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## Is Adolescent Employment Still a Risk Factor for High School Dropout?

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### Abstract

Past cohorts of teenagers who spent long hours in jobs were more likely to drop out of high school than those who worked moderate hours or did not work at all. This article examines the association between employment intensity and dropout among adolescents in the High School Longitudinal Study of 2009 who traversed high school during a time of decreased prevalence of both employment and dropout relative to earlier cohorts. Analyses reveal that a relatively small percentage of teenagers nowadays are characterized as either intensive workers or dropouts (around 11% each). Yet, despite declines in intensive employment and dropout, disadvantaged youth remain overrepresented in both groups, and intensive work is still a risk factor for poor grades and dropout.

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Past cohorts of teenagers in the United States (U.S.) who worked long hours in after-school jobs heightened their risk of high school dropout (for reviews, see Staff, Mont'Alvao, & Mortimer, 2015; National Research Council, 1998). For instance, studies reveal that the risk of leaving high school without a degree was about twice as likely among youth who work “intensively” (i.e., average more than 20 hours per week) during the school year than for students who do not work or who average less intensive hours (Apel et al., 2008; D'Amico, 1984; Lee & Staff, 2007; Marsh, 1991; McNeal Jr., 1997; Warren & Cataldi, 2006; Warren & Lee, 2003; Warren, LePore, & Mare, 2000). Though the high work intensity-dropout link is well documented, these studies relied on longitudinal data from teenagers who came of age in the 1980s and 1990s, a historical era in the U.S. marked by an especially high prevalence of high school students holding part-time jobs during the school year. Moreover, changes in the societal context of teenage employment since these earlier studies were

conducted indicate the value of revisiting the well-demonstrated intensive work-dropout association. Broad changes in the labor force have lessened the demand for teen workers over the past several decades (Smith, 2011; 2012; Staff et al., 2014), reduced the employment prospects of those who do not complete high school, and greatly increased the wage returns to college degrees. As a result, the consequences of failure to complete high school have become increasingly dire for young people as they attempt to obtain stable work and economic self-sufficiency. In view of this mix of historical changes over the past 30–40 years, which together have reduced teenage employment opportunities and made it more costly to drop out of high school, does intensive work in adolescence still contribute to high school dropout?

To assess whether high-intensity youth work still carries a risk for poor academic performance and high school dropout in a recent cohort of U.S. youth, we use nationally representative data from the High School Longitudinal Study of 2009 (the HSLs:09). The HSLs:09 first surveyed ninth graders in the fall of 2009 regarding their school and work experiences, and then again in the 11<sup>th</sup> grade (i.e., spring of 2012). Parent-reported measures of family socioeconomic status (SES), standardized test-based measures of academic ability, and youth self-reported measures of school commitment and educational expectations from the 9<sup>th</sup> grade allow us to gain insight into whether the characteristics of high intensity youth workers have undergone changes in recent years. Furthermore, high school transcript data was collected to assess students' cumulative grade point average and to determine high school completion status, allowing us to examine whether the academic consequences of high-intensity youth work has changed among contemporary youth or whether it remains a significant risk factor.

## Links between Adolescent Employment and High School Dropout

Compared to past cohorts of youth, U.S. teenagers are currently staying in school longer and spending less time in the workplace while attending secondary school. The percentage of young people who do not have a high school diploma or GED credential has declined from 14 percent in 1976 to 6.6 percent in 2012 (Stark & Noel, 2015). During the same period, national data from the Monitoring the Future study reveal that, while over 75 percent of high school seniors worked during the school year from 1977 to 2001, the percentage dropped to only 40 percent in 2012 (Staff et al., 2015). Prior analyses of the HSLs:09 reveal that a majority of teenagers in 2012 had not previously worked during the school year by the spring of the 11<sup>th</sup> grade (Anonymous, 2017; Details omitted for double-blind reviewing). The decline in youth work was steepest in the aftermath of the Great Recession (Smith, 2011; 2012), and the largest decline was experienced among those who averaged more than twenty hours per week during the school year (Staff et al., 2014).

Does high-intensity employment in adolescence still harm academic outcomes, despite substantial declines in the number of youth working during the school year and in rates of high school dropout? There are two perspectives on this issue:

## Perspective 1. High-intensity Work in Adolescence is Still a Risk Factor for High School Dropout.

As mentioned previously, in the 1980s and 1990s, about 80 to 90 percent of teenagers held a paid job before leaving high school (U.S. Department of Labor, 2000). Scholars at that time voiced concern (Greenberger & Steinberg, 1986; Marsh, 1991) that this high involvement in paid work during adolescence could conflict with time devoted to school investments (*time trade-off hypothesis*). Compared to non-employed youth or those working moderate hours (i.e., 20 or fewer hours per week), youth who work intensively spend less time on homework, miss more classes, participate in fewer extracurricular activities, and give less effort to school (Carr, Wright, & Brody, 1996; D'Amico, 1984; Greenberger & Steinberg, 1986; Kalenkoski & Pabilonia, 2012; Lee & Staff, 2007; Marsh, 1991; Marsh & Kleitman, 2005; McNeal, 1997; Monahan, Lee, & Steinberg, 2011; Mortimer, 2003; Osgood, 1999; Schoenhals, Tienda, & Schneider, 1998; Staff, Schulenberg, & Bachman, 2010; Warren & Lee, 2003). Importantly, unlike intensive work, moderate hours of youth work have not been consistently linked to negative school outcomes, and some research shows that moderate workers report higher grade point averages and standardized test scores than non-employed youth, as well as more involvement in school (Anonymous, 2017; D'Amico, 1984; Mortimer & Johnson, 1998; Warren et al., 2000).

Intensive work hours in adolescence have also been associated with poor school grades, low achievement scores, and reduced odds of high school graduation, college matriculation, and acquisition of a four-year college degree (Carr et al., 1996; Bachman et al., 2011; Mortimer, 2003; Rothstein, 2007; Staff & Mortimer, 2007; Tyler, 2003). Warren and Cataldi (2006), using five nationally representative datasets spanning the mid-1960s to the mid-1990s, found that high school sophomores who worked intensively were about two times as likely to drop out compared to moderately working youth, and that the effect was stable over this period.

Intensive hours of work during the school year may also harm academic outcomes by engendering a sense of early maturity that is incompatible with the role of high school student (*precocious maturity hypothesis*). Teenagers who spend long hours on the job may grow increasingly dependent on their relatively high earnings from work, fostering a sense of premature affluence (Bachman, 1983) and disengagement from school (Bachman & Schulenberg, 1993). Intensive employment may also lead working youth to an older pool of potential intimate partners, encouraging precocious family formation (Staff et al. 2012) that in turn may increase the risk of dropout. In addition, research shows positive links between intensive work hours in adolescence and school misconduct, truancy, suspensions, delinquency, and substance use (Apel, Paternoster, Bushway, & Brame, 2006; Greenberger & Steinberg, 1986; Johnson, 2004; McMorris & Uggen, 2000; Mortimer et al., 1996; Staff, Osgood, et al., 2010). The problem behaviors linked with intensive work could independently increase the risk of school failure and dropout.

Importantly, longitudinal studies have shown how poor school achievement, a lack of commitment to school, and early problem behaviors are strong predictors of subsequent investment in high intensity work (Mortimer, 2003; National Research Council, 1998). Some studies have also demonstrated that controlling for these preexisting differences in risk factors between students substantially reduces observed effects of early work experiences on

school performance (Schoenhals et al., 1998; Warren et al., 2000; Rothstein, 2007). However, Apel and colleagues (2008), Tyler (2003), and Staff and colleagues (2010) found a negative effect of high work intensity on school success and completion even when these potential sources of spuriousness are controlled with highly stringent analytic techniques (e.g., fixed effects, instrumental variables). Thus, from this perspective, we hypothesize that intensive work in adolescence will be positively associated with poor school performance and high school dropout, even after controlling for prior school performance, low academic ability, school disengagement, and other early life disadvantages that predict subsequent investments in paid jobs.

