors leading to disconnection leading to further risk factors for ongoing disconnection and poor outcomes. This cycle no doubt is related to the growing inequality in our nation, which now has rates of economic mobility lower than many European countries and Canada (Corak, 2016). Solutions to the disconnected youth problem stand to improve outcomes for individuals and families while also improving economic productivity and diminishing government outlays.

The Current Study

In this study, we aimed to contribute to the literature on factors influencing youth disconnection in order to illuminate potential solutions to this grave and costly problem impacting societies, families, and individuals. Rather than examining characteristics of all disconnected youth ages 16–24 as most prior studies have, we used longitudinal data on the cohort of 2002 high school sophomores to unpack differences by age. We focused specifically on predictors of disconnection at ages 18, 20, and 26 because these are the ages of participants in the ELS:2002 at each of the three follow-up data collection waves (Ingels, Pratt, Rogers, Siegel, & Stutts, 2005).

We used the longitudinal ELS:2002 data for several reasons. This rich data source provides the opportunity to better understand pathways youth and young adults take into and out of employment and education during these formative years. The large amount of information provided by the ELS:2002 data on individual high school students and their families also enables the use of regression analysis to determine which risk factors for disconnection pose the greatest risk and for whom. Thus, we investigated the extent to which disconnected youth remain in this status or later become students or workers, and then used predictive modeling to clarify the importance of specific risk factors. We also provide a close look at disconnected youth who are actively seeking work versus those who have dropped out of the labor force,[6] given that there may be important differences between these two groups, including differences in the supports that would help them to reconnect to society. Fortunately, the ELS:2002 includes data on inactive versus active disconnected youth.

Four questions guided our study of disconnected youth and young adults among 2002 U.S. high school sophomores through age 26:

1. What proportion of the population of 2002 U.S. high school sophomores were disconnected youth at approximately ages 18, 20, and 26? What proportion of disconnected youth were actively seeking employment and what proportion had dropped out of the labor force?
2. To what extent did 2002 U.S. high school sophomores follow a consistent path to education, employment, or disconnected youth status? What proportion of youth who were disconnected at one age were enrolled in school or employed at prior and subsequent ages?
3. To what extent do personal characteristics, such as gender, race/ethnicity, parental socioeconomic status (SES), and high school experiences, beliefs, and characteristics predict disconnection at ages 18, 20, and 26? To what extent does prior disconnection predict disconnection at ages 20 and 26?
4. To what extent do these student characteristics and experiences and high school characteristics predict inactive versus active disconnection at ages 18, 20, and 26?

We present our findings below in three parts. First, we present estimates of disconnection rates at ages 18, 20, and 26, along with a discussion of (a) how these age-specific rates compare to rates estimated for youth in the 16–24 age range and (b) contextual influences on disconnection rates for the ELS:2002 cohort. Second, we present path models

Table 1 Education and Employment Status of ELS:2002 Longitudinal Sample at Approximately Ages 16, 18, 20, and 26

	Grade 10/Age 16		Grade 12/Age 18		Age 20		Age 26	
	2002		2004		2006		2012	
Status	*N*	%	*N*	%	*N*	%	*N*	%
Overall status								
In education	2,767,943	100.0%	2,609,091	94.3%	1,657,432	59.9%	680,059	24.6%
In employment and not in school	–	0.0%	122,279	4.4%	966,530	34.9%	1,766,811	63.8%
Not in education, employment, or training	–	0.0%	36,573	1.3%	143,982	5.2%	321,073	11.6%
Disaggregated disconnected youth status (percentage of total population)								
Unemployed	–		36,573	1.3%	75,002	2.7%	211,132	7.6%
Inactive	–		–		68,979	2.5%	109,941	4.0%
Disaggregated disconnected youth status (percentage within disconnected youth population)								
Unemployed	–		36,573	100.0%	75,002	52.1%	211,132	65.8%
Inactive			–		68,979	47.9%	109,941	34.2%

Note. Author's calculations use the ELS:2002 data set (https://nces.ed.gov/surveys/els2002/).

documenting the pathways of 2002 high school sophomores into and out of education and employment and disconnection over the years of the ELS:2002 study, along with a discussion of how these pathways differed for those that did and did not complete high school. Finally, we present the results of predictive models comparing the relative contributions of risk factors and potential protective factors to the likelihood of disconnection at ages 18, 20, and 26. A complete account of the study methodology and data is available in Appendix A. All reported values were estimated using sample weights, which produce nationally representative estimates based on the ELS:2002 sample.

Youth Disconnection Rates at Ages 18, 20, and 26

In 2012, the U.S. Census Bureau (2017) noted 43.6 million youth between the ages of 15–24 in the United States, up from 39.1 million in 2000. Although many of these individuals have no doubt followed a traditional pathway from secondary school to postsecondary school and/or work, many have not taken a direct path from the dependence of adolescence into the independence of adulthood. We found that the proportion of disconnected youth among 2002 high school sophomores, based on the ELS:2002 longitudinal sample of 2,767,943 young people, varied drastically by age and tended to increase over time. The disconnection rate grew from only 1.3% at the end of high school (approximately age 18) to 5.2% at approximately age 20 to 11.6% at approximately age 26 (see Table 1). Thus, we see that disconnection is less common during the secondary school years, when most individuals are still in high school or at least working. The disconnection rate grows substantially by age 20, as young adults make their way out into the world and attempt to earn credentials or simply to earn a living. About 5% of 2002 high school sophomores were disconnected at age 20, and about 12% were disconnected at age 26.

The use of a range of youth ages by prior researchers may actually obscure the true picture because disconnection rates may vary sharply within the often-used 16-to-24 age range. For U.S. millennials who were high school sophomores in 2002, we find that their disconnection rates in 2012 were similar to those estimated for the U.S. cohort aged 16–24 in 2012 (13%–14%; Carcillo et al., 2015; Lauff et al., 2014) and for those aged 20–24 in 2015 (11.2%; Ross & Svajlenka, 2016). However, rates estimated for 16–24 year olds were far higher than our estimates of disconnection specifically among those aged 18 in 2004 and 20 in 2006. In contrast to our estimates of 1% at age 18 (in 2004) and 5% at age 20 (in 2006), disconnection rates for all youth in the16-to-24 age range were estimated at 15% in 2001 (Hair et al., 2009) and nearly 13% in 2008.[7] At the same time, the disconnection rate for 16–19 year olds was estimated at 5% for 2012–2014 (Ross & Svajlenka, 2016), and this estimate is much closer to our estimates for 18 and 20 year olds. Thus, we concur with the authors of a recent Brookings Institution report (Ross & Svajlenka, 2016) that disconnection may be more of a problem for young adults as they move away from the high school years and less of a problem for those still of high school age. Our findings also clarify that disconnection is a bigger problem at age 26 than at age 20, when young adults may still be connected to schools.

Unemployment rates varied during the years in which 2002 high school sophomores began building their lives. For the 16- to 19-year-old age group, the unemployment rate was 22% in 2002 and 21% in 2004, when 2002 high school

sophomores were ages 16 and 18, respectively. Unemployment rates for 20–24 year olds grew from 9% in 2006 to 16% in 2012 (National Center for Education Statistics [NCES], 2017), when 2002 high school sophomores were ages 20 and 26. The Great Recession clearly played a part in the disconnection rates of young adults making their way into the world in the late 2000s.

The Great Recession may also have led to increased enrollment in college, even among young adults. Associate's and bachelor's degrees and above attainment rates for 22–26 year olds increased from 32% to 35% from 2008 to 2012 (U.S. Census Bureau, 2016a). The bachelor's degree completion rate increased slightly more than the associate's degree completion rate during these years (24% to 26% vs. 8% to 9%, respectively). Millennials, on average, are earning proportionally more college degrees than people of comparable age in prior generations (Frey, 2018). Even so, a sizeable proportion of 2002 high school sophomores did not pursue college degrees and instead either sought employment or dropped out of the labor force altogether.

Inactivity Versus Unemployment Among Disconnected Youth

An important aspect of the problem of disconnected youth is the extent to which disconnection means dropping out of the labor force or continuing to seek employment. We found that nearly 66% of disconnected youth are, in fact, actively job searching (unemployed) at approximately age 26, while only 34% have dropped out of the labor force and are not seeking employment (inactive). This aligns with the 30% inactive and 70% active disconnected youth rates published by the NCES using the ELS:2002 longitudinal data (Lauff et al., 2014). These rates are in sharp contrast to the OECD-wide rate of inactive disconnected youth (NEETs), estimated at 58% in 2012 (Carcillo et al., 2015).[8] This difference is not as sharp at age 20, when 52% of disconnected youth are actively seeking work and 48% have effectively dropped out of the labor force.

Pathways Into and Out of Disconnected Youth Status: Changes Over Time

Next, we explore the extent to which young adults remain disconnected or engaged in society by examining the pathways of 2002 high school sophomores into and out of education, employment, and disconnection at approximately ages 18, 20, and 26. We first present these pathways for the complete sample (see Figure 1) and subsequently for those who were in education at age 18 (see Figure 2) and those who had already left high school by age 18 (see Figure 3). The separate presentation of pathways for these two groups enables us to compare education and employment decisions for those who remained in high school at the end of their senior year (12th grade) to the decisions of those who had already left high school.

Education and Employment Rates of 2002 High School Sophomores

Our overall path model diagram depicting education[9] and employment rates for the full longitudinal sample (Figure 1) highlights that an individual's status changes over time. Although many youth do take direct paths from high school to college and then employment, many do not. Moreover, those who were once in education or employed may well end up disconnected and those who were once disconnected may end up in education or employment at a later point. In fact, the majority of 2002 high school sophomores who were disconnected at age 26 had previously been employed or in school, or both. Only a small minority (4,731, or only 0.2%, of the complete longitudinal sample of 2,767,943 2002 high school sophomores, or 3% of those that left high school by age 18) were disconnected at ages 18, 20, and 26 (i.e., they were unemployed and not in education or training at all three time points; see Table 1 and Figure 1).

Age 18 Outcomes of 2002 Sophomores

The vast majority of 2002 high school sophomores (94%) were still enrolled in high school in Spring 2004, when they would have been approximately 18 years old. Just over 4% of all 2002 high school sophomores (4.4%) were working and not enrolled in school, and slightly more than 1 percent (1.3%) were disconnected youth at this age (see Figure 1 and Table 1). Gender may play a role in disconnected youth status at age 18 (see Appendix B), as females comprise over 61%

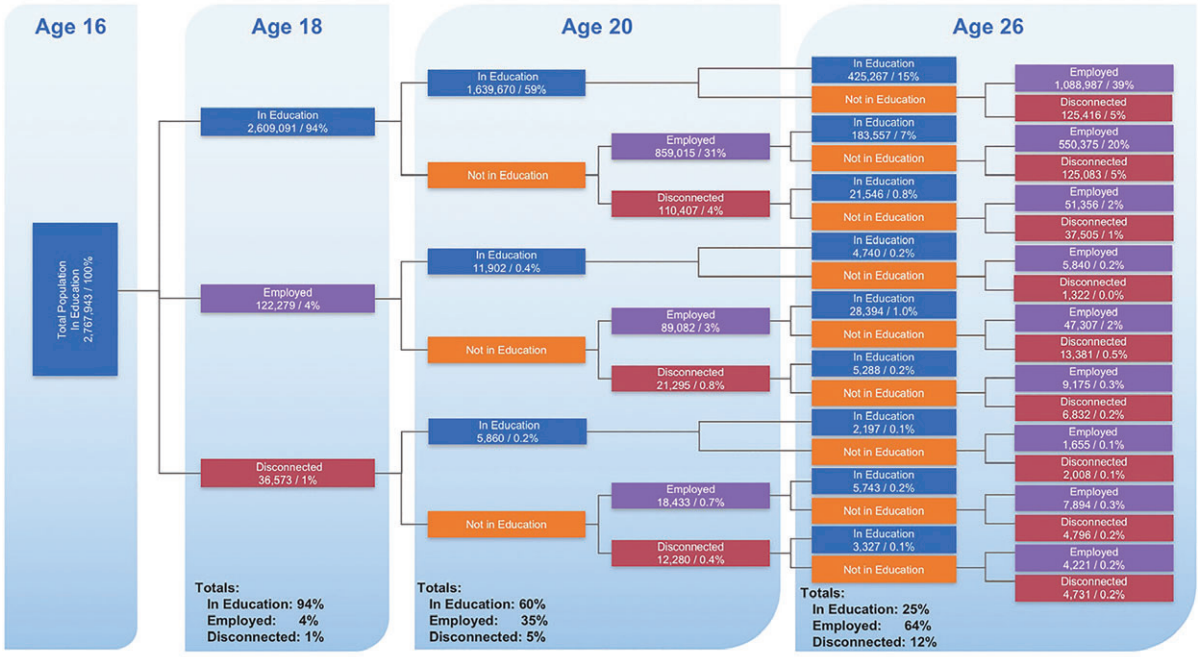

Figure 1 Education and employment pathways of 2002 high school sophomores at approximately ages 16, 18, 20, and 26. Percentages reported are of the full sample. Source: Authors' calculations using the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/).

of disconnected youth at this age, compared to only 52% of "connected youth" (e.g., those enrolled in school and/or employed). While dropping out of school tends to be more common among males (Burns & Roberts, 2012), teenage mothers are more likely than young fathers to be the primary caregivers of their children. It may also be that males who have not earned a high school credential are more likely to be working than their female peers.

