EXPLAINING THE RELATIONSHIP BETWEEN EMPLOYMENT AND JUVENILE DELINQUENCY*

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Most criminological theories predict an inverse relationship between employment and crime, but teenagers' involvement in paid work during the school year is correlated positively with delinquency and substance use. Whether the work–delinquency association is causal or spurious has been debated for a long time. This study estimates the effect of paid work on juvenile delinquency using longitudinal data from the national Monitoring the Future project. We address issues of spuriousness by using a two-level hierarchical model to estimate the relationships of

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within-individual changes in juvenile delinquency and substance use to those in paid work and other explanatory variables. We also disentangle the effects of actual employment from the preferences for employment to provide insight about the likely role of time-varying selection factors tied to employment, delinquency, school engagement, and leisure activities. Whereas causal effects of employment would produce differences based on whether and how many hours respondents worked, we found significantly higher rates of crime and substance use among nonemployed youth who preferred intensive versus moderate work. Our findings suggest the relationship between high-intensity work and delinquency results from preexisting factors that lead youth to desire varying levels of employment.

As has been true for several decades, most adolescents in the United States combine school and paid work before completing their secondary educations (Staff, Messersmith, and Schulenberg, 2009; U.S. Department of Labor, 2000). Social scientists have been interested for a long time in the consequences of paid work for crime, delinquency, and other deviant behaviors (see Uggen and Wakefield, 2007, for a review), and a separate literature has developed concerning the effects of work during adolescence on psychosocial development (Greenberger and Steinberg, 1986; Mortimer, 2003; Staff, Messersmith, and Schulenberg, 2009). Some criminological theories lead some researchers to the expectation that employment for teenagers would reduce deviance, others to the expectation it would increase deviance, and still others to argue that any relationship between them is spurious. Although numerous studies have revealed that teenagers who work long hours engage in more delinquency and substance use, recent research suggests that most, if not all, of this relationship is a result of selection rather than of any causal impact of employment (Apel et al., 2007; Apel et al., 2008; Apel et al., 2006; Bachman et al., 2008; Bachman et al., 2003; Paternoster et al., 2003). Many important questions remain, however, and we seek to build on recent advances in three ways. First, to clarify the consequences of working long hours, we provide a more differentiated comparison with that status, both distinguishing whether adolescents work fewer hours versus not at all and considering desired levels of employment. Second, we test the possibility that the effects of employment vary by sociodemographic subgroup, giving special attention to adolescents for whom employment might be most important. Finally, rather than studying all teenagers, we focus our research on the group of primary interest, namely, adolescents who are enrolled in secondary school.

Leading scholars have argued for a long time that paid work among adults can reduce crime (Becker, 1968; Merton, 1938; Sampson and Laub,

1993); yet studies of youth find little support for the expected inverse relationship between employment and delinquent behavior. By contrast, high-intensity workers (i.e., youth who average more than 20 hours of work per week) exhibit more problem behaviors than youth who work fewer hours or not at all (Bachman et al., 2008; Bachman et al., 2003; Bachman and Schulenberg, 1993; McMorris and Uggen, 2000; Mortimer, 2003; Staff and Uggen, 2003).

A primary reason that teenage employment might have more negative consequences than adult employment is that working too many hours could conflict with commitment to schooling and thereby reduce social control (Hirschi, 1969; Marsh, 1991). Compared with youth who do work less or not at all, youth who spend long hours on the job tend to have lower grade point averages (GPAs), test scores, and educational aspirations; tend to spend less time on their homework and in extracurricular activities; and are more likely to drop out of high school (Apel et al., 2008; Lee and Staff, 2007; Marsh and Kleitman, 2005; Mortimer, 2003; Schoenhals, Tienda, and Schneider, 1998). Moreover, youth with a heavy work commitment have less flexibility in their work schedules, leaving little time for being engaged in the nonacademic aspects of school.

In addition, employment might gain teenagers financial resources (e.g., money for gas and car payments) and autonomy from parental supervision (Longest and Shanahan, 2007) that enable more unstructured socializing (Osgood, 1999). Indeed, Safron, Schulenberg, and Bachman (2001) found that working youth spend relatively more time in unstructured socializing activities, such as going to parties and riding around in cars for fun. Based on the routine activity perspective, Osgood et al. (1996) argued that such activities engender deviant behavior by increasing opportunities for deviance.

Two alternative explanations portray the relationship between teenage work hours and delinquency as spurious rather than as causal. In the first explanation, both originate from a premature striving for a more "adult-like" status (Bachman and Schulenberg, 1993). This striving is reflected both in behaviors considered deviant for minors, such as drinking alcohol, using drugs, and smoking cigarettes, and in the adult-like independence shown by employment. This premature striving also provides an alternative account for the association of employment and deviance with key variables of school commitment in social control theory and unstructured socializing in a routine activities explanation. Detachment from the student role and a preference for high-intensity work in adolescence is associated with a lower school performance (Staff, Schulenberg, and Bachman, 2010; Warren, 2002) and a greater likelihood of substance use and other problem behaviors (Bachman et al., 2003). According to Osgood et al. (1996), the activities conducive to deviance involve unsupervised time with

peers, which should be especially appealing to adolescents striving for independence.