### **Perspective 2. The Effect of High-intensity Work in Adolescence on School Dropout has Changed since the Great Recession.**

Though the effects of intensive work on dropout remained consistent among earlier cohorts of youth (Warren & Cataldi, 2006), broad changes in the labor force have lessened the demand for teen workers in the U.S., especially in the years following the Great Recession (Smith, 2011; 2012; Staff et al., 2014). These changes, coupled with large demographic shifts in the student population, may have transformed the process by which youth locate, obtain, and maintain after-school jobs, thereby altering the work intensity-school dropout association. As we review in this section, these changing selection influences may have led to less dropout risk associated with employment because prior research shows that Hispanic youth and non-Hispanic black youth as well as youth from low SES families are less harmed by employment, and also because employers can exercise greater selectivity in hiring. Alternatively, selection influences may have led to higher risk if intensive workers are increasingly the most socioeconomically disadvantaged teens.

Background factors, such as race/ethnicity and family SES influence the likelihood and intensity of employment during the high school years. For instance, though Hispanic and non-Hispanic black youth are less likely than non-Hispanic white youth to work during the school year, research on prior cohorts shows that they are more likely to work intensively when employed (National Research Council, 1998; U.S. Department of Labor, 2000). In addition, youth from lower SES backgrounds are also less likely to be employed during the school year compared to teenagers from higher socioeconomic backgrounds, but they are more likely to work intensive hours when they are employed (Staff et al., 2014). Given demographic changes in the student population (i.e., increases in the proportion of Hispanic students coupled with declines among non-Hispanic white students; NECS, 2017), we might also expect changes in the relationship between work intensity and dropout due to demographic shifts. Unique patterns of work and dropout for Hispanic students could remain static, but change the overall pattern due to their greater representation.

Furthermore, research has found that intensive work hours during the school year may not be as harmful to school achievement for Hispanic youth and non-Hispanic black youth as well as youth from disadvantaged SES backgrounds (D'Amico, 1984; Lee & Staff, 2007; Bachman et al., 2013; Johnson, 2004). There are three explanations for this pattern of findings. First, a higher percentage of low SES youth may be holding jobs to pay for school expenses or long-term educational goals, compared to more advantaged youth who use their

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earnings for leisure activities. Since high schoolers who save some of their earnings for college report high aspirations, grades, and educational attainment (Marsh, 1991; Marsh & Kleitman, 2005), differences in earnings use may be offsetting some of the negative effects of high work intensity among low SES teenagers. Second, because discrimination and poor local labor markets make it difficult for Hispanic and non-Hispanic black youth to obtain jobs during high school, youth who do find employment may be a more select group. In comparison to non-Hispanic white youth who do not encounter these obstacles and have more opportunities to gain work, Hispanic and non-Hispanic black teens may be less vulnerable to the academic and social risks of spending long hours on the job. Third, the process of greater selectivity into work for Hispanic, non-Hispanic black, and low SES youth may increase the chances that these youth find jobs that are higher quality and more adult-like (i.e., offer vocational development, opportunities to work with adults, skill development, and connection to school; Entwisle et al., 2000). Among predominately low SES, non-Hispanic black youth in Baltimore, Entwisle (2005) demonstrated that obtaining more “adult-like” jobs in adolescence reduced the chances of later high school dropout. When investigating the negative links between intensive employment and school success, these studies highlight the importance of understanding the mechanisms that sort teenagers into different work experiences during the high school years.

Building on these studies, it is possible that the negative effects of high-intensity work on school outcomes may have weakened in recent years due to demographic changes in the composition of teenage intensive workers. As prior research shows weaker work intensity-dropout links among Hispanic and non-Hispanic black youth, as well as youth from socioeconomically disadvantaged backgrounds, we hypothesize that this broad shift in the pool of intensive workers will lead to a weaker overall effect of intensive work on school grades and dropout, at least compared to cohorts of youth who worked prior to the Great Recession.

Furthermore, in the 1980s, 1990s, and early 2000s, teenagers had opportunities to regain work even after they left jobs voluntarily or were fired. Presently, given employer cut-backs since the Great Recession, employers can be more selective in their choice of teenage workers, hiring only the best prospects who like school, who avoid trouble, and who have high educational ambitions. Therefore, the Great Recession may have transformed the composition of the recent cohort of intensive youth workers into an especially select group that overall have little risk of poor school performance or dropout, even when engaged in high intensity work. It is also plausible that the Great Recession led to a higher percentage of non-working youth who wished they could work intensively but were without jobs. Researchers have found that a strong desire for intensive work in adolescence can lead to problem behaviors, even among youth who are not working (Bachman et al., 2003; Staff, Osgood, et al., 2010). Thus, non-working youth today could be a more heterogeneous mixture of students who have a low and high risk of dropout compared to years past, which again would lead to weak overall links between intensive work and poor school outcomes.

Alternatively, selection processes influencing youth employment may have strengthened the work intensity-dropout relationship. Contemporary youth cohorts know the importance of high school graduation and college matriculation (as demonstrated by exceptionally high

educational aspirations they and their parents hold; Reynolds & Johnson, 2011), and realize that intensive high school employment without a high school degree is not a solid path to long-term success in the labor market. Teenagers who still pursue intensive employment during the school year may be an increasingly disadvantaged group. This would lead to a growing disparity between intensive workers and those who work fewer hours or not at all. It is also plausible that moderate workers may be increasingly advantaged, and use some work experience to appear well-rounded in college applications. If a limited amount of work experience in adolescence (so as not to compete with school) has become more of a luxury good for well-to-do teenagers, this would lead to persistent or even growing differences between intensive and moderate workers in their dropout propensity and long-term educational attainment. Thus, we test a final hypothesis: the positive links between intensive employment and high school dropout will be even stronger in the wake of the Great Recession relative to earlier cohorts of youth.

## Data

The High School Longitudinal Study of 2009 (HSLs:09) is a longitudinal, nationally representative dataset of 9<sup>th</sup> graders in 2009 conducted by the National Center for Education Statistics. Ninth grade students were selected using a two-stage stratified random sampling design (see Ingels et al., 2011). In the first stage, a nationally-representative stratified random sample of schools was selected, with an oversample of private schools. Schools were stratified by school type (public, private, and Catholic), region (Northeast, Midwest, South, and West), and locale (city, suburban, town, rural). Some schools were not eligible for the survey, such as Bureau of Indian Affairs schools, special education schools, career technical education schools, or Department of Defense schools. Juvenile corrections facilities and testing centers for homeschools were also not eligible. Finally, schools were ineligible if they did not have both 9<sup>th</sup> and 11<sup>th</sup> grades, were not operational in the fall of 2009, or did not require daily class attendance.

Subsequently, an average of twenty-five students was randomly surveyed across the 944 participating public, private, and Catholic high schools in the United States. HSLs:09 had a 50 percent unweighted school response rate (56 percent weighted), which was a lower school cooperation rate than anticipated due to various reasons (e.g., fewer resources/staff during the economic downturn). Students were first surveyed in the fall of 2009 as 9<sup>th</sup> graders (beginning in September) and completed follow-up surveys in the spring of 2012 (from approximately the end of January to the middle of June 2012). The mean age of students in the fall of 2009 was 14.5 (ranging from ages 13 to 19). In the spring of 2012, the mean age was 17.5 (ranging from ages 16 to 22). In addition to the follow-up surveys, high school transcript data was collected after the students' scheduled date of high school graduation (i.e., in the Spring of 2013).

Within the 944 participating schools, approximately 26,310 students were sampled. Students were ineligible for the survey if they were foreign exchange students or had transferred to a different school or dropped out before the data collection began, leaving approximately 25,210 eligible students. Of these 25,210 eligible students, 85 percent completed the base year student questionnaire, 82 percent completed the second wave questionnaire, and 87



percent had valid transcript data. Students were included in the follow-up waves regardless of whether they remained enrolled in their original school. Approximately 60 percent of the eligible students had missing data on one or more of the variables used in analyses. This high percentage of missing data is largely due to the foreign-born status variables, each of which had more than 36 percent missing. The variables in our analysis vary in their missingness with an average of 17 percent missing.