Age 20 Outcomes of 2002 Sophomores

Two years later, in 2006, when 2002 high school sophomores would have been approximately 20 years old, nearly 60% were enrolled in some type of educational or training program, including 2- and 4-year colleges and high school equivalency courses (see Figure 1 and Table 1). Nearly 35% were working and not enrolled in school, and just 5.2% were disconnected (see Figure 1). As we previously stated, just over half (52%) of these disconnected youth were actively searching for work, while just under half (48%) had dropped out of the labor force. Gender continued to play a role at age 20; 59% of disconnected youth were female at this age, compared to only 52% of their peers enrolled in school and/or working (see Appendix B). Most inactive disconnected youth (69%) were female, compared to 51% of those that were disconnected but still actively looking for work.

Age 26 Outcomes of 2002 Sophomores

In 2012, when 2002 high school sophomores would have been about 26 years old, nearly 25% were enrolled in school, just under 64% were employed and not enrolled in school, and almost 12% were considered disconnected—not in school or working (see Figure 1 and Table 1). Sixty-six percent of age 26 disconnected youth were female, compared to 51% of those who were employed and/or in school (see Appendix B). As we noted above, the majority (66%) of age 26 disconnected youth were actively searching for work. In 2012, ELS:2002 surveys included questions about whether respondents had children. Using these data, we found that 47% of active disconnected youth reported having dependent children at home, compared to 59% of disconnected youth who had dropped out of the labor force. Thirty-four percent of unemployed active disconnected youth with dependents were female, compared to 58% of inactive disconnected youth with dependent children. Clearly, childrearing may be a common reason for being out of the workforce and not in school or seeking work.

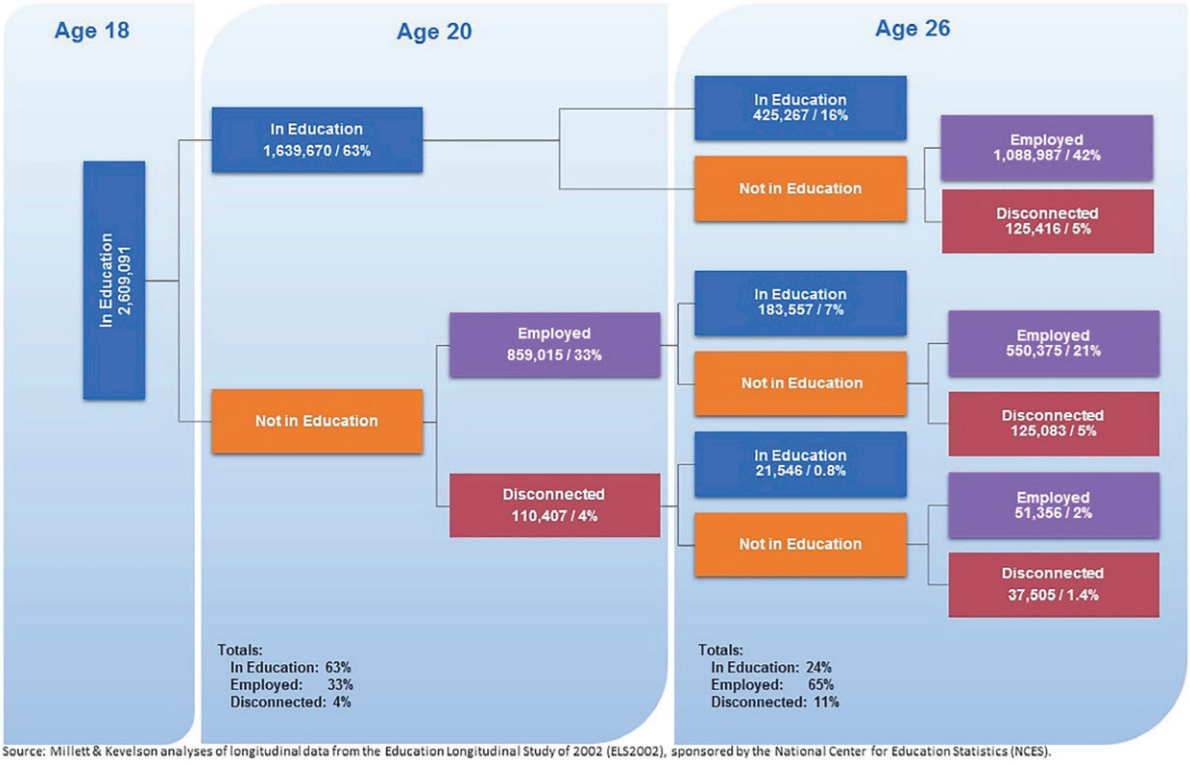

Figure 2 Education and employment pathways of 2002 high school sophomores at approximately ages 18, 20, and 26: Individuals remaining in school at age 18 (2004). Percentages reported are of individuals in education at age 18. Source: Authors' calculations using the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/).

Tracking Outcomes for Those Remaining in High School

In general, 2002 high school sophomores who remained in high school through the end of their senior year[10] were most often enrolled in school at age 20 and in the workforce by age 26 (see Figure 2). Regardless of which category those still enrolled in high school at the end of their senior year belonged to at age 20—in school, employed and not in school, or disconnected youth—by age 26, the majority were employed, the next largest group were in school, and relatively few were disconnected youth. This finding is not surprising, given the importance of high school graduation for employment and college enrollment. Youth who opt not to complete high school, or to do so in a less traditional manner, such as through high school equivalency courses and examinations, may simply be less likely to take traditional pathways to careers.

Age 20 Outcomes of Those Remaining in High School

Of the 94% of 2002 high school sophomores still enrolled in high school at the end of their senior year, most (63%) were enrolled in some type of educational or training program 2 years later, when they were approximately 20 years old (see Figure 2), primarily in 2- and 4-year colleges and universities. Nearly 33% were employed but not enrolled in school or training, and 4.2% were disconnected, not employed or enrolled in school, by age 20. Of those who were disconnected, about half were still actively seeking employment and the other half were out of the labor force.

Gender played a role in disconnected youth status at age 20 for those who were still enrolled in high school at the end of their senior year (see Appendix B). We found that 59% of all age 20 disconnected youth were female, compared to 52% of those enrolled in school and/or working. Moreover, 56% of the age 20 disconnected youth that had dropped out of the labor force were female, while females comprised only 44% of those still actively seeking work. Some of this difference may be explained by young women opting to stay home to care for young children, but we did not have data on this until the 2012 survey data collection wave, when participants were approximately age 26.

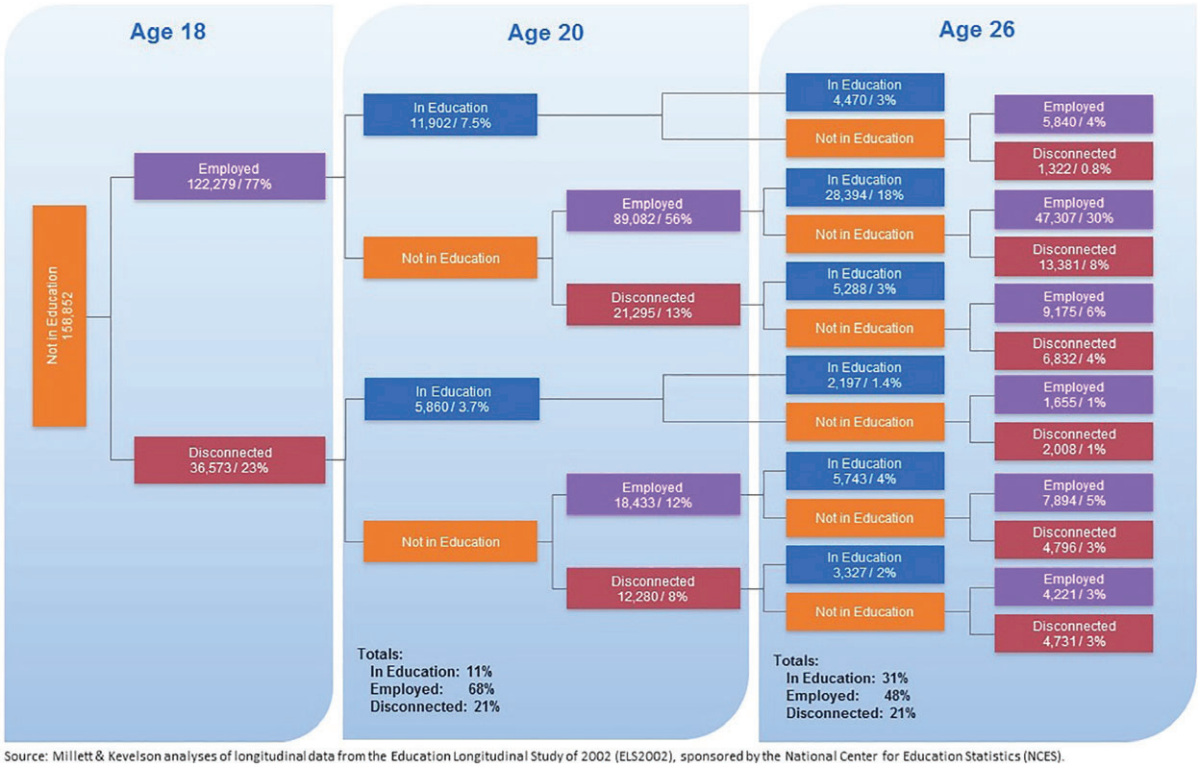

Figure 3 Education and employment pathways of 2002 high school sophomores at approximately ages 18, 20, and 26: Individuals not in school at age 18 (2004). Percentages reported are of individuals not in education at age 18. Source: Authors' calculations using the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/).

Age 26 Outcomes of Those Remaining in High School

Six years later, in 2012, when 2002 high school sophomores would have been about 26 years old, just over 24% were enrolled in school or training, nearly 61% were employed and not in school, and 11% were disconnected (see Figure 2). Gender seemed to play an even bigger role in disconnection at this age. Sixty-eight percent of these disconnected 26 year olds were female, compared with only 51% of 26 year olds enrolled in school and/or working. Sixty-four percent of disconnected 26 year olds were actively seeking work, and 36% were unemployed and out of the labor force. Females were even more overrepresented among those out of the labor force at age 26—84% of inactive disconnected 26 year olds were female, whereas 59% of disconnected 26 year olds still seeking employment were female (see Appendix B).

We found that childrearing was more common among those who were disconnected and out of the labor force (i.e., those who were not looking for work). While 45% of those who were actively seeking work had dependent children, this was the case for 58% of those who were out of the labor force.[11] Seventy-seven percent of active disconnected youth with dependent children were female, compared to 98% of disconnected 26 year olds who were rearing children and out of the labor force (see Appendix B).

Comparing Pathways for High School Leavers

In contrast to those who remained in high school through the end of 12th grade, at approximately age 18, those who left early were generally working at ages 20 and 26; at no age were the majority of students in this group enrolled in school (see Figure 3). Of those who had already left school at the end of 12th grade, at approximately age 18, 77% were employed and 23% were disconnected—a far greater proportion than the 1.3% of the full sample that were disconnected at this age. High school sophomores not enrolled in school at approximately age 18 were more likely to end up disconnected at approximately age 20 or 26 than those enrolled in school at age 18. While only 4% of those still enrolled in high school at the end of their senior year were disconnected at age 20, 21% of high school leavers were disconnected at this age (see Figure 3). Similarly, 11% of those who remained in high school were disconnected at age 26 (see Figure 2), 21% of those

who left high school early were disconnected, neither employed nor in school, at age 26 (see Figure 3). These patterns seemed to indicate that those who drop out of high school, as most of those not in school at the end of 12th grade had, are more likely to end up disconnected at ages 20 and 26. This is not surprising given the many risk factors that are associated with dropping out of high school (Burns & Roberts, 2012), and the high unemployment rates among those who do not earn a high school credential (Bureau of Labor Statistics, 2017).

Lower Education Rates

The employment and education path models also reveal that high school noncompleters may be less inclined to reenter education soon after high school, but they may end up doing so later on. The proportions of those in education are relatively low at age 20 for those who were out of school at the end of 12th grade (11%) but similar to the education participation rates of those still enrolled in high school at the end of their senior year by 2012. For instance, 63% of those still enrolled in high school at the end of their senior year were enrolled in school in 2006, at approximately age 20 (see Figure 2), whereas just over 11% of high school leavers were enrolled in school at the same age (see Figure 3). However, in 2012, at approximately age 26, 24% of those still enrolled in high school at the end of their senior year were enrolled in school, whereas 31% of high school leavers were enrolled. In fact, the average age of high school equivalency completion is 26.5 years, which is in line with the implications of our findings (Educational Testing Service, 2017).

Repeated Disconnection

Patterns in pathways of disconnected youth also pointed to the persistence of challenges that led to repeated or ongoing disconnected youth status (see Figure 3). Thirty-two percent[12] of those who were disconnected youth at age 18 were once again unemployed and out of school at age 26 (i.e., they experienced repeated episodes of disconnection). Evidently some individuals seem to find it particularly challenging to remain in the labor market or in training for it, likely due to the many risk factors facing disconnected youth and the negative impacts of periods of disconnection. As we noted above, approximately 34% of those who were disconnected youth at age 18 and back in school at age 20 were disconnected again at age 26.[13] This proportion is actually similar to the 38% of 2004 and 2006 disconnected youth who were in this category again in 2012.

Gender and Disconnection

In contrast to those still enrolled in high school at the end of their senior year, gender was not always a major factor in disconnected youth rates for high school leavers (see Appendix B). When high school leavers were approximately age 26, in 2012, 54% of those who were disconnected and 44% of their connected peers were female. Gender played more of a role when high school leavers were age 20, in 2006—63% of those who were disconnected were female, compared to 42% of their connected peers. Gender did, however, seem to be a possible factor in rates of active versus inactive disconnected youth among high school leavers. When high school leavers were age 20, in 2006, 49% of those who were actively disconnected—still seeking jobs—were female, compared with 83% of inactive disconnected youth. This difference was slightly smaller by the time high school leavers had reached age 26 in 2012—43% of active disconnected youth and 67% of inactive disconnected youth were female by this point.