In a similar vein, self-control theory would predict a spurious relationship of work with delinquency and substance use. Students with the here-and-now orientation characteristic of low self-control would have little concern that paid work limits their time for schoolwork (Gottfredson and Hirschi, 1990). Youth who find it difficult to delay gratification might select work environments that offer more immediate rewards (i.e., money, peer-status, and autonomy) and entail fewer constraints on their behavior (Newcomb and Bentler, 1988).

These overlapping arguments for spuriousness contend that delinquency and relevant causal factors precede involvement in paid work. According to these positions, the observed associations between employment and deviant behavior should disappear once these preexisting differences are taken into account.

CAUSAL STATUS OF THE RELATIONSHIP

Although a large body of research shows that teenagers who work long hours engage in more deviance than youth who do not, this association does not necessarily reflect a causal influence. Several studies show that controlling for measures such as prior deviance, school success, and school commitment reduces but does not eliminate this relationship; for several years, many researchers in this area seemed to interpret these results as indicating that the relationship was causal (Marsh, 1991; Steinberg and Cauffman, 1995). Yet regression controls of this sort are a weak basis for causal inference because they leave open the possibility that these findings develop from unmeasured, preexisting differences between high-intensity workers and other youth (Winship and Morgan, 1999).

A group of scholars, including Apel, Brame, Bushway, and Paternoster, have addressed this problem by using analyses that control for all stable individual differences through within-individual comparisons (such as fixed-effects panel models). This approach fully controls for a factor such as self-control, which Gottfredson and Hirschi (1990) specify to be unchanging,[1] but it does not control for any within-person variation over time in a factor such as striving for adult-like status. In a series of articles, this group (Apel et al., 2007; Apel et al., 2008; Apel et al., 2006; Paternoster et al., 2003) has found that this analytic approach eliminates the relationship between intensive hours of paid work and delinquent behavior.[2]

1. As we discuss in a subsequent section, this would not be sufficient if Gottfredson and Hirschi (1990) were incorrect and self-control does change during the secondary school years.
2. When using state-level child labor laws as instrumental variables, Apel et al.

Thus, their research supports the conclusion that working long hours has no causal effect on deviance; rather, the relationship between the two variables is a result of preexisting differences between who does and does not work long hours.

THE CURRENT STUDY

Although recent research has improved our understanding of the relationship between intensive work and problem behaviors, important questions remain. The current study examines this relationship using longitudinal data from the Monitoring the Future project (see Johnston et al., 2008a, 2008b). Like the recent work by Apel, Paternoster, and colleagues, we rule out a large class of spurious relationships by studying within-individual change. We also seek to advance the understanding of this topic in the three ways we describe in the following sections.

INTENSIVE WORK ROLES COMPARED WITH WHAT?

Whereas recent studies using fixed-effects methodologies compare periods when youth are working intensively with all other periods (Apel et al., 2006; Paternoster et al., 2003), we provide a more fine-grained comparison that differentiates among amounts of employment and distinguishes preferences for employment as well as actual employment.

First, we sharpen the comparison with intensive employment by distinguishing when youth are not working versus when they work moderately (i.e., 20 or fewer hours per week). Because unemployment and joblessness have been associated for a long time with adolescent deviance (Allan and Steffensmeier, 1989; Sullivan, 1989), it is important to distinguish nonworking youth from youth who work a moderate number of hours. Moreover, research shows that when youth limit the hours they spend in paid work, they are more academically engaged and perform better in school than when they work intensively or not at all (Mortimer, 2003; Schoenhals, Tienda, and Schneider, 1998). This research suggests that jobs compatible with the student role might limit involvement in problem behaviors. Thus, by comparing no employment, moderate employment, and intensive employment, we will determine whether the common approach of comparing intensive employment with "all else" has masked the important consequences of work.

Second, we also refine our examination of employment during secondary school by considering preferences for employment as well as actual

(2008) found that high-intensity work increased the risk of school dropout and decreased delinquency. They speculated that high-intensity work might provide a positive identity for youth who drop out of high school and thus inhibit their subsequent criminal behavior.

employment. Although within-person analysis is a powerful tool, it does not control for time-varying factors like striving for adult status, which would develop primarily during the post–elementary-school years (Jessor and Jessor, 1977; Newcomb and Bentler, 1988). Preferences for work provide insight about the likely role of time-varying selection factors tied to employment. Specifically, we distinguish among nonworking youth in terms of whether they would prefer not to work, would prefer to work a limited number of hours, or would prefer intensive work. The genuine effects of employment would produce within-person differences based on whether and how much respondents work but not based on preferences for work alone. If the same differences emerge among nonemployed youth who prefer different amounts of work, then the relationship would instead seem attributable to whatever factors lead youth to desire varying levels of employment. No doubt youth who work differ in many ways from youth who do not, but it seems likely that many relevant factors (such as parent's strictness, neighborhood job market, and the youths' industriousness) vary little over time and thus are well-controlled in our analyses. Of course, this analysis cannot yield definitive proof of causality, but we believe it can advance this area of research by indicating the plausibility of a broad and important class of alternative explanations.