To account for missingness, we use 20 multiply imputed datasets, constructed by the chained regression procedure in Stata (using the “MI” command). This procedure first accounts for whether the variables are categorical or continuous, and then uses the appropriate regression command (e.g., logistic for binary variables like gender) to simultaneously impute each of the variables with missing data, under the assumption that the data are missing at random. Following recommended practices (Allison, 2002; Johnson & Young, 2011), our imputation model included all variables in our analysis as well as the weight and stratification indicators to address the structure of our data. Following the imputation of our 20 datasets, the MI estimate procedure in Stata combine the estimates and adjust standard errors for analyses (Rubin, 1987). Our main analyses use data that was imputed to the full eligible student sample size of 25,210. Of these eligible students, about 2 percent were incapable of filling out the base-year questionnaire due to disabilities (physical or cognitive) or difficulty with English. However, some questionnaire incapable students became eligible over time; contextual information was collected from teachers and parents, and school-level data were recorded from administrators and counselors for all eligible students. Additionally, we used the restricted version of the data, which allowed us to weight our analyses (using weights provided by NCES to account for both unit and item non-response; Ingels et al., 2015) and adjust our estimates and standard errors for the complex survey design (using the “SVY” command in Stata).

## Measures

### High School Dropout and Grade Point Average

We consider the relationship between teenage employment and two outcomes: 1) cumulative high school grade point average (GPA); and 2) high school dropout status. Students’ overall GPA in high school, measured on a scale ranging from 0.0 to 4.0, was based on official transcript records collected after the students were scheduled to finish high school (Spring of 2013). Table 1 presents weighted descriptive statistics for all measures in our analyses. GPA conforms to the normal distribution. On average, the sample has grades in the low B range, with a mean GPA of 2.54. The measure of high school dropout status was created by the NCES project staff to distinguish students who were continuously enrolled versus those who had at least one known previous dropout episode (i.e., had experienced a 4 week spell out of high school) by the Spring of 2013. Whereas stopping or dropping out of high school is relatively rare, at only 11 percent, the number of those who interrupt their educations in this sample is sufficient to use conventional logistic regression models (King & Zeng 2001). We initially analyze all dropout episodes, and then restrict our measure to those students who were dropouts as of the spring of 2013 (i.e., their senior year), eliminating stopouts. Of those

with a dropout episode in high school, most were stopouts (72%) with only about 720 students recorded as dropouts in spring of 2013.

### Teenage Employment

In the Spring of 11<sup>th</sup> grade, respondents were asked “at any time since starting 9<sup>th</sup> grade, did you work for pay during the school year? Do not count work around the house.” Youth who had worked for pay then indicated the hours per week they usually spent on the job. We used these two measures to create three mutually exclusive dummy categories capturing work intensity from the 9<sup>th</sup> to the Spring of 11<sup>th</sup> grade school years: 1) never worked during the school year (not counting work around the house or unpaid informal work); 2) worked at some point during the school year and averaged 1–20 hours per week (*moderate work*); and 3) worked at some point during the school year and averaged more than 20 hours per week (*intensive work*). This distinction between moderate and intensive work conforms to past research (National Research Council, 1998). As shown in Table 1, from 9<sup>th</sup> grade to the spring of the 11<sup>th</sup> grade more than half of students (54 percent) had never worked during the school year. Thirty-five percent of the students were moderate workers and about 11 percent of students were intensive workers. The fact that the majority of students in this sample had never worked is consistent with other nationally representative datasets showing a steep decline in teenage work experience in recent years, especially in the years following the Great Recession (Staff et al., 2014; Smith, 2011).

### Background Variables

We include a large number of control variables in our analyses to assess whether the composition of teenage workers has changed, as well as to gain leverage on potential sources of spuriousness when investigating links between work intensity, GPA, and dropout. During the first wave of the study, parental and youth surveys were used to create measures of youth race/ethnicity (coded as: Hispanic; non-Hispanic white; non-Hispanic black; non-Hispanic Asian; non-Hispanic American Indian/Alaskan Native; non-Hispanic Native Hawaiian/Pacific Islander; and non-Hispanic Multiracial), gender (1=male; 0=female), birth year (1993 or earlier; 1994; and 1995 or later), generation status (student foreign born; both parents foreign born; one parent foreign born; child and both parents U.S. born), parent’s highest education (ranging from “less than high school” to “Bachelor’s degree or higher”), standardized family income (ranging on a 15-point scale from “family income less than or equal to \$15,000” to “family income over \$235,000”), family structure (1=two parents, 0=other), urbanicity (city; suburb; town; rural), and region (Northeast; Midwest; South; West). Demographically, as shown in Table 1, the sample is roughly half Non-Hispanic white youth, with the second most prevalent group being Hispanic youth (22 percent). Over 95% of students were born in 1994 or 1995; approximately 4% were born in 1993, 1% were born in 1992, and .01% (about 30 students) were born in 1991 or earlier. Most of the students lived with two parents (55 percent) and were born in the U.S. to U.S. born parents, but 26 percent were first or second generation immigrants. The sample is evenly split by sex.

Additional control variables from the ninth grade include an investigator-assessed mathematics achievement score (standardized theta score), based upon tests completed by respondents using a computer. Parents and students’ educational expectations were assessed



by the question: “As things stand now, how far in school do you think you [your child] will actually get?” (“Don’t know,” “Some college or less,” “Bachelor’s degree,” “More than Bachelor’s degree”). Contemporary teenagers have high educational expectations (Reynolds & Johnson, 2011), as 57 percent of youth expected they would earn at least a Bachelor’s degree. Parents had even higher educational expectations for their children, as 69 percent of parents expected their teenage child to earn at least a Bachelor’s degree. Students also self-reported their commitment toward school; about 83 percent believed that school is not a waste of time. The number of hours spent in extracurricular activities on a typical school day ranged from “less than 1 hour” to “5 or more hours.” The number of hours spent on homework is a count measure ranging from “0” to “10 or more hours” in the past week. Finally, uncertain career expectations indicate whether students reported the job they planned to hold at age 30. Approximately 29 percent of ninth graders did not know what job they wanted to hold in adulthood.

## Results

### What Factors Predict High Intensity Work in Adolescence?

The selection hypothesis rests on the assumption that the composition of intensive teen workers has shifted in recent years, changing the work hours-dropout association. To examine whether the composition of workers has changed in recent years (particularly youth who work intensively), we begin analyses with an assessment of the factors associated with working during high school. We use a multinomial logistic regression model (see Table 2) to estimate the likelihood that a student works moderately or intensively as opposed to not working during the school year. We report all effects for multinomial logistic regression, as well as the binary logistic regression that follows as odds ratios. Odds ratios compare the relative odds of success to failure among two groups, as opposed to relative risk which describes how likely an outcome is in one group compared to another.

Consistent with prior research (National Research Council, 1998), we found little difference between girls and boys in the odds of working either moderately or intensively versus not working. However, using Stata’s postestimation commands, we can see that boys have approximately 27% higher odds of intensive versus moderate hours of work compared to girls. We also found that older students have higher odds of working. For instance, compared to those born in 1995 or later (age 17 or younger in 2012), those born in 1993 or earlier (age 19 or older) have 1.68 times ( $p < .05$ ) and 2.34 times ( $p < .01$ ) greater odds of working moderately and intensively, respectively.

However, these findings also indicated historical changes in the precursors of work intensity. That is, Table 2 shows that contemporary non-Hispanic white teenagers have higher odds of working both moderately and intensively than other racial and ethnic groups, compared to not working. Prior research has long shown that Hispanic youth and non-Hispanic black youth are more likely than non-Hispanic white youth to work long hours when they are employed (National Research Council, 1998). In this cohort, non-Hispanic black youth have lower odds than non-Hispanic white youth of working intensively during the school year, and Hispanic youth did not differ from non-Hispanic white youth in their odds of working intensively. (Multiracial students were no different from white students in their patterns of

work.) We also did not observe racial/ethnic differences in the odds of working intensively versus moderately.