Childrearing and Disconnection

Gender differences in high school leavers' rates of opting out of the labor force may be only partially explained by the fact that slightly more inactive disconnected 26 year olds than active disconnected 26 year olds had dependent children—61% versus 59% (see Appendix B). However, all inactive disconnected youth with dependent children were female, and only 51% of actively job-seeking disconnected youth with children were female. Compared to those still enrolled in high school at the end of their senior year, female high school leavers who were disconnected at age 26 and had children were less likely to be seeking employment (51% vs. 77%, respectively). This finding may not be surprising given that high school leavers tend to earn substantially less than high school and college completers (Burns & Roberts, 2012).

To provide a more rigorous comparison between disconnected youth and those who were employed and/or enrolled in school, in the next section we present the results of regression analyses exploring the extent to which various student

background factors, and some school characteristics, predict the likelihood of being a disconnected youth at ages 18, 20, and 26.

Demographic and Academic Backgrounds: Disconnected Youth Compared to Their Connected Peers

To set the stage for our regression analyses comparing the relative associations of various factors with disconnection, we provide a comparison of the demographic characteristics and high school experiences and behaviors of those who were disconnected to those who were not at approximately ages 18, 20, and 26. In accordance with prior research (Belfield et al., 2012; Burd-Sharps & Lewis, 2017; Hair et al., 2009; Ross & Svajlenka, 2016), disconnected youth at all three ages tended to be from lower SES households (see Table 2). They were also more often female, perhaps not surprisingly given that some portion of disconnected youth have opted to leave the labor force, or delay their entry into it, to care for young children. While this contrasts with findings by other researchers (Belfield et al., 2012; Ross & Svajlenka, 2016), we must emphasize that females were more likely to be disconnected after we controlled for many other relevant factors. We should also note that including the ELS childrearing data revealed that, not surprisingly, childrearing clearly explained the disconnection of young females. More individuals with children were disconnected at age 26, and more females than males with children were disconnected. In fact, females with children were more than twice as likely as those without children to be disconnected.

Regardless of their age, disconnected youth and young adults were more often from disadvantaged racial minority groups.[14] In other words, Asian and White individuals were less often disconnected whereas Hispanic or Black young people were more often disconnected. Those from other race groups, including Native American and multiracial youth and young adults, were also more often disconnected.

The high school experiences and behaviors of those who ended up disconnected clearly indicated less engagement in high school and lower academic performance. At ages 18, 20, and 26, 2002 high school sophomores who were disconnected more often had fewer reading and mathematics skills and lower levels of academic self-efficacy (ASE; e.g., their belief in their ability to succeed in English and mathematics courses). They also engaged more often in problematic behaviors such as skipping classes, arriving late to school, or other behaviors that resulted in suspensions. Disconnected youth and young adults were more likely to have been students with special needs (i.e., they had an individualized education plan) while in high school.

Not surprisingly, 2002 high school sophomores who ended up disconnected were less likely than their connected peers to have had a grade point average (GPA) higher than 2.0 (on a 4.0 scale). However, the difference between the two groups diminishes substantially by age 26, at which point this minimum GPA was less of a protective factor and there was less difference between those who were disconnected and those who were not in terms of high school GPA.

The same is true for taking the *PSAT*® examination, an indicator of being on a college preparation track, in 10th grade—fewer of those who took the PSAT were disconnected at ages 18 than at age 20, and so on. Finally, we see that more disconnected youth than connected youth and young adults attended high schools in the western United States. Disconnected youth more often attended public schools. Those who were disconnected at age 18 more often attended urban schools and less often attended rural schools.

Comparing the Influence of Predictors of Disconnection

To address our third research question, on factors associated with disconnection, we used logistic regressions[15,16] to model relationships between student demographic and academic characteristics and disconnection at the end of 12th grade (at approximately age 18), 2 years after the end of high school (at approximately age 20), and 8 years after the end of high school (at approximately age 26). These analytic models enabled us to compare the relative contributions of each student demographic characteristic, each high school experience, and each high school characteristic by simultaneously holding constant the other characteristics and experiences related to disconnection.

Our first models included only SES, gender and race, because they have been shown to be associated with educational outcomes (Arnold & Doctoroff, 2003; Ready, LoGerfo, Burkam, & Lee, 2005), which predict career outcomes. Moreover, males and low-income and disadvantaged minority students are more likely to drop out of high school (Burns & Roberts, 2012).

Table 2 Disconnected Youth Versus Youth Connected to Education or the Workforce at Approximately Ages 18, 20, and 26: Means and Frequencies of Student and School Characteristics

Characteristics	Age 18 Disconnected Mean/ percentage (*SD*)	Age 18 Connected Mean/ percentage (*SD*)		Age 20 Disconnected Mean/ percentage (*SD*)	Age 20 Connected Mean/ percentage (*SD*)		Age 26 Disconnected Mean/ percentage (*SD*)	Age 26 Connected Mean/ percentage (*SD*)	
Student characteristics									
Student socioeconomic status	−0.878 *(0.87)*	0.012 *(1.00)*	***	−0.606 *(0.87)*	0.033 *(1.00)*	***	−0.334 *(1.00)*	0.044 *(0.99)*	***
Female	61.1	52.3	***	59.4	52.0	***	66.0	50.6	***
White	28.0	14.6	***	42.7	63.7	***	55.2	63.6	***
Hispanic	2.5	97.5	***	23.7	14.3	***	20.0	14.1	***
Asian	0.8	3.9	***	3.5	3.9	***	3.2	4.0	***
Black	25.4	13.5	***	21.2	13.2	***	14.1	13.6	***
Other race	9.2	5.0	***	8.8	4.8	***	7.4	4.7	***
White female	24.3	33.0	***	25.8	33.2	***	39.6	32.0	***
Hispanic female	18.7	7.7	***	15.0	7.5	***	12.5	7.3	***
Asian female	0.0	2.0	***	1.6	2.0	***	1.6	2.0	***
Black female	13.3	7.0	***	11.0	6.9	***	7.9	7.0	***
Other race female	4.8	2.5	***	6.1	2.4	***	4.4	2.3	***
Special needs student in high school	19.7	8.8	***	26.1	8.0	***	17.7	7.8	***
Exhibited problem behaviors in high school	0.731 *(1.10)*	−0.010 *(0.99)*	***	0.447 *(1.20)*	−0.025 *(0.98)*	***	0.194 *(1.14)*	−0.026 *(0.98)*	***
GPA > 2.0 (on a scale of 0 to 4.0)	25.5	82.5	***	53.7	83.2	***	71.5	83.1	***
10th grade math exam score	−0.860 *(0.79)*	0.012 *(1.00)*	***	−0.778 *(0.94)*	0.043 *(0.99)*	***	−0.399 *(1.00)*	0.052 *(0.99)*	***
10th grade reading exam score	−0.667 *(0.94)*	0.009 *(1.00)*	***	−0.644 *(0.95)*	0.035 *(0.99)*	***	−0.337 *(1.00)*	0.044 *(0.99)*	***
Took PSAT exam sophomore year	5.3	49.3	***	13.3	50.7	***	31.0	51.1	***
Academic self-efficacy in high school	−0.457 *(0.87)*	0.006 *(1.00)*	***	−0.447 *(0.98)*	0.025 *(1.00)*	***	−0.249 *(1.00)*	0.033 *(1.00)*	***
Has children (age 26 only)							50.7	31.6	***
Female with children (age 26 only)							42.1	17.7	***
School characteristics									
Northeastern school	18.2	18.4		14.0	18.6	***	16.1	18.7	***
Midwest school	14.2	25.3	***	26.0	25.1	***	21.1	25.7	***
Southern school	37.4	34.6	***	35.9	34.6	***	35.8	34.5	***
Western school	30.3	21.6	***	24.1	21.6	***	27.0	21.1	***
Suburban school	44.5	51.1	***	50.5	51.1	***	50.6	51.1	***
Rural school	15.0	20.5	***	19.0	20.5	***	19.3	20.5	***
Urban school	40.5	28.4	***	30.6	28.4	***	30.1	28.4	***
Public school	98.1	91.9	***	97.7	91.7	***	94.6	91.6	***
Private school	1.9	8.1	***	2.3	8.3	***	5.4	8.4	***

Note. GPA = grade point average. All continuous variables were z-scored; thus, measures for the overall sample have mean = 0 and *SD* = 1. The original socioeconomic status scale was 0 – 1.82, mean = 0.63, and *SD* = 0.43. Regions were defined as follows: Northeast = CT, ME, MA, NH, NJ, NY, PA, RI, VT; Midwest = IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI; South = AL, AR, DE, DC, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV; and West = AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY. School characteristics are dichotomous indicator variables.

***$p < .001$.

We then added interaction terms for race and gender because racial differences in disconnection rates are likely due in part to gender differences. In models with interaction terms, *female* represents White females, and race dummy variables represent males of each race, while race and gender interaction terms represent females of each race. Specifically, race/ethnicity dummy variables were set = 1 for all individuals of a certain race/ethnicity in models with and without race/ethnicity by female interaction terms. Whereas in initial models the gender and race dummy variables represented females and all individuals of each race/ethnicity, respectively, the addition of race/ethnicity by female interaction terms resulted in the overall race/ethnicity dummy variables representing only male individuals and the female indicator variable

representing only White females. The addition of the race/ethnicity by female interaction terms enabled us to compare the likelihood of disconnection among young men and women from different racial and ethnic backgrounds with that of young White men and women.

Next, we tested the inclusion of various measures of high school academic abilities, experiences, and attitudes, because academic success or failure, consistent engagement in schooling, and positive attitudes toward school could be important predictors of disconnection. Perhaps even more importantly, academic skill levels could be one of the most important factors in educational and employment outcomes (Sands & Goodman, 2018) among both disconnected and connected young adults. We specified separate models with reading and mathematics test scores because the correlation of these variables could cause inaccurate logistic regression estimates.

We also included variables representing status as a parent of dependent children and an interaction term representing females with dependent children in our models of disconnection at age 26 (this information was not available at earlier ages). In analytic models without this interaction term, *Has children* represented all individuals with children. After the addition of the interaction term representing females with dependent children, the *Has children* variable represented only males with children.

To control for variations in high schools' contributions to students' outcomes, we included measures of schools' geographic region, urbanicity (rural, urban, or suburban), and control (public or private) based on a presumption that student disconnection rates may be influenced by differences in school resources and by differences in the employment opportunities and supports for at-risk individuals by geographic location. Moreover, the final models predicting disconnection at ages 20 and 26 included indicators of disconnection in prior years, to account for the increased likelihood of future disengagement revealed by our path models. Thus, the final models were lagged-variable cross-sectional models.

The following sections detail the results of logistic regression models of the likelihood of 2002 U.S. high school sophomores ending up disconnected, that is, neither employed nor in education, at approximately ages 18 (in 2004), 20 (in 2006), and 26 (in 2012). In each section, we explore the extent to which high school academic experiences and student background characteristics are related to disconnection. The importance of these factors changes over time, as we note above. However, although students' home backgrounds and academic factors were less salient as they grew older, race, gender, and some high school experiences continued to influence outcomes even at age 26.

Note that we present a summary table of the results of the final regression models for each time point, to enable comparisons over time. Results of the full sets of models specified for each age are presented in Tables C1 to C4.

Predictors of Disconnection at Age 18

Disconnection at Age 18: Academic Experiences Attitudes and Abilities

We expected that high school experiences and academic abilities would be particularly salient factors predictive of disconnection at a time when students should be completing high school and preparing for postsecondary school or jobs. Indeed, we found that students with high school GPAs greater than 2.0[17] (NCES, 2011) were only 10% as likely as their peers with lower GPAs to be unemployed and out of school at the end of high school (see Table 2; OR [odds ratio] = 0.10 – 0.11; $p < .001$). Thus, GPA may be a protective factor, as it signals at least a basic level of engagement in high school academics.

Surprisingly, other factors related to academic success in high school, including scores on the ELS: 2002 10th grade reading and mathematics tests, status as a student with special educational needs or disabilities, problematic behaviors, and ASE were not related to the likelihood of being disconnected at the end of high school after holding constant all other academic and background factors. It seems disconnection at age 18 is primarily related to SES, race, and high school GPA, which can be viewed as a proxy for skills level and engagement.[18]

Disconnection at Age 18: Race, Gender, Socioeconomic Status

We expected that student demographic factors such as race, gender, and SES would play a large role in determining the likelihood of ending up disconnected by the end of high school, given that low-income and disadvantaged minority students, and males, are more likely to drop out of high school (Burns & Roberts, 2012). Indeed, our model of age 18 disconnection including only race, SES, and gender (see Model 1 in Table C1), shows that those from a high-SES background were 58%

Table 3 Protective and Risk Factors for Disconnection at Ages 18, 20, and 26: Final Logistic Regression Results

	Age 18 DY		Age 20 DY		Age 26 DY	
Protective and risk factors	Reading	Math	Reading	Math	Reading	Math
Student socioeconomic status (SES)[a]	0.49	0.51	0.75	0.77	0.86	0.86
White female (vs. White male)[b]	2.36	2.28	1.79	1.70	1.59	1.55
Hispanic male (vs. White male)						
Asian male (vs. White male)[c]			2.14	2.18		
Black (vs. White male)						
Other race male (vs. White male)					2.13	2.10
Hispanic female (vs. White female)[d]					0.71	0.70
Asian female (vs. White female)[d]					0.64	0.65
Black female (vs. White female)[d]					0.50	0.49
Other race female (vs. White female)[d]					0.95	0.95
Has children (age 26 only)					0.57	0.57
Female with children (age 26 only; vs. females without children)[e]					2.49	2.47
Special needs student			2.66	2.19	2.01	1.93
Exhibited problem behaviors						
GPA > 2.0 (on a 4.0 scale)	0.10	0.11	0.50	0.53		
Took PSAT exam 10th grade (proxy for academic track)[f]			0.37	0.39	0.73	0.74
Academic self-efficacy in high school			0.85	0.88	0.92	
10th grade math exam score				0.78		
10th grade reading exam score						
Disconnected Youth at age 18 (in 2004)			3.68	3.64		
Disconnected Youth at age 20 (in 2006)					2.53	
Constant	0.02	0.02	0.05	0.04	0.08	0.08

Note. DY = disconnected youth; GPA = grade point average; light grey shading = factors predicting a lower likelihood of disconnection; dark grey shading = factors predicting a greater likelihood of disconnection. Table presents odds-ratios; outcome variables are indicators of disconnection; logistic regressions conducted on weighted data from the ELS:2002 longitudinal sample representative of the population of US sophomores in 2002; all results presented are statistically significant at least at the $p < 0.05$ level.

[a]Cells highlighted in light grey indicate factors predicting a lower likelihood of disconnection.

[b]Cells highlighted in dark grey indicate factors predicting a greater likelihood of disconnection.

[c]No Asian students were in the disconnected youth category at age 18 (in 2004), thus age 18 models excluded Asians. Non-significant results are excluded from this table but included in Appendix C Tables C1-C4.

[d]Female by race interaction term odds ratios are the product of the odds ratio for each interaction term and the odds ratio for each race/ethnicity, respectively. For example, the odds ratio shown here for Hispanic females is the product of the odds ratio for Hispanic female and the odds ratio for Hispanic. See Tables C1-C4 for odds ratios for all variables in the models.

[e]Measure of having dependent children and female with children interaction term only included in age 26 models; odds-ratios shown here for female with children interaction are the product of odds ratio for female with children and odds ratio for has children.

[f]No student that had taken the PSAT in 10th grade (in 2002) was disconnected at age 18 (in 2004), thus age 18 models excluded this variable.

less likely to be disconnected at age 18 (OR = 0.42; $p < .001$). Black students, and those from other racial backgrounds, including Native Americans and multiracial individuals, were at least twice as likely to end up disconnected at age 18 before we controlled for academic abilities, attitudes, and experiences.

SES remained a significant predictive factor in models with all controls (see Table 3 or Table C1); students from higher SES backgrounds were about half as likely as their less affluent peers to be disconnected at the end of high school, even after controlling for other demographic and academic factors (OR = 0.49 – 0.51; $p < .001$). However, after controlling for academic experiences, attitudes, and abilities, being a racial minority no longer predicted a greater likelihood of disconnection. Interestingly, White women were over twice as likely to be disconnected as White males at age 18, after controlling for high school academic factors and SES. This finding is likely explained by teenage parenthood.

School characteristics were not significantly associated with disconnection at age 18, after accounting for student demographic and academic characteristics. It seems that student characteristics and experiences matter more than whether or not they attend a private or public high school or an urban, rural, or suburban high school. There were also no significant differences in the odds of disconnection among high schools in different regions of the United States.

Predictors of Disconnection at Age 20

We find that those who were disconnected at age 18 were over 3.5 times as likely to be disconnected again at the next ECLS:2002 survey wave, in 2006, when participants would have been about 20 years old (OR = 3.6 – 3.7; $p < .05$). For 2002 U.S. high school sophomores, disconnection at age 18 was the most powerful factor associated with disconnection at age 20.[19] Clearly there was a certain segment of the young adult population facing significant challenges associated with obtaining educational credentials or jobs.

Disconnection at Age 20: Academic Experiences, Attitudes, & Abilities

While a GPA greater than 2.0 continued to be a protective factor, reducing the likelihood of disconnection at age 20 as it did at age 18, the extent of protectiveness declined; at age 18, those with this minimum GPA were only about 10% as likely to be disconnected ($p < .001$), whereas they were about 50% as likely to be disconnected at age 20 ($p < .001$).

Other academic abilities, attitudes, and choices were predictive of disconnection at age 20 but not at age 18. The only academic risk factor, being a special needs student in 10th grade, increased the odds of disconnection by 2.2 – 2.7 times ($p < .001$). The most protective academic factor was being on a college preparatory track; 10th grade mathematics ability was less protective, and ASE was only slightly protective. Being on a college preparatory track in 10th grade, as measured by the choice to take the PSAT, predicts a 61% to 63% lower likelihood of disconnection at age 20 ($p < .001$). Those with higher 10th grade mathematics, but not reading, examination scores were 78% as likely/22% less likely to be disconnected at age 20 ($p < .05$). The same was true for ASE, which is slightly protective, but only predicts a 12% to 15% lower likelihood of disconnection ($p < .05$).

Disconnection at Age 20: Race, Gender, and SES

As they did at age 18, demographics continued to play a key role in disconnection from society at age 20. We found that SES remained a significant predictor of disconnection at age 20, as it did at age 18, albeit with less of a protective impact at age 20, when higher SES young adults were 23% to 25% less likely to be disconnected ($p < .001$). Young White women continued to more likely than young White men to be disconnected youth at age 20 (OR = 1.7 – 1.8; $p < .001$). Black men were more likely than White men to be disconnected until we accounted for differences in high school engagement behaviors and academic abilities, after which point this association was nonsignificant. However, Asian males became more than twice as likely as White males to be disconnected at age 20, after we accounted for these factors.

As was the case at age 18, school characteristics were not significantly associated with disconnection at age 20, after accounting for student demographic and academic characteristics. Again, school characteristics did not seem to be as important as individual student characteristics and background.

Predictors of Disconnection at Age 26

Our final set of logistic regression models explored the relative contributions of demographic and academic factors to disconnection at age 26 (see Table 4). We found that, not surprisingly, those who were disconnected at age 20 were 2.5 times more likely to be disconnected youth at the final ELS:2002 survey wave, when they would have been approximately 26 years old ($p < .001$). However, this was only the case for the model with 10th grade reading test scores and not for the model including 10th grade mathematics test scores. Moreover, disconnection at age 18 was not significantly associated with disconnection at age 26. This surprising finding seems to indicate that disconnection at the end of high school does not necessarily increase the odds of later disconnection. In other words, disconnection is sometimes only temporary, as it clearly was for some young adults in this cohort. Furthermore, given that the final models account for disconnection due to childrearing, we can conclude that disconnection for other reasons is not influenced by disconnection at age 18.

Disconnection at Age 26: Academic Experiences, Attitudes, and Abilities

Some high school engagement behaviors and abilities continued to influence education and employment outcomes at age 26, as shown by the extent to which they predicted disconnection 10 years after the first wave round of ELS:2002 surveys. As it did at age 20, status as a special needs student in 10th grade predicted a greater likelihood of ending up disconnected

Table 4 Predictors of Being Out of the Labor Force (Inactive Disconnected Youth [DY]) Versus Disconnected and Actively Seeking Work at Ages 20 and 26

	Age 20 DY		Age 26 DY	
Protective and risk factors	Reading	Math	Reading	Math
Student socioeconomic status (SES)				
White female (vs. White male)[a]	1.75	1.79	3.21	3.21
Hispanic male (vs. White male)				
Asian male (vs. White male)				
Black male (vs. White male)[b]	0.44			
Other race male (vs. White male)				
Hispanic female (vs. White female)				
Asian female (vs. White female)[c]			0.39	0.37
Black female (vs. White female)[c]			0.17	0.18
Other race female (vs. White female)				
Has children (age 26 only)			0.14	0.15
Female with children (age 26 only; vs. females without children)[d]			1.61	1.61
Special needs student in HS				
Exhibited problem behaviors in HS				
GPA > 2.0 (on a 4.0 scale)				
Took PSAT exam 10th grade (proxy for academic track)				
Academic self-efficacy in HS				
10th grade math exam score				
10th grade reading exam score				
Disconnected Youth at age 18 (in 2004)				
Disconnected Youth at age 20 (in 2006)				
Midwest high school	0.38	0.38		
Southern high school				
Western high school			2.17	2.16
Rural high school			1.81	1.83
Urban high school				
Private high school				
Constant			0.12	0.12

Note. GPA = grade point average; dark grey shading = factors predicting a greater likelihood of disconnection; light grey shading = factors predicting a lower likelihood of disconnection. Table presents odds-ratios; outcome variables are indicators of inactive disconnection; logistic regressions conducted on weighted data from the Education Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002; all results presented are statistically significant at least at the $p < 0.05$ level.

[a]Cells highlighted in dark grey indicate factors predicting a greater likelihood of disconnection.

[b]Cells highlighted in light grey indicate factors predicting a lower likelihood of disconnection.

[c]Female by race interaction term odds ratios are the product of the odds ratio for each interaction term and the odds ratio for each race/ethnicity, respectively. For example, the odds ratio shown here for Asian females is the product of the odds ratio for Asian female and the odds ratio for Asian. See Tables C5-C7 in Appendix C for odds ratios for all variables in the models.

[d]Measure of having dependent children and female with children interaction term only included in age 26 models; odds-ratios shown here for female with children interaction are the product of odds ratio for female with children and odds ratio for has children.

at age 26. Those who were special needs students during their sophomore year of high school in 2002 were about twice as likely to be disconnected at age 26 ($p < .001$). In fact, status as a special needs student in 10th grade predicted a likelihood of disconnection at age 26 (OR = 1.9 – 2.0; $p < .001$), nearly as strongly as at age 20 (OR = 2.2 – 2.7; $p < .001$). It may be that the disabilities that led to the receipt of special educational services continued to impact educational progress and/or employment prospects or stability into the adult years, when accommodations and supportive services may no longer have been available for some disabled young adults.

Being on a college preparatory track in high school seemed to be a protective factor that reduced the likelihood of disconnection at age 16, whereas most other academic background factors, including mathematics ability, were no longer associated with disconnection in our final model of age 26 outcomes (see Table 4). It seemed that neither high school reading and mathematics abilities nor high school GPA were related to the likelihood of disconnection at age 26. Being on a college track predicted a 26% to 27% lower likelihood of disconnection at age 26, highlighting the importance of

academic support programs for at-risk populations. ASE in 10th grade predicted an 8% lower likelihood of disconnection about 10 years later; thus, while it was less protective than being on a college track, ASE may be an important factor to consider when planning for potential interventions.

Disconnection at Age 26: Race, Gender, and SES

Although SES was still a highly significant predictor of disconnection at age 26, SES played a lesser role 8 years after expected high school graduation than it did at the end of high school. We found that, after controlling for demographics and academic engagement and abilities, young adults from higher SES families were only 14% less likely to be disconnected at age 26, whereas they were 50% less likely to be disconnected at age 18 ($p < .001$). The effect of SES on the likelihood of disconnection clearly diminished over time. Its influence was also tempered by high school academic engagement and abilities.

Gender continued to be a strong predictor of disconnection among White women, even after controlling for childrearing. Not surprisingly, women with children were nearly 2.5 times as likely to be unemployed and out of school at age 26 ($p < .001$). Even after accounting for the "stay at home mom" effect, we find that young White women were over 1.5 times as likely as young White men to be disconnected at age 26. At the same time, young women from all racial minority groups — Asian, Hispanic, Black, and "other race" — were less likely than White women to be disconnected at age 26. Given that these comparisons excluded those with children, a possible explanation is that white women may be more likely to be disconnected than minority women because they are more likely to be married (Raley, Sweeney, & Wondra, 2015).

Young White men were less likely than young minority men to be disconnected at age 26, until we adjusted for differences in school characteristics. After holding constant school sector, urbanicity, and region, only "other race" young men — including Native Americans and multiracial individuals — were more likely to be disconnected than young White men. The odds that they will end up disconnected were 2.1 times higher than those for young white men ($p < .01$). These higher odds are likely explained by the many risk factors and challenges faced by some racial minority individuals in general, and by Native Americans in particular.

As was the case at ages 18 and 20, high school characteristics were not significantly associated with disconnection at age 26. As the next section will show, high school characteristics were not as important as individual student characteristics and background factors when it came to the odds of being both unemployed and out of school midway through the twenties.

Predictors of Disconnection and Dropping out of the Labor Force

Next we sought to address our fourth and final research question, on factors predictive of not just disconnection, but also dropping out of the labor force rather than actively seeking employment. We specified additional logistic regression models to explore which academic and demographic factors might be predictive of youth and young adults dropping out of the labor force (see Appendix C, Tables C5–C7). Our models compared inactive disconnected youth and young adults (i.e., those who had dropped out of the labor force) to those who had disconnected but were still actively seeking employment. Because data on inactive versus active unemployment rates were only collected when ELS:2002 sample members were approximately ages 20 and 26, we present results only for these two time points. In each section below, we explore the extent to which high school academic experiences and student background characteristics are related to inactive, rather than active, disconnection. The main takeaways of these findings were that race, gender, and high school region were the only salient predictors of inactive disconnection. Final models are discussed in this section, and all models are displayed in Appendix C Tables C5, C6, and C7.

Student Characteristics Predictive of Inactive Disconnection

Whereas SES was a significant and consistent predictor of disconnection overall, it was not associated with the likelihood of ending up inactive and disconnected at age 20 or 26 (see Table 4). High school academic abilities, attitudes, and experiences were also not associated with the odds of inactive or active disconnection at either age, although they were associated with disconnection overall.