Consistent with prior research, we also found that socioeconomic background contributes to high school employment intensity. Students whose parents have a bachelor's degree or higher level of education have 48 and 51 percent lower odds of working intensively than those whose parents have no high school diploma, compared to not working and working moderately, respectively ( $p < .05$ ). Additionally, as family income increases, so do the odds that the student works moderately as opposed to not working (by about 8 percent for each one-standard deviation increase). Finally, second generation immigrant students whose parents are both foreign born have 34 percent and 41 percent lower odds of moderate and intensive work, respectively, than U.S. born students of U.S. born parents, which is likewise consistent with prior research (Perreira et al., 2007; Kofman & Bianchi, 2012). Students who resided in town environments have higher odds of working intensively than urban students, and students in the South and West (compared to Northeast) have higher odds of working moderately. Intensive work has lower odds in the West than the Northeast.

Students' experiences in and expectations of their education are also associated with their high school employment. Students' odds of working intensively, but not moderately, decrease significantly as their math score increases, as each standard deviation increase in math scores reduces the odds of working intensively by 18 percent ( $p < .001$ ). Students with more extracurricular activities have greater odds of working moderately, with each additional activity increasing the odds by 6 percent ( $p < .05$ ). Those who are uncertain of their future career have significantly lower odds of both moderate and intensive work, with respective odds ratios of 0.83 and 0.72 ( $p < .01$ ). We also found that students who expect to earn a bachelor's degree, relative to those with expectations of high school or less, have 49 percent higher odds of working intensively compared to not working ( $p < .05$ ).

### Is High-Intensity Work in Adolescence Still a Risk Factor?

We next turn our analysis to examining the association between youth employment and high school GPA and dropout (see Table 3). In the first model, we control for race/ethnicity, sex, and age, all of which significantly predict GPA. In this model, working intensively is significantly associated with a decrease in high school GPA of 0.29 ( $p < .001$ ), or nearly a third of a letter grade. While working moderately has no association with GPA relative to non-workers, the difference between moderate and intensive work derived via Stata's postestimation commands is also statistically significant ( $b = -.30, p < .001$ ). Thus, intensive work is negatively associated with students' high school GPA relative to both not working and moderate work, confirming past research on the benefits of the latter.

In Model 2, we include the full set of control variables. The findings remain consistent in this model. Intensive workers have significantly lower GPAs by about 0.18 than students who do not work in high school ( $p < .001$ ), and by about 0.20 than those who worked moderately ( $p < .001$ ). We found significant relationships between the control variables and high school GPA that are consistent with prior research (e.g., higher for non-Hispanic white teens, females, those with highly educated parents, and those from intact and higher income families). Adolescents who were younger had higher GPAs than older ones (who may have

repeated prior grades). Parental educational expectations, respondent educational expectations, commitment to school, math scores, and extracurricular activities also were associated with higher GPAs.

Next, our analysis examines high school dropout. In Table 3, model 3, intensive work is significantly associated with increased odds of dropping out, net of race/ethnicity, sex, and age. The odds of dropping out are 55 percent higher for intensive workers relative to non-workers ( $p < .01$ ). This positive effect remains in model 4 even after controlling for all other measures, with a 44 percent increased odds of dropout for intensive workers ( $p < .05$ ). Intensive workers have higher odds of dropping out compared to those youth who work moderately (OR=1.54;  $p < .05$ ). In Model 4, with the exception of race/ethnicity, we found a similar pattern of significant associations for the controls as was found for GPA, but in the opposite direction, as would be expected. Thus, youth with higher parental education, higher family income, intact family structure, higher parental educational expectations, and higher school commitment and test scores have lower odds of dropping out.

Finally, we examined variation in the associations across subpopulations. In a series of regression models with interactions, we examined differences by sex, race/ethnicity, family income, parents' education, and generation status (not shown but available upon request). For dropout there are no differences in the estimates of high school employment for these subpopulations. Similarly, there are no differences in the estimates of the effects of work on GPA by sex, race/ethnicity, family income, parents' education, and generation status.

### Alternative Specifications

In supplemental analyses, we addressed whether the pattern of findings shown in Table 3 was sensitive to how we coded the measure of high school dropout and addressed school clustering. It is important to note that our "ever dropout" outcome measure includes students who were dropouts in the spring of 2013 as well as "stopouts" who had a previous dropout episode. Stopouts were excluded in a supplemental logistic regression analysis that includes the full set of control variables. As shown in Table 4, the odds of being a dropout in spring of 2013 for intensive workers, relative to non-workers, was larger than the odds of ever dropping out (shown in Model 2 of Table 3). Similarly, the odds of dropping out in spring of 2013 remained large in magnitude and significant (OR=1.96,  $p < .05$ ) for the intensive workers relative to the moderate workers.

Finally, it is plausible that the links between intensive work and dropout may vary by school, as high schools vary in policies aimed at keeping youth in school, programs aimed at fostering vocational development, or programs targeted to foster better connections between employers and schools. In supplemental analyses, we included fixed effects for the 944 schools in our analyses to gain leverage on whether school-related unobservable characteristics were influencing the findings. As shown in Table 5, the associations between intensive work and high school GPA and dropout are robust to using school fixed effects. For instance, compared to the estimates shown in Models 2 and 4 of Table 3, the estimate of intensive work, compared to not working, on GPA becomes slightly larger in magnitude ( $b = -.22$ ,  $p < .001$ ), whereas the odds ratio on dropout becomes slightly smaller (OR=1.39,  $p < .01$ ), when school fixed effects are included. Thus, these results provide evidence that even

within the same school, and controlling for all unobservable school effects, students who work intensively have lower performance and higher odds of dropping out relative to their classmates who do not work.

## Discussion

Research on past cohorts has long documented the risk that high-intensity work poses for high school dropout (Apel et al., 2008; D'Amico, 1984; Lee & Staff, 2007; Marsh, 1991; McNeal Jr., 1997; Warren & Lee, 2003; Warren & Cataldi, 2006). However, whether the work-dropout relationship remains for the decreasing number of youth in the United States who still spend their after-school time working long hours on the job is not clear. Addressing this issue is especially important given substantial shifts in the labor force, which have lessened opportunities for teen work, reduced the employment prospects for those who do not complete high school, and increased the economic returns to college and other post-secondary degrees. Increases in compulsory schooling and programs designed to help students graduate from school attempt to address the shifting economic realities. Given this mixture of historical changes, making it much more costly to drop out than even 20 years ago, we used longitudinal data from a recent nationally representative cohort of high school youth to assess whether intensive work was still a risk factor for school failure and high school dropout.

Results show that only 11 percent of teenagers in the 2009 ninth grade cohort averaged intensive hours of paid work at some point during the school year by the spring of 11<sup>th</sup> grade, and only 11 percent of this cohort dropped out of high school. Despite low rates of both intensive employment and dropout, high-intensity work is still a risk factor for high school dropout among contemporary youth. For instance, the odds of dropping out of high school for the minority of youth who spent long hours on the job were 44 percent higher compared to the majority of youth who did not work during the school year, and 54 percent higher compared to workers who limited their hours, even after controlling for a large number of potential confounders. This disparity in dropout was even more pronounced when we excluded temporary stopouts from the analyses. Additionally, high-intensity workers had significantly lower GPA scores by about one-half of a letter grade compared to moderate workers or those not working at all.

These results support the perspective that high-intensity work in adolescence remains a risk factor for high school dropout. Though we did not formally test the mechanisms for this relationship, one reason may be that as the investment in work increases above a threshold, the time available to spend on schoolwork and other extracurricular activities decreases, which in turn leads to lower grades and greater odds of dropping out. The precocious maturity hypothesis may also explain part of the relationship. The sense of maturity gained from more adult-like work roles could be causing intensive workers to disengage from school. Prior research using the same data has found that intensive workers had significantly lower test scores and educational expectations in the 11<sup>th</sup> grade compared to non-workers (Anonymous, 2017). Further, intensive workers were less likely to be uncertain about their future career plans, indicating an investment in work not present for those who did not work during high school.

We also found that moderate workers had significantly higher GPAs and had higher odds of staying in school compared to intensive workers, even after accounting for selection influences (especially family background). In addition, moderate employment has been shown to be positively associated with participating in extracurricular activities (Mortimer, 2003; Mortimer & Johnson, 1998), countering claims that less intensive work might limit time available for school pursuits. These beneficial effects of limited work hours on school dropout may have been more pronounced had a measure of work duration been available. For instance, youth working for longer durations at low intensity tend to have more positive outcomes than those who work sporadically, moving from one job to the next (Mortimer, 2003). Unfortunately, unlike prior longitudinal datasets based on cohorts of youth working in the 1980s and 1990s (e.g., the 1979 and 1997 cohorts of the National Longitudinal Survey of Youth), the HSLs:09 dataset does not include questions regarding the length of employment, and this question is therefore beyond the scope of our study.