Race and gender were related to inactive disconnection to some extent at age 20 and even more at age 26. At age 20, White females have 75% to 80% higher odds of being inactive and disconnected, compared to White males. However,

given that we had no measure of childbearing to include at this age, it is safe to assume that some of these higher odds would be explained by young women staying home to care for children. Interestingly, we found that minority women were no more or less likely to be inactively disconnected at age 20. At age 26, when we were able to hold constant childrearing rates among young men and women in general, as well as female childrearing in particular, we find that young White women were over 2 times more likely to be inactively disconnected than actively disconnected, compared to their White male counterparts. At the same time, disconnected Asian young women were nearly 80% less likely to be inactively disconnected, and disconnected young Black women were nearly 85% less likely to be inactive—to have dropped out of the labor force. Women in these groups may be more likely to be disconnected only temporarily because odds are they are continuing to seek employment opportunities. This trend may be related to higher rates of marriage among White women than among Asian and Black women (Raley et al., 2015). It may also be that we are seeing the effects of cultural differences (Hamermesh, Genadek, & Burda, 2017) or that Asians from lower income and lower wealth groups tend to continue to search for jobs while they are disconnected, given high rates of income and wealth inequality among Asians (Weller & Thompson, 2016).

Childrearing had a clear impact on the odds of continuing to search for work or dropping out of the labor force. Disconnected young fathers were 85% less likely to drop out of the labor force than young men without children, whereas disconnected young mothers were over 1.5 times more likely to be out of the labor force and not seeking employment ($p < .001$). We can assume that disconnected young mothers are more likely to opt not to work outside the home while rearing their children, whereas disconnected young fathers are generally looking for work and probably seeking to support their family.

School Characteristics Predictive of Inactive Disconnection

Whereas school characteristics were not significantly associated with disconnection overall, we found that students attending certain types of schools may be more likely to be disconnected and out of the labor force than disconnected but actively seeking work. Young adults who attended rural high schools have higher odds of being out of the labor force altogether once they are disconnected at age 26. This trend may be related to overall higher unemployment rates in rural areas (U.S. Department of Agriculture, 2018) which may lead to higher rates of labor force drop-out.

We also found that the region in which students attended high school may relate to their likelihood of being inactively or actively disconnected. Disconnected young adults that attended a high school in the midwestern region of the United States are 62% less likely to be out of the labor force and more likely to be actively seeking work at approximately age 20 (Bureau of Labor Statistics, 2007). This trend is surprising, given the slightly higher unemployment rate in the Midwest in 2006. In contrast, when we looked at the results for age 26, we found that students who attended a western high school were twice as likely to be out of the labor force as seeking work. This finding may be related to the high unemployment rate in the western region of the United States in 2012 (Bureau of Labor Statistics, 2013).

Regression Findings Summary

In the final models with all controls included, we identified a range of protective and risk factors for disconnection at each age. This range broadened as individuals aged and some high school experiences, behaviors, and demographic factors became more salient. While SES was a consistent predictor of disconnection, the protectiveness of a higher SES, and the risk associated with a lower SES, diminished as individuals aged. Moreover, the direction of the SES effect despite the possibility of some higher SES young adults taking voluntary breaks from school or work confirmed that disconnection was a genuine issue among lower SES individuals. High school academic abilities and being on a college preparatory track in 10th grade were less protective by age 26. The influence of risk factors measured in high school also diminished over time. However, status as a special needs student in high school still predicted twice the likelihood of disconnection at age 26. Prior disconnection remained one of the strongest predictors of disconnection at ages 20 and 26, highlighting the problem of repeated disconnection experienced by a small group of youth and young adults (only 0.6% of our full sample, or 11.1% of high school leavers). Finally, the odds of dropping out of the labor force, rather than actively searching for work, were most strongly explained by gender and having dependent children, and, to a lesser extent, by race and high school region and urbanicity.

Study Limitations

Although our study sheds some light on the specific factors that increase the odds of disconnection among young adults in the United States, it is not an experimental study and, thus, we cannot draw any conclusions about the causes of disconnection (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). Moreover, the ELS:2002 data set does not document how long individuals were disconnected or whether or not they were disconnected, employed, or in school in between survey waves. Thus, we cannot comment on the issue of chronic disconnection, although we do discuss the phenomena of an individual experiencing repeated episodes of disconnection. Another potential drawback is that the ELS:2002 data used for this study were drawn from surveys, and some portion of the data may be inaccurate due to social desirability bias (Grimm, 2010). Nonetheless, our findings highlight the influence of demographic factors and high school experiences on the likelihood of young adults disengaging from society rather than attempting to build job skills or earn credentials or simply earn an income.

Summary and Conclusions

In addition to reinforcing the cycle of poverty (Hair et al., 2009; Ross & Svajlenka, 2016), high rates of U.S. disconnected youth could threaten the social cohesion and social development of our nation. Moreover, disconnected youth cost taxpayers large amounts of money in the form of foregone labor productivity and tax revenues and increased incarceration and social services uptake rates (Belfield & Levin, 2012). In addition, individuals who become disconnected face a range of challenges that may impact their life outcomes and those of their children. For these reasons we embarked on this study to shed light on the factors that lead young people to disconnect from society by opting out of work and education. Bridgeland and Mason-Elder (2012) noted:

> Unless the nation takes significant action, millions of young people will remain in poverty, fail to find work, or even end up incarcerated or homeless. [Disconnected] youth who fail to reconnect are likely to have children who will grow up in similar circumstances, perpetuating a cycle of social and economic immobility. (p. 8)

Disconnection Rates Vary by Age

Whereas other studies explore disconnection among all youth aged 16–24 at a given time, our study provides a glimpse into the longitudinal education and employment pathways of 2002 high school sophomores over time. Although the longitudinal sample may exclude some disconnected youth that failed to participate in the full ELS:2002 study, and thus the sample may not be representative of all disconnected youth, we still find that the disconnection rate at age 26 is similar to rates estimated by other researchers using other data sources. Even more important, we find that the disconnection rates for ages 18 and 20 are far lower than those estimated for the full 16-to-24 age range, emphasizing that disconnection is more of a problem among people in the early to mid-twenties than in the teen years when youth may still be connected to schools and drop outs may still try to complete high school. Thus, we may conclude that the needs of disconnected individuals likely vary by age; those in their teenage years may benefit from interventions targeted at supporting high school completion, whereas those in their twenties, who are in a more critical position in the transition to adulthood, may need more targeted outreach focused on job skills preparation and employment support services. At the same time, the effects of the Great Recession on this particular cohort cannot be discounted; some of the increase in disconnection rates as ELS:2002 participants aged may be attributable to the negative impacts of the recession on employment among all groups but, in particular, among youth and young adults (Bureau of Labor Statistics, 2018).

Many Disconnected Youth Seek Jobs

We also aim to shed light on the different characteristics of disconnected youth who were actively seeking employment and those who had dropped out of the labor force. It is encouraging that most disconnected youth are actively job searching at age 26 and interesting that equal proportions of disconnected youth are inactive and active at age 20. Increased employment support services for disconnected young adults in their early to mid-twenties may help to get those who want to work into jobs. Unemployment is a more salient issue for youth building their

lives around the time of the Great Recession, as 2002 high school sophomores were. Unemployed youth found it more difficult to obtain jobs during this period than did their forebears in earlier years (Bureau of Labor Statistics, 2018). Individuals facing the many risk factors that affect disconnected youth may be even less likely to obtain and maintain stable employment. The difficulty of obtaining employment alone may lead some individuals to drop out of the labor force, as may the low pay of many jobs available to those without high school or college credentials.

While it is not surprising that women with young children are most likely to drop out of the labor force, rather than actively seeking employment, it is interesting that some minority women are more likely than White women to continue seeking work. This trend is likely explained by socioeconomic differences related to race and to differences in rates of marriage by race. Specifically, White young mothers are more likely to be married, which may afford them the economic resources to stay home with their young children (Raley et al., 2015). Minority young women are less likely to be married, thus they are less likely to be out of the labor force by choice.

Not surprisingly, given higher rates of disconnection and unemployment in rural counties (Burd-Sharps & Lewis, 2017), individuals who attended rural high schools are more likely to drop out of the workforce and cease searching for jobs. Regional variations in unemployment rates also seem to influence the odds of dropping out of the labor force. Efforts to connect young adults to secure employment, with or without the completion of degrees and certificates, are particularly important in rural areas of the United States. There may also be a greater need for such efforts in the western region of the United States, although it is also possible that western high school students are more likely to take alternative pathways, including breaks from college to travel or volunteer.

Disconnection May Be Temporary but Obstacles Persist

Although many youth do take direct paths from high school to college and then employment, many do not. While it is heartening that those who were once disconnected may end up in education or employment at a later point, it is also true that those who were once in education or employed may well end up disconnected. Not surprisingly, and in line with several prior studies (Hair et al., 2009; Ross & Svajlenka, 2016), we find that those who do not complete high school on time, or at all, are far more likely to end up disconnected at later ages. Furthermore, the many risk factors facing those who end up disconnected clearly continue to plague them, as many become disconnected again even after a period of connection such as enrollment in an educational or training program.

At the same time, our path model diagrams highlight that young adults move into and out of education and employment; few individuals were disconnected youth at all three time points. We can speculate that, based on the many risk factors we noted above, a broad range of factors may have played a further role in shifts into and out of the workforce and schooling, from lack of funds to cover the cost of college, to mismatches between job requirements and skills (Robst, 2007), to frustration with low-wage work (Erceg & Levin, 2014), to the need to care for an elderly relative or young children, to choices to turn to criminal activities when legal activities do not seem financially promising (Soyer, 2016).

Socioeconomic Status Is Not Destiny and High School Academic Experiences Matter

Our predictive models highlight that both SES and high school academic abilities are associated with disconnection from society at ages 18, 20, and 26. However, these associations diminish over time, and by age 26 SES is a weaker predictor of disconnection than having been on a college preparatory track or having special educational needs in high school. Moreover, the direction of the SES effect confirms that disconnection is a genuine issue among individuals with lower SES, and is not generally due to young adults with higher SES taking voluntary breaks from school or work. Our findings also confirm that SES and high school skills and experiences matter after accounting for stay at home moms.

Our results also highlight that students with special educational needs may be at a particular disadvantage. Even when ongoing supports are provided (Osgood, Foster, & Courtney, 2010), studies document that students with special needs in high school are less likely to attend college and tend to earn lower wages on average (Sanford et al., 2011). At the same time, while academic disabilities increase the odds of disconnection, high school literacy and mathematics skills and grades are unrelated to disconnection at age 26, although high school mathematics skills are a protective factor at age 20. Thus, being

on a college track or having special educational needs can have lasting impacts, whereas, among those without special needs, low academic skills may ultimately not matter as much as demographics and the risk factors they can represent.

Although 10th grade academic experiences and skill levels may reduce the likelihood of later disconnection to some degree, and negative high school experiences certainly do not doom individuals to disconnected youth status, the likelihood of disconnection still varies substantially by SES, race, and gender. Those from lower SES households and racial minorities—in particular Asian, Native American, and multiracial young men—have far greater odds of ending up disconnected in the critical skill-building early adulthood years, after controlling for many other relevant factors. Our findings align with those of other studies of disconnected youth for members of these minority groups (Belfield & Levin, 2012; Hair et al., 2009; Ross & Svajlenka, 2016), but not for Black and Hispanic students, who have similar outcomes to Whites after controlling for academic abilities and experiences. Ours is one of many studies to highlight the serious issue of racial and socioeconomic inequality in opportunities for successful education and employment outcomes, and more general inequalities in income, wealth, and related advantages, documented by a plethora of research (Brooks-Gunn & Duncan, 1997; Duncan & Murnane, 2011; Reardon, 2011). In particular, it emphasizes the negative impacts of these inequalities for Asian, Native American, and multiracial young men, and for individuals with low SES from all racial backgrounds. At the same time, our findings highlight that disconnection is no more likely for Black or Hispanic students than it is for White students, providing a refreshingly positive takeaway on outcomes for members of these minority racial groups.

Even so, unemployment rates are generally higher among underrepresented minority groups and those without a college degree (Bureau of Labor Statistics, 2016 [see Table 3], 2017). This fact certainly contributes to the greater likelihood of disconnection among these groups. Moreover, gender is a factor largely because women still tend to be the caregivers of young children and aging parents (U.S. Census Bureau, 2016b), thus women with dependents are more likely to be disconnected than men with dependents. Research also documents that it may be more expensive to work now than in prior decades—the relative costs of childcare, health insurance, and education have increased drastically since the 1990s (Andes & Muro, 2014)—which may lead more caregivers to opt to drop out of the labor force entirely.

Student Background Matters More Than Where They Attend High School

Our findings reveal no significant differences between public and private schools; urban, suburban, and rural schools; or schools in various regions of the United States in terms of their contribution to the likelihood of disconnection. Despite the documented advantages of suburban high schools and private high schools, it seems that student demographics and academic experiences matter more than where they attend high school and what type of school they attend. Our results indicate that being on a college preparatory track in high school significantly reduces the likelihood of disconnection during the critical years when youth and young adults are building their lives. Thus, we can conclude that academic focus is important (Klugman, 2012), regardless of location or type of school. We can further conclude that high school students with identified disabilities may be at a distinct disadvantage as they work to build their own lives; some may find the world beyond high school lacking in needed supports and scaffolds, despite the availability of services for those beyond the age of secondary school (Osgood et al., 2010).