In the current study, the negative links between intensive work and dropout were not moderated by gender, race/ethnicity, and socioeconomic background. Prior research shows that the negative effects of high intensity work are less prevalent among Hispanic youth and non-Hispanic black youth, as well as youth from low socioeconomic backgrounds. Hispanic and non-Hispanic black youth are more likely than non-Hispanic white youth to report contributing some of their earnings to family expenses, as are youth whose parents have lower levels of educational attainment (Staff et al., 2015). The benefits of collective family (vs. individualistic) uses of adolescent earnings have been noted in prior research (Shanahan et al., 1996). Additionally, Hispanic, non-Hispanic black, and disadvantaged youth have more difficulty obtaining work in the first place, making for a greater stake in employment and placing a higher value on the experience (Entwisle et al., 2000). Unlike findings based on prior cohorts, white youth in this study had higher odds of working both moderately and intensively than members of most other racial and ethnic groups. Family income is associated with higher odds of working moderately.

It is especially noteworthy that the association between intensive employment and high school dropout is a continuing and apparently constant long-term trend extending over the past four decades. The positive association between intensive employment and dropout from 1966 to 1997 was empirically demonstrated by Warren & Cataldi (2006) in five nationally representative datasets (with controls for race/ethnicity, gender, parents' education, family structure, age/grade delay, and college aspirations/expectations), and confirmed by Lee and Staff (2007) using the National Educational Longitudinal Study of 1988 (and propensity score matching with a similar variable set). Importantly, our estimate of the effect of intensive work on high school dropout extends the time series to the 2009 cohort of 9<sup>th</sup> graders (and uses a broader set of controls). As shown in Table 6, our more recent estimate does not significantly differ from these earlier estimates, nor do they differ significantly from one another.

The persistent link between long hours of employment and high school dropout raises the question as to what high schools might do to reduce high intensity employment risk. One approach is to lessen the likelihood of such strong, premature work investment in the first place via communication and persuasion. High school counselors, teachers, parents, and

high school students themselves should be informed of the risk high intensity adolescent employment poses for school dropout. But even if they and their mentors were so informed, some students may be drawn to work long hours because of disinterest or difficulty in school, or the perceived (and actual) benefits of working. High intensity student workers' jobs are more like adult jobs; they bring relatively high earnings and may yield other intrinsic (autonomy, supervisory responsibility, expression of interests) and extrinsic (advancement opportunity) benefits as well. Some students may have little choice in the matter; as a result of marital dissolution, poverty and hardship, parents may rely on their adolescent children's paychecks.

Given that some students, though a diminishing number, may want to or need to work long hours, educational policies are indicated that enable high intensity employed youth to stay in school despite time-consuming work roles. For example, to better accommodate their needs, we recommend that schools provide greater flexibility in the timing of courses that are required for graduation (e.g., by offering night classes) and allow students to make up tests or assignments that are missed because of work demands. Teachers might also enhance the linkage between school and work by encouraging class discussions about work-related issues; by asking students to write about the rewards, issues, and obstacles they confront in their work settings; and by bringing together students' academic and work lives in other ways. Although the "vocational track" has been eliminated in most high schools, vocational or career-related courses, work-related extracurricular activities, school-sponsored job shadowing and internships, and other attempts to make high school more meaningful to the vocationally-oriented student could enhance interest in remaining in school and lessen the lure of high school dropout.

Unfortunately, the teenagers in the HSLS:09 were not asked about where they work and the quality of their employment, nor was this information available in the other studies referenced in Table 6. Other research has shown that the quality of work is related to a variety of adolescent outcomes. For example, having a job that provides opportunities to learn job-related skills is negatively related to adolescent deviance (Staff & Uggen, 2003). Furthermore, youth working informally (i.e. lawn work, babysitting) may be more likely than those in more formal work settings to see positive outcomes from employment due to the setting and nature of the employment (Staff et al., 2015). These jobs are more likely to be accompanied by positive adult role models, lower stress levels, and older supervisors.

The longitudinal design of this study, with strong controls for selection influences and school fixed effects, allowed us to confidently test whether intensive work is still a risk factor for dropout. Further, for GPA, the use of transcript data and school fixed effects should assuage any concerns about inflation due to self-report and school-level differences in its measurement, respectively. Though previous research with earlier cohorts using sophisticated designs (i.e., instrumental variables) has shown robust links between high intensity work and dropout, we nonetheless remain cautious in interpreting these as causal effects. On the one hand, our findings remain robust to the inclusion of school-level unobservables. At a minimum then, we can conclude that students who work intensively have lower GPAs and higher odds of dropping out relative to their same-school classmates, eliminating concerns about school-level unobserved heterogeneity through within-school



comparisons. On the other hand, our results also show that youth are not randomly assigned to work intensive hours, and thus person-level unobservables may be partly driving the effect of intensive work on dropout among contemporary youth. Ideally, future longitudinal data with contemporary cohorts will become available that will allow for the use of individual fixed effects, which is not possible with the HSLs:09. An additional consideration is the possibility that the general trend of grade inflation results in higher GPAs in this cohort than the cohorts of prior research. Future studies may address this question through the use of SAT or other standardized test scores.

Whereas previous studies of the relationship between work intensity and high school dropout used data that was collected in the 1980s or 90s, this study extends prior research through its use of data collected within the past ten years. This is important due to the decline in youth employment over the past few decades (Staff et al. 2015). This decline, coupled with the decrease in rates of drop out, suggests that youth today view the benefits of high school employment and education for their futures differently than youth in prior decades.

Although the rates of youth employment have declined, the positive association between intensive work and high school dropout persists. Whereas our results show no differences between moderate workers and non-workers in grade point average and dropout rates, they indicate that intensive work is still a risk factor for low school achievement and dropping out of high school. Further, despite fewer youth working during the school year, 11 percent of our sample worked intensively. This suggests that even with more teenagers shifting away from formal work during the school year, a non-trivial portion of youth are still selecting into intensive work roles while also attempting to complete high school. Thus, it remains important to continue efforts to create policies and programs within high schools that encourage those most invested in employment to stay in school and to complete their high school education.

## References

- Allison PD (2002). Missing data. Thousand Oaks, CA: Sage. doi: 10.4135/9781412985079
- Apel R, Bushway S, Brame R, Haviland AM, Nagin DS, & Paternoster R (2007). Unpacking the relationship between adolescent employment and antisocial behavior: A matched samples comparison. *Criminology*, 45(1), 67–97. doi: 10.1111/j.1745-9125.2007.00072
- Apel R, Bushway S, Paternoster R, Brame R, & Sweeten G (2008). Using state child labor laws to identify the causal effect of youth employment on deviant behavior and academic achievement. *Journal of Quantitative Criminology*, 24, 337–362. doi: 10.1007/s10940-008-9055-5 [PubMed: 23825897]
- Apel R, Paternoster R, Bushway S, & Brame R (2006). A job isn't just a job: The differential impact of formal versus informal work on adolescent problem behavior. *Crime & Delinquency*, 52, 333–369. doi: 10.1177/0011128705278633
- Bachman JG (1983). Premature affluence: Do high school students earn too much money? *Economic Outlook USA*, 10, 64–67.
- Bachman JG, Saffron DJ, Sy SR, & Schulenberg JE (2003). Wishing to work: New perspectives on how adolescents' part-time work intensity is linked to educational disengagement, substance use, and other problem behaviors. *International Journal of Behavioral Development*, 27(4), 301–315. doi: 10.1080/01650250244000281

- Bachman JG, & Schulenberg JE (1993). How part-time work intensity relates to drug use, problem behavior, time use, and satisfaction among high school seniors: Are these consequences or merely correlates? *Developmental Psychology*, 29(2), 220–235. doi: 10.1037/0012-1649.29.2.220
- Bachman JG, Staff J, O'Malley PM, & Freedman-Doan P (2013). Adolescent work intensity, school performance, and substance use: Links vary by race/ethnicity and socioeconomic status. *Developmental Psychology*, 49(11), 2125–2134. doi: 10.1037/a0031464 [PubMed: 23316768]
- Bachman JG, Staff J, O'Malley PM, Schulenberg JE, & Freedman-Doan P (2011). Twelfth-grade student work intensity linked to later educational attainment and substance use: New longitudinal evidence. *Developmental Psychology*, 47(2), 344–363. doi: 10.1037/a0021027 [PubMed: 21171751]
- Baum CL, & Ruhm CJ (2016). The changing benefits of early work experience. *Southern Economic Journal*, 83(2), 343–363. doi: 10.1002/soej.12157
- Carr RV, Wright JD, & Brody CJ (1996). Effects of high school work experience a decade later: Evidence from the National Longitudinal Survey. *Sociology of Education*, 69(1), 66–82. doi: 10.2307/2112724
- D'Amico R (1984). Does employment during high school impair academic progress? *Sociology of Education*, 57(3), 152–164. doi: 10.2307/2112599
- Entwisle DR (2005). Urban teenagers: Work and dropout. *Youth & Society*, 37(1), 3–32. doi: 10.1177/0044118X04268313
- Entwisle DR, Alexander KL, & Olson LS (2000). Early work histories of urban youth. *American Sociological Review*, 65(2), 279–297. doi: 10.2307/2657441
- Greenberger E & Steinberg LD (1986). *When teenagers work: The psychological and social costs of teenage employment*. New York, NY: Basic Books. doi: 10.1525/awr.1988.9.1.8
- Ingels SJ, Pratt DJ, Herget DR, Burns LJ, Dever JA, Ottem R, Rogers JE, Jin Y, Leinwand S, & LoGerfo L (2011). *High School Longitudinal Study of 2009 (HSL:09). Base-year data file documentation (NCES 2011–328)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Ingels SJ, Pratt DJ, Herget D, Bryan M, Fritch LB, Ottem R, Rogers JE, and Wilson D (2015). *High School Longitudinal Study of 2009 (HSL:09) 2013 Update and High School Transcript Data File Documentation (NCES 2015–036)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Johnson DR, & Young R (2011). Toward best practices in analyzing datasets with missing data: Comparisons and recommendations. *Journal of Marriage and Family*, 73, 926–945. doi: 10.1111/j.1741-3737.2011.00861.x
- Johnson MK (2004). Further evidence on adolescent employment and substance use: Differences by race and ethnicity. *Journal of Health and Social Behavior*, 45, 187–197. doi: 10.1177/002214650404500205 [PubMed: 15305759]
- Kalenkoski CM, & Pabilonia SW (2012). Time to work or time to play: The effect of student employment on homework, sleep, and screen time. *Labour Economics*, 19, 211–221. doi: 10.1016/j.labeco.2011.10.002
- King G, & Zeng L (2001). Logistic regression in rare events data. *Political Analysis*, 9, 137–163. doi: 10.1093/oxfordjournals.pan.a004868
- Kofman Y, & Bianchi SM (2012). Time use of youths by immigrant and native-born parents: ATUS results. *Monthly Labor Review*, 135, 3–24. [PubMed: 26005226]
- Lee JC, & Staff J (2007). When work matters: The varying impact of work intensity on high school dropout. *Sociology of Education*, 80(2), 158–178. doi: 10.1177/003804070708000204
- Marsh HW (1991). Employment during high school: Character builder or subversion of academic goal? *Sociology of Education*, 64, 172–189. doi: 10.2307/2112850
- Marsh HW, & Kleitman S (2005). Consequences of employment during high school: Character building, subversion of academic goals, or a threshold? *American Educational Research Journal*, 42(2), 331–369. doi: 10.3102/00028312042002331
- McMorris B, & Uggen C (2000). Alcohol and employment in the transition to adulthood. *Journal of Health and Social Behavior*, 41, 276–94. doi: 10.2307/2676321 [PubMed: 11011505]

- McNeal RB Jr. (1997). Are students being pulled out of high school? The effect of adolescent employment on dropping out. *Sociology of Education*, 70(3), 206–220. doi: 10.2307/2673209
- Monahan KC, Lee JM, & Steinberg L (2011). Revisiting the impact of part-time work on adolescent adjustment: Distinguishing between selection and socialization using propensity score matching. *Child Development*, 82(1), 96–112. doi: 10.1111/j.1467-8624.2010.01543.x [PubMed: 21291431]
- Mortimer JT (2003). *Working and growing up in America*. Harvard University Press.
- Mortimer JT, Finch MD, Ryu S, Shanahan MJ, & Call KT (1996). The effect of work intensity on adolescent mental health, achievement, and behavioral adjustment: New evidence from a prospective study. *Child Development*, 67(3), 1243–1261. doi: 10.1111/j.1467-8624.1996.tb01793.x [PubMed: 8706520]
- Mortimer JT, & Johnson MK (1998). Adolescent part-time work and educational achievement” In Borman K & Schneider B (Eds.), *The adolescent years: Social influences and educational challenges* (pp. 183–206). Chicago, IL: National Society for the Study of Education.
- National Center for Education Statistics. (2017). *Racial/ethnic enrollment in public schools*. Washington, DC: U.S. Department of Education <[https://nces.ed.gov/programs/coe/indicator\\_cge.asp](https://nces.ed.gov/programs/coe/indicator_cge.asp)>
- National Research Council. (1998). *Protecting youth at work: Health, safety, and development of working children and adolescents in the United States*. Washington, DC: The National Academies Press.
- Osgood DW (1999). Having the time of their lives: All work and no play? In Booth A, Crouter AC, & Shanahan MJ(Eds.), *Transitions to adulthood in a changing economy: No work, no family, no future?* (pp. 176–186). Westport, CT: Praeger.
- Paternoster R, Bushway S, Brame R, & Apel R (2003). The effect of teenage employment on delinquency and problem behaviors. *Social Forces*, 82(1), 297–335. doi: 10.1353/sof.2003.0104
- Perreira KM, Harris KM, & Lee D (2007). Immigrant youth in the labor market. *Work and Occupations*, 34(1), 5–34. doi: 10.1177/0730888406295394
- Reynolds JR, & Johnson MK (2011). Change in the stratification of educational expectations and their realization. *Social Forces*, 90(1), 85–109. doi: 10.1093/sf/90.1.85
- Rothstein DS (2007). High school employment and youths’ academic achievement. *The Journal of Human Resources*, 42(1), 194–213. doi: 10.3368/jhr.XLII.1.194
- Rubin DB (1987). *Multiple imputation for nonresponse in surveys*. New York: Wiley. doi: 10.1002/9780470316696
- Shanahan MJ, Elder GH Jr., Burchinal M, & Conger RD (1996). Adolescent earnings and relationships with parents: The work-family nexus in urban and rural ecologies In Mortimer JT & Finch MD (Eds) *Adolescents, Work, and Family: An Intergenerational Developmental Analysis* (pp. 97–128). Newbury Park, CA: Sage Publications.
- Schoenhals M, Tienda M, & Schneider B (1998). The educational and personal consequences of adolescent employment. *Social Forces*, 77(2), 723–761. doi: 10.2307/3005545
- Smith CL (2011). Polarization, immigration, education: What’s behind the dramatic decline in youth employment? Division of Research and Statistics and Monetary Affairs Finance and economics discussion series 2011–2041. Washington, D.C: Federal Reserve Board. doi: 10.2139/ssrn.1956751
- Smith CL (2012). The impact of low-skilled immigration on the youth labor market. *Journal of Labor Economics*, 30(1), 55–89. doi: 10.1086/662073
- Staff J, Johnson MK, Patrick M, & Schulenberg J (2014). The great recession and recent employment trends among secondary students in the United States. *Longitudinal and Life Course Studies*, 5(2), 173–188. doi: 10.14301/lcs.v5i2.275 [PubMed: 25642296]
- Staff J, Mont’Alvao A, & Mortimer JT (2015). Children at work In Bornstein M & Levelthal T (Eds.), *Handbook of child psychology and developmental science: Volume 4: Ecological settings and processes* (pp. 345–374). New Jersey: John Wiley and Sons.
- Staff J, & Mortimer JT (2007). Educational and work strategies from adolescence to early adulthood: Consequences for educational attainment. *Social Forces*, 85(3), 1169–1194. doi: 10.1353/sof.2007.0057