Targeted Interventions to Address Disconnection

Many intervention programs and support services are already available for youth at risk of disconnection. The most well-known of these programs may be programs to prevent students from dropping out of high school or to reengage those who have already dropped out. Many programs to reengage dropouts have a low success rate, but a recent Boston-area effort to provide high levels of support through reengagement centers is one promising practice for addressing the high school drop-out problem (Rennie Center for Education Research & Policy, 2012). Most encouraging for those seeking to reduce disconnection rates is that such programs may be able to reengage youth who are not currently connected to a school—those who are at the greatest risk for continued disconnection and poor long-term outcomes. Furthermore, state-level initiatives, such as those undertaken by Indiana, can provide job training opportunities to fill job vacancies with unemployed or underemployed individuals (Herron, 2018).

Programs also exist specifically to reconnect disconnected youth to society. One challenge is that in many major metropolitan areas these programs are small and not connected to one another; their resources and reach may be too limited to address the problem on their own. One promising initiative in Chicago involves a collaboration between programs and organizations providing support services for the large number of disconnected youth in the Chicago area (Elejalde-Ruiz, 2017) combined with research to document the most promising practices in reengagement of disconnected youth. Another Chicago initiative under consideration would require high school students to submit documentation of employment, training, or educational plans after high school (Kauffman, 2017).

The White House Council for Community Solutions (2012) proposed a variety of solutions to address the problem of disconnected youth based on the premise that often just a single intervention will not be effective in reconnecting disconnected youth. Their report recommends a multipronged solution with strategies such as crossing sectors and community collaboration, creating a sense of shared national responsibility and accountability, engaging youth leaders, and building more robust supports for employment. Important key recommendations across all of these larger strategies include securing adequate funding, collaborative use of data and technology, and policy alignment.

Bridgeland and Mason-Elder (2012) echo several of the same solutions as the White House Council for Community Solutions (2012), such as increasing pathways to secondary and postsecondary education, fostering mentorship programs, improving community collaboration, and investing in federal programs aimed at supporting the needs of disconnected youth. They emphasize the importance of engaging employers to specifically recruit disconnected youth for vacant positions and business leaders including disconnected youth in plans to increase economic development. It may also be critical to strengthen existing pathways to community college and better align intervention programs with the labor market such that young people leave with skills sought by employers (Treskon, 2016).

Implications for Research and Practice

Based on our findings, we suggest multiple avenues to continue building knowledge of the most effective supports for disconnected youth and those at risk of disconnection.

Reconnecting Women With Dependent Children

Not surprisingly, young mothers are far more likely to end up disconnected than their peers who wait to start a family. We recommend identifying and compiling a comprehensive resource on successful strategies for reengaging or engaging job-seeking young mothers in the work force or in education. A comprehensive accounting of successful methods for connecting individuals to jobs and school, obtaining affordable and reliable childcare, and addressing transportation needs and other challenges could be disseminated to inform intervention programs designed to help these young women connect or reconnect to the world of work, education, or job training.

Exploring Ways to Reduce Disconnection by Supporting Academic Engagement

Beyond solely indicating academic skill levels, GPAs may be an indicator of engagement in coursework and attendance. One approach to examine best ways to support academic engagement and foster at least a moderate level of academic success, given our findings on the potential protectiveness of a minimum GPA of 2.0, would be to conduct research in high schools. We suggest an examination of the factors related to academic performance and effective student supports, including such details as how transcripts might be redesigned to highlight student potential and flag risks. Partnerships with high school staff would assist with the identification of promising practices in maximizing academic engagement and fostering academic success among students at risk of disconnection, as well as reengagement of students already disconnected. Given our finding on the importance of mathematics skills for outcomes at age 20, it may be especially advantageous to focus on improving mathematics teaching for all students.

Leveraging Elements of College Preparatory Tracks to Help all Students

While it is true that college may not be necessary for all individuals, some of the benefits of being on a college preparatory track — such as increased support for transitioning out of high school — may extend to all students. We recommend

research to explore the most effective ways to develop, implement, and refine programs to support the transition to work and adulthood for those most at risk of disconnection. One approach to document the strategies that foster a successful transition would be case studies of programs and schools that help such students prepare for postsecondary work, college, or training while emphasizing college preparation. Examples include school-to-work transition support programs for youth in foster care and those with documented special educational needs or disabilities.

Fostering Academic Self-Efficacy in High School

The importance of social and emotional skills has been well documented by multiple studies in recent years (Duckworth & Seligman, 2005; Gutman & Schoon, 2013; Heckman, Stixrud, & Urzua, 2006). Based on our findings, one promising path to preventing disconnection or reengaging disconnected youth in school would be to clarify which intervention programs and features of programs are most effective at targeting students' beliefs in their own academic abilities and which are most effective with those most at risk of becoming disconnected (i.e., those from lower SES and minority backgrounds, low academic achievement, and/or special educational needs). The results of this effort could inform the development and refinement of intervention models aimed at addressing disconnection.

Identifying Effective Supports for Students With Disabilities

Based on our finding that individuals with special educational needs in 10th grade were over twice as likely to end up disconnected at age 26, we recommend developing a comprehensive understanding of the strategies and services that most effectively support these individuals through the transition to adult roles. While institutions of higher education may provide academic supports for students with disabilities, such students may be more likely to try to transition directly into the world of work. Future research should not only clarify the specific needs of such individuals, it should also identify the most effective ways for employers and high schools to maximize the successful outcomes of persons with disabilities.

Strengthening Workforce Development Programs

Based on our finding that most disconnected youth are, in fact, actively seeking employment, we recommend strengthening efforts to connect disconnected youth to available jobs in their states and communities. A review of successful workforce development strategies, including job skills training and job searching and interviewing supports, could be used to inform existing and new intervention programs for disconnected youth and for those most at-risk of disconnection, including minority young men and those from lower SES households. Of particular interest are strategies to identify, locate, and recruit disconnected youth and young adults, especially those beyond high school age, to participate in support and training programs.

Notes

1 Note that some studies may not account for different situations that may appear in data as disconnection, such as more affluent young adults voluntarily taking time off of work and school to travel or married and/or more affluent young women opting to stay home to care for young children. Our study aims to account for these factors.

2 Differences in estimated disconnection rates may also be due to differences in the time period measured by the various national surveys used to produce these estimates. For instance, American Community Survey (ACS) data, used by Burd-Sharps and Lewis (2017), are a measure of the week (employment) or three months (education) prior to the survey, whereas the Current Population Survey (CPS) data, used by Carcillo et al. (2015), tracks respondents' status by month. Both the National Longitudinal Study of Adolescent to Adult Health (Add Health), used by Belfield et al. (2012), and ELS:2002, used by Belfield et al. (2012) and Lauff et al. (2014), asked respondents about their status at the time of the survey, whereas the NLSY97, also used by Belfield et al. (2012), asked about the year prior to the survey.

3 The authors used ACS microdata providing a 3-year estimate encompassing the years 2012–2014, whereas Burd-Sharps and Lewis (2017) used ACS data only to estimate the disconnection rate for 2015. Even so, the annual disconnection rates estimated by Burd-Sharps and Lewis (2017) for 2012–2014 (14.1%, 13.8%, and 13.2%) were still higher than the 3-year rate of 7.6% estimated by Ross and Svajlenka (2016).

4 Fernandes-Alcantara, of the Congressional Research Service (CRS), used CPS data and the Office of Career, Technical, and Adult Education (OCTAE. U.S. Department of Education (U.S. Department of Education, 2016) used data from the Programme for the International Assessment of Adult Competencies (PIAAC). The CPS excluded institutionalized youth and young parents married to a connected spouse, while PIAAC may have only excluded institutionalized youth.
5 One study found that 8% of U.S. youth were almost entirely or entirely disconnected from ages 18–24 (Kuehn et al., 2009), while two others found that 9% and 10% of youth, respectively, were in this category from ages 16 to 21 (Belfield et al., 2012; Hair et al., 2009).
6 Note that ELS:2002 respondents were asked if they were employed or not at the time of the survey. If they were employed, they were asked if they were actively seeking work or had dropped out of the labor force. Thus, all data on active versus inactive disconnection are self-report data, as is all data on employment and enrollment more generally.
7 Disconnection rates were not estimated by prior researchers specifically for 2004 and 2006.
8 OECD rate is for individuals aged 15–29 years, except for Japan (15–24) and the United States (16–24).
9 Note that education also includes training programs that may results in certificates rather than a postsecondary degree.
10 The vast majority of ELS:2002 longitudinal sample members enrolled in school at age 17 were still in high school. However, a very small minority was enrolled in college.
11 Data on childrearing rates were only collected in the final ELS:2002 data collection wave, in 2012, when sample members were about 26 years old.
12 From Figure 3: (2,008 + 4,796 + 4,731)/36,573 = 32%
13 From Figure 3: 2,008/5,860 = 34%
14 Note that Asian includes Native Hawaiian or Other Pacific Islander, Black includes African-American, "other race" includes Native Americans, Alaska natives, and multiracial individuals (these categories were collapsed together because sample sizes were insufficient to permit a reliable regression estimate), and Hispanic includes Latino. All race categories except Hispanic exclude Hispanic or Latino ethnicity. Samples were too small to explore differences by racial subgroups, such as between Asians or Hispanics from different countries.
15 Missing data on outcome measures and some student demographics and test scores were addressed using multiple imputation via a chained equations routine following Allison (2001).
16 Note that we initially specified two-level hierarchical linear models, with student variables at Level 1 and school variables at Level 2, in order to account for students being nested within schools, and the impact this could have on standard errors in a single-level regression model. However, we found that only a small percentage of the variance in our disconnected youth outcome variables (9.7% for age 18, 8.6% for age 20, and 3.2% for age 26) lies at the school level. The small amount of between-school variance was insufficient to justify the use of multilevel analytic models; therefore, we opted to use logistic regressions, but still included measures of school context disaggregated to the student-level, to control for potentially relevant school-level differences. Standard errors were clustered at the school level as part of the complex samples analysis procedures used to adjust standard errors to account for the study sampling design.
17 This is approximately equivalent to a 70–79 numeric grade, or a C, according to the NCES (2011).
18 Note that we tested for correlation between the academic success variables because if they were highly correlated the statistical model could not discriminate between the different effect of each single variable, especially at age 18, when just 1.3% of individuals are disconnected. The variables were not highly correlated (Pearson correlation coefficients ranged from 0.175–0.332), thus it seems that the academic success variables other than GPA may actually not be predictive of disconnection at age 18.
19 Note that the inclusion of a lagged indicator of disconnected youth status at age 18 could have upwardly biased the odds ratios in all models. For example, Marconi and Ritzen (2015) found that the estimated coefficients are expected to be closer to 0 than they are in a model without lagged variables. However, the odds ratios are of similar size in models with and without the lagged indicators (see Tables C3–C4 in Appendix C), thus this type of bias does not appear to be an issue in our models.
20 Note that Native American respondents were not included as a separate racial group in this study because the sample size was too small to produce relaible estimates for the statistical analyses we are conducting.
21 We used the multiple imputation module of SPSS version 23, which uses a chained equation routine and produces five imputed data sets for analysis. The imputation models included several auxiliary variables not included in analytic models but correlated with outcome variables.
22 Note that all students sampled for the ELS:2002 in the base year were by definition enrolled in school at the time; therefore, there were no disconnected youth in the base year sample. In general, our estimates of the proportions of disconnected youth refer to the population of individuals that were enrolled in 10th grade at the time of the first survey wave. Proportions of disconnected youth in the overall population may be higher.

23 SES is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income.

24 Note that Asian includes Native Hawaiian or Other Pacific Islander; Black includes African American; "other race" includes Native Americans, Alaska natives, and multiracial individuals (these categories were collapsed together because sample sizes were insufficient to permit a reliable regression estimate); and Hispanic includes Latino. All race categories exclude Hispanic or Latino origin.

25 This measure was an indicator of student having an individualized education plan (IEP) in their sophomore year of high school. An IEP is a written document that is developed for each public school child who is eligible for special education. The IEP is created through a team effort and reviewed at least once a year.

26 Items in the scale included student survey items on a 4-point scale ranging from 1 (*almost never*) to 4 (*almost always*), asking students to rate the extent to which they believe they can do an excellent job on mathematics tests, can understand difficult mathematics texts, can understand difficult English texts, can learn something really hard, can understand a difficult English class, can do an excellent job on English assignments, can do an excellent job on English tests, can understand a difficult mathematics class, can master skills in English class, can get no bad grades if they decide to, can get no problems wrong if they decide to, can do an excellent job on mathematics assignments, can learn something well if they want to, and can master mathematics class skills.

27 Items in this scale included student survey items ascertaining how many times students were late for school, how many times they cut/skip classes, how many times they were absent from school, how many times they got in trouble, how many times they were put on in-school suspension, how many times they were suspended/put on probation, and how many times they transferred for disciplinary reasons. All items were on a 5-point scale ranging from 1 (*never*) to 5 (*10 or more times*).

28 Note that we initially specified two-level hierarchical linear models, with student variables at Level 1 and school variables at Level 2, in order to account for students being nested within schools and the impact this could have on standard errors in a single-level regression model. However, we found that only a small percentage of the variance in our disconnected youth outcome variables (9.7% for age 18, 8.6% for age 20, and 3.2% for age 26) lies at the school level. The small amount of between-school variance was insufficient to justify the use of multilevel analytic models; therefore, we opted to use logistic regressions, but still included measures of school context disaggregated to the student level to control for potentially relevant school-level differences.

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Appendix A

Methodology

Data and Sample

Data used for this study are drawn from the ELS:2002 (https://nces.ed.gov/surveys/els2002/), sponsored by the NCES. Although researchers have identified difficulties in counting the number of disconnected youth using existing large scale national data sets not necessarily designed to capture these data, the ELS:2002 does not undersample at-risk populations, as the ACS and CPS may. The ELS:2002 also collected data on participants' status at the time of the survey, not in the 12 months prior as the PIAAC does.