- Staff J, Osgood DW, Schulenberg JE, Bachman JG, & Messersmith EE (2010). Explaining the relationship between employment and juvenile delinquency. *Criminology*, 48(4), 1101–1131. doi: 10.1111/j.1745-9125.2010.00213.x [PubMed: 21442045]
- Staff J, Schulenberg JE, & Bachman JG (2010). Adolescent work intensity, school performance, and academic engagement. *Sociology of Education*, 83(3), 183–200. doi: 10.1177/0038040710374585 [PubMed: 20802795]
- Staff J, & Uggen C (2003). The fruits of good work: Early work experiences and adolescent deviance. *Journal of Research in Crime and Delinquency*, 40(3), 263–290. doi: 10.1177/0022427803253799
- Staff J, VanEseltine M, Woolnough A, Silver E, & Burrington L (2012). Adolescent work experiences and family behavior. *Journal of Research on Adolescence*, 22, 150–164. doi: 10.1111/j.1532-7795.2011.00755.x [PubMed: 22736931]
- Stark P, & Noel AM (2015). Trends in high school dropout and completion rates in the United States: 1972–2012. (NCES 2015–015). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Tyler JH (2003). Using state child labor laws to identify the effect of school-year work on high school achievement. *Journal of Labor Economics*, 21(2), 381–408. doi: 10.1086/345562
- U.S. Department of Labor. (2000). Report on the youth labor force. Washington, D.C.: U.S. Government Printing Office.
- Warren JR, & Lee JC (2003). The impact of adolescent employment on high school dropout: Differences by individual and labor-market characteristics. *Social Science Research*, 32, 98–128. doi: 10.1016/S0049-089X(02)00021-2
- Warren JR, LePore PC, & Mare RD (2000). Employment during high school: Consequences for students' grades in academic courses. *American Educational Research Journal*, 37, 943–969. doi: 10.3102/00028312037004943
- Warren JR, & Cataldi EF (2006). A historical perspective on high school students' paid employment and its association with high school dropout. *Sociological Forum*, 21(1), 113–143. doi: 10.1007/s11206-006-9005-7

**Table 1.**

## Descriptive Statistics

		Weighted Percent or Mean (SE)
Ever Dropout	No	89%
	Yes	11%
GPA		2.54 (.02)
Teenage Employment	Never Worked	54%
	Ever worked, 1–20 hours	35%
	Ever worked, 20+ hours	11%
Race	Hispanic	22%
	Non-Hispanic white	52%
	Non-Hispanic black	14%
	Non-Hispanic Asian	4%
	Non-Hispanic American Indian/Native American	1%
	Non-Hispanic Native Hawaiian/Pacific Islander	1%
	Non-Hispanic multiracial	8%
Sex	Female	50%
	Male	50%
Birth Year	1993 or earlier <sup>a</sup>	5%
	1994	38%
	1995 or later <sup>b</sup>	57%
Generation Status (Both Parents)	1 (Child Foreign Born)	7%
	2 (Parents Foreign Born)	11%
	2.5 (A Parent Foreign Born)	8%
	3 (Parents and Child US Born)	74%
Generation Status (Parent 1)	1 (Child Foreign Born)	7%
	2 (Parent Foreign Born)	14%
	3 (Parent and Child US Born)	79%
Parents' Highest Education	Less Than High School	7%
	High School Diploma or GED	35%
	Associates or Vocational	22%
	Bachelors or Higher	36%
Standardized Family Income		-.13 (.02)
Family Structure		

	Weighted Percent or Mean (SE)
Other	45%
Two Parents	55%
Parents' Educational Expectations	
Don't Know	12%
High School or Less	10%
Some College/Technical	10%
Bachelor's Degree	29%
More than Bachelors	40%
Commitment to School	
Strongly Agree	4%
Agree	13%
Disagree	51%
Strongly Disagree	32%
Urban-Centric Locale	
City	32%
Suburban	33%
Town	12%
Rural	23%
Region	
Northeast	17%
Midwest	22%
South	38%
West	23%
Standardized Math Score (9th Grade)	50.65 (.21)
Hours Spent on Homework (9th Grade)	3.04 (.04)
Hours of Extracurricular Activities (9th Grade)	2.47 (.02)
Uncertain Career Expectations (9th Grade)	29%
Student's Educational Expectations	
Don't Know	21%
High School or Less	14%
Some College	7%
Bachelor's Degree	16%
More than Bachelor's	41%

Note.

<sup>a</sup>Of the teenagers born in 1993 or earlier, 4% were born in 1993, 1% were born in 1992, and .01% (approximately 30 youth) were born in 1991 or earlier.

<sup>b</sup>Of the 57% of youth born in 1995 or later, .01% (approximately 30 youth) were born in 1996 or later. N=25,210 (The National Center for Education Statistics requires that all sample survey data must be rounded to nearest 10)



**Table 2.**  
Multinomial Logistic Regression Predicting High School Work (Reference=Never Worked)

	Ever worked, 1–20 hours		Ever worked >20 hours		1–20 hours, >20 hours	
	OR	95% CI	OR	95% CI	OR	95% CI
Race (Ref=non-Hispanic white)						
Non-Hispanic black	.49 ***	.40 .61	.51 ***	.36 .74	1.04	.72 1.51
Non-Hispanic Asian	.60 **	.42 .85	.51 *	.29 .92	.86	.43 1.72
Hispanic	.71 ***	.59 .85	.80	.58 1.11	1.13	.81 1.58
Non-Hispanic American Indian/Native American	.39 *	.17 .87	.32 *	.11 .97	.84	.25 2.77
Non-Hispanic Native Hawaiian/Pacific Islander	.27 **	.11 .71	.25 *	.06 .99	.90	.22 3.78
Non-Hispanic multiracial	.89	.73 1.09	1.07	.79 1.44	1.20	.89 1.61
Sex (Ref=female)	.93	.82 1.06	1.18	.97 1.43	1.27 *	1.04 1.55
Birth Year (Ref=1995 or later)						
1993 or earlier	1.68 *	1.12 2.52	2.34 **	1.45 3.78	1.39 *	.86 2.27
1994	1.32 **	1.12 1.57	1.59 ***	1.30 1.93	1.20	.99 1.44
Parents' Highest Education (Ref=Less Than HS)						
HS Diploma or GED	.97	.67 1.40	.76	.51 1.15	.79	.50 1.25
Associates or Technical	.99	.69 1.40	.71	.47 1.09	.73	.47 1.12
Bachelor's or Higher	1.05	.73 1.51	.52 **	.33 .81	.50	.31 .79
Standardized Family Income	1.08 *	1.01 1.16	1.01	.90 1.13	.94	.84 1.04
Intact Family (2 Parents)	.99	.87 1.13	.88	.73 1.07	.89	.75 1.06
Parents' Educational Expectations (Ref=HS or less)						
Don't Know	1.16	.84 1.61	1.21	.76 1.95	1.04	.67 1.62
Some College	1.20	.86 1.69	1.22	.79 1.87	1.01	.66 1.54
Bachelor's Degree	1.30	.97 1.75	.99	.64 1.53	.76	.50 1.16
More than Bachelor's	1.06	.81 1.41	.89	.58 1.37	.84	.55 1.27
Commitment to School	.96	.89 1.04	.95	.85 1.07	.99	.88 1.12
Urban-centric locale (Ref=City)						
Suburban	.94	.81 1.09	1.12	.87 1.44	1.19	.91 1.55
Town	1.09	.90 1.32	1.46 *	1.09 1.96	1.34 *	1.01 1.78
Rural	1.01	.85 1.19	1.23	.95 1.59	1.22	.93 1.59
Region (Ref=Northeast)						