The ELS:2002 data were collected in a national probability sample of 752 public and private schools in the spring term of the 2001–02 school year (Ingels et al., 2005). Of 17,591 eligible selected sophomores, 15,362 completed a base year questionnaire, as did 13,488 parents and 743 principals. Asian and Hispanic students were oversampled in order to achieve a sample of sufficient size to get accurate statistical estimates.[20] Data collection included direct cognitive assessments of students' achievement in reading and mathematics, as well as parent, student, and school administrator surveys. Follow-up surveys were conducted in spring of 2004, 2006, and 2012. Our longitudinal sample of 12,444 students includes base year survey respondents with data for all 4 years of the study. The use of a panel weight (F3F1PNLWT) to compensate for the stratified sampling design of the study, and to adjust for the differential probabilities of sample selection at each stage, resulted in estimates representing 2,767,943 2002 high school sophomores. Means or sample proportions for all study variables are presented in Table A1.

Missing data on outcome measures and some student demographics and test scores were addressed using multiple imputation, via a chained equations routine following Allison (2001).[21] We inputted 2% to 28% of data across variables including disconnected youth indicators, student test scores, student SES, problem behaviors in high school, academic self-efficacy in high school, gender, GPA greater than 2.0, and status as a special education student.

Measures

We used data from the student surveys for each of the four data collection waves, cognitive assessment data collected when students were sophomores, and data from base year (2002) parent and school administrator surveys. Because our primary focus is individuals who ended up disconnected (i.e., not in education, employment, or training), we created indicators of disconnection in Spring 2004, 2006, and 2012, at each of the three ELS:2002 follow-up study waves.[22] These disconnected youth status indicators served as dependent variables in logistic regressions. Variables used to compute the disconnected youth status indicators included measures of enrollment in school and employment at each of the three time points.

Table A1 Sample Descriptives: Means or Proportions of Analysis Variables

Variable	Mean/proportion	*SD*
Student socioeconomic status	0	1
Female	52.4	
White	62.6	
Hispanic	14.8	
Asian	3.9	
Black	13.6	
Other race	5	
White female	32.9	
Hispanic female	7.9	
Asian female	2	
Black female	7.1	
Other race female	4.5	
Special needs student	11.1	
Exhibited problem behaviors	0	1
GPA > 2.0 (on a scale of 0 to 4.0)	80.8	
10th grade math exam score	0	1
10th grade reading exam score	0	1
Took PSAT exam 10th grade	43.9	
Academic self-efficacy	0	1
Northeastern school	18.3	
Midwest school	25.2	
Southern school	34.7	
Western school	21.8	
Suburban school	51.1	
Rural school	20.4	
Urban school	28.6	
Public school	8	
Private school	92	

Note. Author's calculations use Educational Longitudinal Study of 2002 data set (https://nces.ed.gov/surveys/els2002/).

Other student-level variables used in our descriptive analyses and as control variables in analytic models included measures of student SES,[23] race and ethnicity,[24] gender, status as a special needs student during high school,[25] a GPA above 2.0 on a 4.0 scale, and 10th grade ELS:2002 mathematics and reading exam scale scores. An indicator that students had taken the PSAT in their sophomore year was included as a proxy measure of being on a college preparatory track in high school, which we expected would make it less likely to end up as a disconnected youth in subsequent years. A composite measure of academic self-efficacy was included because students' beliefs in their academic abilities may relate to likelihood of becoming disconnected.[26] And a composite measure of problem behaviors in high school was also developed because such behaviors may indicate academic or family-related challenges that may influence the likelihood of becoming a disconnected youth.[27]

Three measures of students' school characteristics were also included in analyses to provide contextual information. These included measures of the level of high school control (i.e., public or private) to account for variations in outcomes by school type; geographical region of the high school to account for regional variations in average student achievement; and urbanicity to account for variations in student achievement between suburban, urban, and rural high school locations.

Analyses

Descriptive analyses were conducted to produce estimates of those in education, in employment, and as disconnected youth at each time point in order to track pathways into and out of disconnected youth status over time. These analyses used indicators of education and employment status at each time point while selecting for those in each status at prior time points.

Analytic models were also specified to test our hypotheses regarding the extent to which demographic characteristics predict disconnected youth status at the end of high school (age 18), at 2 years after high school (age 20), and at 8 years

after high school (age 26) when many individuals have entered the workforce or are seeking specialized training for their future careers. We used logistic regressions[28] with disconnected youth status in 2004, 2006, and 2012, respectively, as our dependent variables. Independent variables included the measures of student and school characteristics described above.

For each of the three dependent variables, models were fitted in steps beginning with only race, gender, and SES, then adding race by gender interaction terms, and then adding student academic experience and skills variables including indicators of special needs, problem behaviors in high school, and a GPA greater than 2.0, and continuous measures of 10th grade reading or mathematics exam scores and a composite measure of level of agreement with items related to academic self-efficacy (see Appendix C). Models with reading and mathematics exam scores were specified separately to avoid multicollinearity due to the correlation of the two exam scores. Final models also included variables representing school characteristics such as regional location, urbanicity, and school sector. Final models predicting odds of disconnection at age 20 in 2006 included an indicator of disconnection in 2004 at age 18. Final models predicting odds of disconnection at age 26 in 2012 included an indicator of disconnection in 2004 at age 18 and in 2006 at age 20, as well as an indicator of having dependent children and an interaction term for gender by status as a parent of dependent children. Thus, a total of six logistic regression models were specified to predict the odds of disconnection at age 18 (see Table C1), eight models were specified predicting the odds of disconnection at age 20 (see Table C2), and 12 models were specified predicting the odds of disconnection at age 26 (see Tables C3 – C4). Two additional sets of models were specified to model the influence of the same set of independent variables on the odds of being out of the labor force (inactively connected) versus actively seeking employment. The first set of additional models, eight in total, predicted the likelihood of dropping out of the labor force at age 20 (see Table C5). The second set of additional models, 12 in all, predicted the likelihood of this outcome occurring at age 26 (see Tables C6 – C7). For all models, the complex samples module of IBM SPSS Statistics (version 23) was used to calculate cluster robust standard errors adjusted for the complex sampling design of the ELS:2002, using design effects via Taylor series linearization (IBM, 2015).

Appendix B

Gender, Active Versus Inactive, and Childrearing Status of Connected and Disconnected Youth: Overall and for High School Leavers and Those Remaining in High School Through 12th Grade

	Grade 12/Age 18		Age 20		Age 26	
	2004		2006		2012	
Status	*N*	%	*N*	%	*N*	%
Connected: In school or employed						
All	2,731,370	100%	2,623,962	100%	2,446,870	100%
Female	1,420,312	52%	1,364,263	52%	1,238,116	51%
Disconnected						
All	36,573	100%	143,982	100%	321,073	100%
Female	22,310	61%	85,559	59%	211,774	66%
Female inactive	–	–	47,400	69%	91,487	43%
Female active	–	–	38,159	51%	120,287	57%
Inactive w/children	–	–	–	–	64,427	59%
Active w/children	–	–	–	–	98,450	47%
Female inactive w/children	–	–	–	–	63,393	58%
Female active w/children	–	–	–	–	71,627	34%
Connected outcomes for youth remaining in high school through 12th grade						
All	–	–	2,498,684	100%	2,318,562	100%
Female	–	–	1,311,713	52%	1,178,966	51%
Disconnected outcome for youth remaining in high school through 12th grade						
All	–	–	110,407	100%	290,530	100%
Female	–	–	64,433	58%	197,180	68%
Inactive	–	–	55,143	50%	102,609	36%
Active	–	–	55,264	50%	185,395	64%
Female Inactive	–	–	35,945	56%	86,592	84%
Female Active	–	–	28,487	44%	109,196	59%
Inactive w/ children	–	–	–	–	59,951	58%
Active w/ children	–	–	–	–	83,359	45%
Female Inactive w/ children	–	–	–	–	58,917	98%
Female Active w/ children	–	–	–	–	63,966	77%
Connected outcomes for youth not remaining in high school through 12th grade						
All	–	–	125,277	100%	117,653	100%
Female	–	–	52,549	42%	51,369	44%
Disconnected outcome for youth not remaining in high school through 12th grade						
All	–	–	33,574	100%	41,199	100%
Female	–	–	21,127	63%	22,307	54%
Inactive	–	–	13,836	41%	7,333	22%
Active	–	–	19,739	59%	25,737	78%
Female inactive	–	–	11,455	83%	4,895	43%
Female active	–	–	9,672	49%	11,091	67%
Inactive w/children	–	–	–	–	4,476	61%
Active w/children	–	–	–	–	15,091	59%
Female inactive w/ children	–	–	–	–	4,476	100%
Female active w/children	–	–	–	–	7,661	51%

Note. Author's calculations use Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) data set.

Appendix C

Logistic Regression Results

Table C1 Logistic Regressions of Disconnected Youth Status in 2004, End of High School (~Age 18) for ELS:2002 Longitudinal Sample

	Model 1		Model 2		Model 3				Model 4			
Characteristics					Reading		Math		Reading		Math	
Student characteristics												
Constant	0.005	***	0.005	***	0.017	***	0.016	***	0.020	***	0.017	***
Socioeconomic status[a]	0.418	***	0.419	***	0.488	***	0.509	***	0.487	***	0.512	***
Female	1.370		1.560		2.397	*	2.307	*	2.358	*	2.283	*
Hispanic[b]	1.655		1.554		1.001		0.904		0.732		0.657	
Black	2.121	*	2.805	*	1.817		1.618		1.664		1.473	
Other race	2.688	*	3.297	*	2.423		2.272		2.331		2.234	
Hispanic female[c]			1.107		1.234		1.220		1.291		1.276	
Black female			0.621		0.539		0.536		0.548		0.543	
Other race female			0.705		0.700		0.722		0.657		0.663	
Special needs student					1.079		0.842		1.121		0.843	
Exhibited problem behaviors[d]					1.136		1.135		1.128		1.130	
GPA > 2.0 (on a 4.0 scale)					0.101	***	0.114	***	0.099	***	0.114	***
10th grade math exam score							0.787				0.777	
10th grade reading exam score					1.038				1.065			
Academic self-efficacy[e]					0.907		0.947		0.892		0.938	
School characteristics												
Midwest school[f]									0.592		0.564	
Southern school									0.969		0.928	
Western school									1.370		1.308	
Rural school[g]									0.877		0.905	
Urban school									1.255		1.267	
Private school[h]									0.609		0.579	

Note. GPA = grade point average. Table presents odds-ratios; outcome variables are indicators of disconnected youth status in 2004; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. Note that Asians are not included in models because there were no Asian students among those who were disconnected in 2004. [c]Dummy variable indicators of student race and gender; comparison is to White female students. [d]Problem behaviors is a composite of survey items indicating frequency of tardiness, absences, suspensions, expulsions, and other disciplinary problems during the sophomore year of high school. [e]Academic self-efficacy is a composite of survey items indicating strength of belief in abilities to perform well academically. [f]Comparison is to high schools in the northeastern region of the United States. [g]Comparison is to suburban high schools. [h]Comparison is to public high schools.

Table C2 Logistic Regressions of Disconnected Youth Status in 2006, 2 Years Post High School (~Age 20) for ELS:2002 Longitudinal Sample

	Model 1		Model 2		Model 3				Model 4				Model 5			
Characteristics					Reading		Math		Reading		Math		Reading		Math	
Student characteristics																
Constant	0.032	***	0.031	***	0.057	***	0.055	***	0.050	***	0.049	***	0.046	***	0.045	***
Socioeconomic status[a]	0.550	***	0.548	***	0.729	***	0.747	***	0.732	***	0.751	***	0.750	***	0.769	***
Female	1.309	*	1.327		1.841	**	1.746	**	1.846	**	1.750	**	1.785	**	1.697	*
Hispanic[b]	1.467	*	1.337		1.113		1.018		1.155		1.066		1.194		1.104	
Asian	1.072		1.427		2.016	*	2.036	*	2.088	*	2.127	*	2.140	*	2.183	*
Black	1.705	*	2.058	*	1.645		1.485		1.636		1.491		1.605		1.470	
Other race	2.327	***	1.661		1.286		1.204		1.294		1.211		1.259		1.181	
Hispanic female[c]			1.163		1.211		1.221		1.195		1.203		1.149		1.153	
Asian female			0.574		0.550		0.553		0.551		0.552		0.575		0.575	
Black female			0.710		0.694		0.692		0.693		0.690		0.711		0.706	
Other race female			1.726		1.756		1.820		1.747		1.817		1.773		1.839	
Special needs student					2.590	***	2.129	***	2.622	***	2.152	***	2.661	***	2.188	***
Exhibited problem behaviors[f]					1.084		1.085		1.083		1.085		1.079		1.081	
GPA > 2.0 (on a 4.0 scale)					0.462	***	0.495	***	0.452	***	0.485	***	0.496	***	0.531	***
10th grade math exam score							0.771	*			0.773	*			0.775	***
10th grade reading exam score					0.936				0.940				0.941			
Took PSAT exam 10th grade[d]					0.348	***	0.369	***	0.361	***	0.384	***	0.366	***	0.389	*
Academic self-efficacy[e]					0.850	*	0.877	*	0.850	*	0.877	*	0.848	*	0.875	*
Disconnected 2004													3.681	***	3.642	*
School characteristics																
Midwest school[g]									1.322		1.297		1.350		1.326	
Southern school									1.268		1.236		1.275		1.243	
Western school									1.186		1.165		1.171		1.152	
Rural school[h]									0.881		0.892		0.885		0.895	
Urban school									0.894		0.881		0.885		0.870	
Private school[i]									0.776		0.757		0.780		0.763	

Note. GPA = grade point average. Table presents odds-ratios; outcome variables are indicators of disconnection in 2006; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status (SES) is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. [c]Dummy variable indicators of student race and gender; comparison is to White female students. [d]The PSAT is a standardized test administered to help students prepare for the *SAT*® college entrance examination. It is included as an indicator of intent to attend college. [e]Academic self-efficacy is a composite of survey items indicating strength of belief in abilities to perform well academically. [f]Problem behaviors is a composite of survey items indicating frequency of tardiness, absences, suspensions, expulsions, and other disciplinary problems during the sophomore year of high school. [g]Comparison is to high schools in the northeastern region of the United States. [h]Comparison is to suburban high schools. [i]Comparison is to public high schools.