	Ever worked, 1–20 hours		Ever worked, >20 hours		1–20 hours, >20 hours				
Midwest	1.12	.95	1.32	.97	.72	1.32	.87	.63	1.19
South	.70	***	.60	.82	.75	1.00	1.07	.78	1.47
West	.76	**	.62	.93	.49	***	.34	.64	* .91
Standardized Math Score (9th Grade)	1.00		.99	1.00	.98	***	.97	.98	** .99
Hours Spent on Homework (9th Grade)	.99		.96	1.01	.96		.92	1.01	.98
Number of Extracurricular Activities (9th Grade)	1.06	*	1.01	1.11	1.06		.99	1.12	.99
Uncertain Career Expectations (9th Grade)	.83	**	.73	.94	.72	**	.58	.88	.87
Student's Educational Expectations (Ref=HS or less)									
Don't Know	1.10		.87	1.40	.92		.68	1.23	.83
Some College	1.18		.87	1.61	1.34		.91	1.97	1.13
Bachelor's Degree	1.22		.95	1.56	1.49	*	1.03	2.15	1.22
More than Bachelor's	1.25		.96	1.62	1.20		.89	1.61	.96
Generation Status Both Parents (Ref=All U.S. Born)									
1. Student Foreign Born	.88		.64	1.21	.64		.38	1.09	.73
2. Both parents Foreign Born	.66	**	.50	.89	.59	*	.37	.97	.90
2.5 One Parent Foreign Born	.81		.62	1.04	.85		.48	1.48	1.05

Note. N=25,210 (rounded to nearest 10);

\*\*\*  $p < .001$ ;

\*\*  $p < .01$ ;

\*  $p < .05$

**Table 3.**

**OLS and Logistic Regressions Predicting High School GPA and Dropout**

	Grade Point Average				High School Dropout			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	Coef	SE	Coef	SE	OR	95% CI	OR	95% CI
Employment Status (vs Never Worked)								
Ever Worked, 1–20 hours	.02	.03	–.01	.02	.86	.68 1.10	.94	.73 1.22
Ever Worked, 21+ hours	–.29	*** .04	–.18	*** .03	1.55	** 1.14 2.11	1.44	* 1.03 2.03
Race (vs non-Hispanic white)								
Non-Hispanic black	–.54	*** .04	–.27	*** .03	1.65	*** 1.31 2.07	1.15	.90 1.49
Non-Hispanic Asian	.23	*** .04	.02	.05	.66	.37 1.16	1.02	.49 2.10
Hispanic	–.45	*** .03	–.22	*** .03	1.36	* 1.04 1.78	.99	.63 1.54
Non-Hispanic American Indian/Native American	–.58	*** .15	–.29	** .11	1.98	.90 4.36	1.38	.64 2.98
Non-Hispanic Native Hawaiian/Pacific Islander	–.22	.12	–.12	.09	.81	.29 2.24	.80	.27 2.40
Non-Hispanic Multiracial	–.29	*** .03	–.17	*** .03	1.14	.84 1.55	.93	.68 1.26
Male (vs female)	–.32	*** .02	–.28	*** .02	1.25	* 1.05 1.49	1.16	.93 1.43
Birth Year (vs 1995 or later)								
1993 or earlier	–.76	*** .07	–.26	*** .06	8.80	*** 6.49 11.93	4.51	*** 3.30 6.15
1994	–.17	*** .02	–.05	** .02	2.07	*** 1.75 2.45	1.70	*** 1.43 2.03
Parents' Highest Education (vs < HS)								
HS Diploma or GED	.09	.05		.05			.60	** .42 .84
Associates or Technical	.06	.05		.05			.62	** .44 .88
Bachelor's or Higher	.16	** .05		.05			.59	** .41 .84
Standardized Family Income	.04	*** .01		.01			.82	*** .73 .91
Intact Family (2 Parents)	.08	*** .02		.02			.79	** .66 .94
Parents' Educational Expectations (vs =< HS)								
Don't Know	.20	*** .05		.05			.69	.46 1.02
Some College	.11	.05		.05			.59	** .43 .82
Bachelor's Degree	.31	*** .04		.04			.44	*** .32 .60
More than Bachelor's	.43	*** .04		.04			.36	*** .26 .50
Commitment to School	.05	*** .01		.01			.86	* .76 .98
Urban-centric locale (Ref=City)								

	Grade Point Average			High School Dropout	
	Model 1	Model 2	Model 3	Model 3	Model 4
Suburban		-.01 .02		1.01	.80 1.27
Town		.12 ** .04		.80	.60 1.08
Rural		.11 *** .03		.71 **	.57 .90
Region (vs Northeast)					
Midwest		.05 .03		1.16	.79 1.70
South		-.12 *** .03		1.47 *	1.01 2.12
West		-.09 ** .03		1.67 *	1.09 2.58
Standardized Math Score (9th Grade)		.03 *** .00		.97 ***	.96 .98
Hours Spent on Homework (9th Grade)		.00 .00		1.00	.95 1.05
Number of Extracurricular Activities (9th Grade)		.02 ** .01		.95	.89 1.01
Uncertain Career Expectations (9th Grade)		.04 .02		.78 *	.64 .95
Student's Educational Expectations (Ref=HS or less)					
Don't Know		.05 .04		.82	.63 1.08
Some College		.04 .04		.63 **	.45 .89
Bachelor's Degree		.16 *** .03		.73	.51 1.04
More than Bachelor's		.20 *** .04		.75	.51 1.10
Generation Status Both Parents (Ref=3rd)					
1. Student Foreign Born		.08 .07		.60	.33 1.08
2. Parent Foreign Born		.04 .05		.73	.42 1.27
2.5 One Parent Foreign Born		.03 .04		.83	.51 1.33
Constant	3.02 ***	.02	.06 ***	.05	.07
				2.80 ***	1.37 **
					5.71

Note. N=25,210 (rounded to nearest 10);

\*\*\*  $p < .001$ ;

\*\*  $p < .01$ ;

\*  $p < .05$

**Table 4.**

Logistic Regression Predicting High School Dropout in Spring of 2013

Employment Status (vs Never Worked)	OR	95% CI
Ever Worked, 1–20 hours	.99	.66 1.51
Ever Worked, 21+ hours	1.95 *	1.12 3.41

Note. All variables from Model 4, Table 3, included but estimates not shown. N=24,070 (rounded to nearest 10);

\*\*\*  $p < .001$ ;

\*\*  $p < .01$ ;

\*  $p < .05$

**Table 5.** OLS and Logistic Regressions Predicting High School GPA and Dropout with School Fixed Effects Included

Employment Status (vs Never Worked)	Grade Point Average		High School Dropout	
	Coef	SE	OR	95% CI
Ever Worked, 1–20 hours	.02 *	.01	.99	.86 1.14
Ever Worked, 21+ hours	-.22 ***	.02	1.39 **	1.14 1.70

Note. Though the estimates are not shown, school fixed effects and all variables from Table 3 included (except for region and urbanicity, which are stable within schools). N=25,210 (rounded to nearest 10);

\*\*\*  $p < .001$ ;

\*\*  $p < .01$ ;

\*  $p < .05$



**Table 6.** Risk of High School Dropout Between Intensive vs Moderate Adolescent Workers in Six Nationally Representative Studies

Study Name	Coef	SE	OR
National Longitudinal Surveys of Young Men and Young Women <sup>1</sup>	.599	.512	1.82
National Longitudinal Survey of Youth: 1979 <sup>1</sup>	.464	.692	1.59
High School and Beyond <sup>1</sup>	.829	.160	2.29
National Educational Longitudinal Study of 1988 <sup>1</sup>	.604	.304	1.83
National Educational Longitudinal Study of 1988 <sup>2</sup>	.493	.173	1.64
National Longitudinal Survey of Youth: 1997 <sup>1</sup>	.148	.594	1.16
High School Longitudinal Study of 2009 <sup>3</sup>	.429	.175	1.54

Note.

<sup>1</sup>Coefficients (Coef) and standard errors (SE) derived from Table V of Warren & Cataldi (2006);

<sup>2</sup>Coefficients and standard errors reported in Table 3 of Lee and Staff (2007);

<sup>3</sup>Coefficients and standard errors from current analyses (Table 3). Note that none of the estimates shown in Table 6 are significantly different from each other (i.e.,  $p < .05$ ) based upon z-tests comparing the equality of the estimates.