Table C3 Models 1–6: Logistic Regressions of Disconnected Youth Status in 2012, 8 Years Post High School (~Age 26) for ELS:2002 Longitudinal Sample

Student characteristics	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
Constant	0.069	***	0.069	***	0.070	***	0.093	***	0.058	***	0.075	***
Socioeconomic Status (SES)[a]	0.698	***	0.699	***	0.748	***	0.746	***	0.749	***	0.750	***
Female	1.861	***	2.441	***	1.751	***	1.020		2.306	***	1.397	**
Hispanic[b]	1.190		1.596	*	1.146		1.160		1.535	*	1.820	**
Asian	0.826		1.430		0.899		0.896		1.559	*	1.425	
Black	0.972		1.547	*	0.890		0.887		1.434		1.743	**
Other race	1.662	**	2.328	**	1.623	*	1.625	*	2.310	**	2.448	***
Hispanic female[c]			0.639	*					0.640	*	0.499	**
Asian female			0.400	**					0.399	**	0.458	**
Black female			0.477	**					0.467	**	0.341	***
Other race female			0.587						0.572		0.519	*
Has dependent children					1.769	***	0.734	*	1.774	***	0.668	**
Female & dependent children							3.764	***			4.359	***

Note. Table presents odds-ratios; outcome variables are indicators of disconnection in 2006; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. [c]Dummy variable indicators of student race and gender; comparison is to White female students.

Table C4 Models 7–9: Logistic Regressions of Disconnected Youth Status in 2012, 8 Years Post High School (∼age 26) for ELS:2002 Longitudinal Sample

	Model 7				Model 8				Model 9			
Characteristics	Reading		Math		Reading		Math		Reading		Math	
Student characteristics												
Constant	0.085	***	0.085	***	0.075	***	0.075	***	0.075	***	0.076	***
Student socioeconomic status[a]	0.851	***	0.855	***	0.869	**	0.871	**	0.856	**	0.859	**
Female	1.597	***	1.553	***	1.578	***	1.537	**	1.586	***	1.549	***
Hispanic[b]	1.680	**	1.645	**	1.698	**	1.671	**	1.466		1.442	
Asian	1.607	*	1.642	*	1.549	*	1.581	*	1.418		1.445	
Black	1.561	*	1.517	*	1.508	*	1.477	*	1.410		1.381	
Other race	2.240	**	2.197	**	2.203	**	2.171	**	2.133	**	2.104	**
Hispanic female[c]	0.502	**	0.506	**	0.480	**	0.484	**	0.483	**	0.487	**
Asian female	0.445	**	0.447	**	0.462	**	0.465	**	0.450	**	0.453	**
Black female	0.346	***	0.347	***	0.355	***	0.356	***	0.355	***	0.356	***
Other race female	0.485	*	0.490	*	0.457	*	0.461	*	0.446	*	0.450	*
Has dependent children	0.566	***	0.561	***	0.569	***	0.566	***	0.571	***	0.567	***
Female & dependent children	4.583	***	4.585	***	4.347	***	4.348	***	4.362	***	4.364	***
Special needs student	2.101	***	1.998	***	1.913	***	1.845	***	2.006	***	1.926	***
Exhibited problem behaviors[d]	1.072		1.073		1.069		1.070		1.058		1.059	
GPA > 2.0 (on a 4.0 scale)	0.887		0.906		0.971		0.988		0.954		0.970	
10th grade math exam score			0.883	*			0.894	*			0.903	
10th grade reading exam score	0.919				0.918				0.932			
Took PSAT exam 10th grade[e]	0.714	***	0.719	***	0.746	**	0.748	**	0.733	**	0.738	**
Academic self-efficacy[f]	0.917	*	0.927		0.924		0.932	*	0.921	*	0.928	
Disconnected 2004					1.415		1.412		1.367		1.364	
Disconnected 2006					2.505	***	2.482	***	2.525	***	2.504	
School characteristics												
Midwest school[g]									0.830		0.826	
Southern school									1.119		1.116	
Western school									1.263		1.263	
Rural school[h]									0.876		0.877	
Urban school									1.036		1.032	
Private school[i]									1.064		1.053	

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. [c]Dummy variable indicators of student race and gender; comparison is to White female students. [d]Problem behaviors is a composite of survey items indicating frequency of tardiness, absences, suspensions, expulsions, and other disciplinary problems during the sophomore year of high school. [e]The Preliminary SAT (PSAT) is a standardized test administered to help students prepare for the SAT (Scholastic Aptitude Test) college entrance examination. It is included as an indicator of intent to attend college. [f]Academic self-efficacy is a composite of survey items indicating strength of belief in abilities to perform well academically. [g]Comparison is to high schools in the northeastern region of the United States. [h]Comparison is to suburban high schools. iComparison is to public high schools. [i]Table presents odds-ratios; outcome variables are indicators of disconnection in 2006; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

Table C5 Logistic Regressions of Inactive or Active Disconnected Youth Status in 2006, 2 Years Post High School (~Age 20) for ELS:2002 Longitudinal Sample

	Model 1		Model 2		Model 3				Model 4				Model 5			
Characteristics					Reading		Math		Reading		Math		Reading		Math	
Student characteristics																
Constant	0.575	**	0.673		0.535	*	0.537	*	0.031		0.690		0.042		0.715	
Socioeconomic status[a]	0.973		0.960		1.028		0.985		1.019		0.980		1.012		0.974	
Female	2.091	***	1.603		1.601		1.628		1.739	*	1.773	*	1.754	*	1.788	***
Hispanic[b]	1.579		1.157		1.084		1.202		0.931		0.985		0.917		0.969	
Asian	1.186		0.848		0.854		0.925		0.919		0.985		0.905		0.968	
Black	0.705		0.467	*	0.409	*	0.476	*	0.437	*	0.492		0.436	*	0.489	
Other race	0.704		0.874		0.723		0.868		0.755		0.867		0.777		0.889	
Hispanic female[c]			1.646		1.485		1.601		1.449		1.541		1.500		1.597	
Asian female			1.899		1.756		1.851		1.452		1.491		1.453		1.490	
Black female			1.994		1.982		2.009		1.618		1.633		1.621		1.637	
Other race female			0.763		0.883		0.804		0.888		0.828		0.888		0.830	
Special needs student					1.176		1.457		1.269		1.533		1.264		1.523	
Exhibited problem behaviors[d]					1.042		1.035		1.063		1.056		1.065		1.058	
GPA > 2.0 (on a 4.0 scale)					1.248		1.224		1.290		1.256		1.261		1.227	
10th grade math exam score							1.014				1.021				1.020	
10th grade reading exam score					0.786	*			0.819				0.822			
Took PSAT exam 10th grade[e]					1.009		0.926		0.981		0.908		0.978		0.906	
Academic self-efficacy[f]					1.003		0.982		0.983		0.964		0.979		0.960	
Disconnected 2004													0.756		0.743	
School Characteristics																
Midwest school[g]									0.393	***	0.395	***	0.383	***	0.385	***
Southern school									0.747		0.780		0.739		0.771	
Western school									0.859		0.922		0.850		0.911	
Rural school[h]									0.978		0.969		0.982		0.974	
Urban school									1.272		1.301		1.288		1.319	
Private school[i]									0.946		0.937		0.940		0.931	

Note. GPA = grade point average. Table presents odds-ratios; outcome variables are indicators of disconnection in 2006; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. [c]Dummy variable indicators of student race and gender; comparison is to White female students. [d]Problem behaviors is a composite of survey items indicating frequency of tardiness, absences, suspensions, expulsions, and other disciplinary problems during the sophomore year of high school. [e]The PSAT is a standardized test administered to help students prepare for the SAT college entrance examination. It is included as an indicator of intent to attend college. [f]Academic self-efficacy is a composite of survey items indicating strength of belief in abilities to perform well academically. [g]Comparison is to high schools in the northeastern region of the United States. [h]Comparison is to suburban high schools. [i] Comparison is to public high schools.

Table C6 Models 1 – 6: Logistic Regressions of Inactive or Active Disconnected Youth Status in 2012, 8 Years Post High School (~Age 26) for ELS:2002 Longitudinal Sample

Student characteristics	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Constant	0.297	***	0.218	***	0.286	***	0.386	***	0.211	***	0.272	***
Socioeconomic status[a]	0.963		0.964		0.979		0.976		0.981		0.973	
Female	3.480	***	5.137	***	3.264	***	1.946	**	4.797	***	2.983	***
Hispanic[b]	0.488	**	0.617		0.489	**	0.509	**	0.604		0.783	
Asian	0.719		2.061		0.738		0.702		2.112		1.783	
Black	0.259	***	0.926		0.256	***	0.256	***	0.910		1.135	
Other race	0.570		0.840		0.569		0.548	*	0.850		0.799	
Hispanic female[c]			0.748						0.771		0.581	
Asian female			0.181	**					0.182	**	0.224	**
Black female			0.152	**					0.153	**	0.116	**
Other race female			0.608						0.597		0.620	
Has dependent children					1.186		0.158	***	1.186		0.145	***
Female & dependent children							10.386	***			11.619	***

Note. Table presents odds-ratios; outcome variables are indicators of Disconnected Youth status in 2006; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status (SES) is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. [c]Dummy variable indicators of student race and gender; comparison is to White female students.

Table C7 Models 7 – 9: Logistic Regressions of Inactive or Active Disconnected Youth Status in 2012, 8 Years Post High School (~Age 26) for ELS:2002 Longitudinal Sample

	Model 7				Model 8				Model 9			
Characteristics	Reading		Math		Reading		Math		Reading		Math	
Student characteristics												
Constant	0.206	***	0.205	***	0.195	***	0.195	***	0.123	***	0.121	***
Student socioeconomic status[a]	0.944		0.948		0.955		0.959		0.964		0.969	
Female	3.184	***	3.266	***	3.165	***	3.248	***	3.210	***	3.288	***
Hispanic[b]	0.935		0.911		0.955		0.932		0.783		0.771	
Asian	1.918		1.718		1.909		1.709		1.842		1.651	
Black	1.263		1.255		1.267		1.258		1.281		1.286	
Other race	0.830		0.888		0.819		0.875		0.758		0.817	
Hispanic female[c]	0.532		0.541		0.522		0.530		0.554		0.563	
Asian female	0.256	*	0.270	*	0.260	*	0.274	*	0.211	**	0.224	**
Black female	0.117	**	0.120	**	0.118	**	0.121	**	0.134	**	0.138	**
Other race female	0.616		0.591		0.619		0.595		0.560		0.534	
Has dependent children	0.152	***	0.154	***	0.151	***	0.153	***	0.144	***	0.145	***
Female & dependent children	10.831	***	10.726	***	10.867	***	10.776	***	11.145	***	11.097	***
Special needs student	1.391		1.414		1.325		1.348		1.378		1.404	
Exhibited problem behaviors[d]	1.058		1.059		1.059		1.061		1.078		1.080	
GPA > 2.0 (on a 4.0 scale)	1.472	*	1.451	*	1.525	*	1.504	*	1.427		1.414	
10th grade math exam score	1.203		1.203				1.206				1.214	
10th grade reading exam score					1.204				1.212			
Took PSAT exam 10th grade[e]	0.734		0.741		0.742		0.749		0.764		0.774	
Academic self-efficacy[f]	1.083		1.075		1.086		1.077		1.092		1.082	
Disconnected 2004					1.115		1.127		0.895		0.914	
Disconnected 2006					1.258		1.262		1.307		1.315	
School characteristics												
Midwest school[g]									1.185		1.221	
Southern school									1.192		1.179	
Western school									2.174	**	2.164	**
Rural school[h]									1.808	**	1.834	**
Urban school									1.335		1.325	
Private school[i]									1.260		1.308	

Note. GPA = grade point average. Table presents odds-ratios; outcome variables are indicators of disconnection in 2006; logistic regressions conducted on weighted data from the Educational Longitudinal Study of 2002 (https://nces.ed.gov/surveys/els2002/) longitudinal sample representative of the population of U.S. sophomores in 2002.

*$p < .05$. **$p < .01$. ***$p < .001$.

[a]Student socioeconomic status (SES) is a standardized continuous variable computed by NCES as an average composite including father/male guardian's education and occupation, mother/female guardian's education and occupation, and household income. [b]Dummy variable indicators of student race; comparison is to White students. [c]Dummy variable indicators of student race and gender; comparison is to White female students. [d]Problem behaviors is a composite of survey items indicating frequency of tardiness, absences, suspensions, expulsions, and other disciplinary problems during the sophomore year of high school. [e]The PSAT is a standardized test administered to help students prepare for the SAT college entrance examination. It is included as an indicator of intent to attend college. [f]Academic self-efficacy is a composite of survey items indicating strength of belief in abilities to perform well academically. [g]Comparison is to high schools in the northeastern region of the United States. [h]Comparison is to suburban high schools. [i]Comparison is to public high schools.

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