Prior studies suggest that preferences for work might be relevant both to deviance and to potential explanatory variables. For instance, Bachman et al. (2003) showed that 8th graders who desired intensive work had more academic difficulties and were more delinquent than youth who desired fewer hours or no work (see also Warren, 2002). Similarly, Staff et al. (2010), using longitudinal data from the Monitoring the Future study, found that when non-working youth merely wished for long hours on the job, their school performance and academic engagement was similar to when they were working intensively. These studies suggest that the desire for intensive employment predates actual intensive work and that work preferences might explain the problem behaviors of high-intensity workers.

TESTING FOR DIFFERENTIAL EFFECTS OF TEENAGE EMPLOYMENT

Our study also will test the possibility that recent studies have missed the effects of teenage employment on delinquency that depend on sociodemographic factors such as gender, race/ethnicity, and socioeconomic background. Some research suggests that intensive work hours might not undermine school commitments for those youth who come from more disadvantaged backgrounds, who might work long hours to pay for educational expenses, or who work to help support their families (Entwisle, Alexander, and Olson, 2000; Lee and Staff, 2007). For youth residing in

poor neighborhoods, employment can be a source of protection against the violence associated with the illicit drug trade (Newman, 1999), and it might increase exposure to conventional values and behaviors (Sullivan, 1989).

Consistent with this logic, Apel et al. (2007) found that intensive hours of paid work during the school year at age 16 reduced crime and substance use only among a small group of disadvantaged youth who displayed high rates of delinquency and substance use prior to their entry into formal employment. Similarly, Johnson (2004) found that long hours on the job did not increase the alcohol and substance use of Black and Hispanic youth. In our research, we will estimate whether the effect of work hours on delinquency varies by gender, race, and socioeconomic background, all of which affect the onset, intensity, and duration of early work experiences (U.S. Department of Labor, 2000).

FOCUSING ON TEENAGE EMPLOYMENT DURING SECONDARY SCHOOL

Studies of teenage employment and delinquency comprise a literature distinct from studies of adult employment and crime (Steinberg and Cauffman, 1995), and for good reason. The dominant U.S. culture calls for a higher priority on school than work until graduation from secondary school (Rosenbaum, 2001). Thus, it is no surprise that contrasting commitments to school and work are prominent in theoretical explanations and that the predictions of some of these theories would not apply to people who have graduated or dropped out of high school.

We will improve on the prior studies that use within-individual comparisons by limiting our analyses to secondary school students. Paternoster et al. (2003: 314) analyzed the National Longitudinal Survey of Youth 1997 sample, using interview data from 1997, 1998, and 1999 for a sample that was between ages 12 and 16 in 1996, including all respondents who participated in all three waves. By 1998, the age range of the sample was 15–19 years (mean age, 16.99 years; Paternoster, 2003: 309), so some participants either would have dropped out of school or would have graduated. Apel et al. (2006), using the same data set, reported that their sample included high-school dropouts (7 percent) and graduates (12 percent). Thus, it is important to confirm the results of these studies with estimates from a sample better tailored to these issues.

Our study, therefore, relies on a representative sample of U.S. students who provided data in the 8th, 10th, and 12th grades, excluding students who had dropped out or graduated (approximately 11 percent of our sample is in 12th grade). Our sample's age range is ideal for studying the consequences of intensive teenage employment, which progresses from being

unusual in the 8th grade (5 percent) to being common by the 12th (30 percent).

METHOD

We use a two-level hierarchical linear model (Raudenbush and Bryk, 2002) to estimate the relationships of within-individual change in juvenile delinquency and substance use to within-individual change in paid work and other explanatory variables. This model treats multiple observations over time as nested within persons. All explanatory variables that vary over time are at level 1, whereas those that do not are at level 2, including both measures that are inherently stable (e.g., demographic factors) and means over time of time-varying variables. We assess whether the effects of employment vary by population subgroups through cross-level interactions between employment statuses and demographic variables. Based on significance tests of variance components, we present results for models with random intercepts but no random coefficients for level 1 variables.

The effects of the time-varying covariates might be biased and inconsistent if the level 1 predictors are associated with unmeasured, person-level, selection factors that influence the outcome variable (Halaby, 2003: 518–23; Raudenbush and Bryk, 2002: 183). To eliminate this potential bias in estimating the level 1 relationships, we limit the analysis to within-individual change by including the individual means from each time-varying covariate as predictors in the level 2 intercept equation. This analysis strategy accounts for both observed and unobserved stable differences between students and controls for any time-varying variables included in the model.

Our analysis strategy also must deal with the highly skewed distributions that are ubiquitous for measures of deviant behavior. Applying conventional least-squared or linear statistical models to such measures violates statistical assumptions and therefore could distort results (Osgood, Finken, and McMorris, 2002). We therefore use ordinal logistic regression models better suited to our outcome measures (Raudenbush and Bryk, 2002).

DATA AND VARIABLES

The data for our longitudinal analyses come from the Monitoring the Future project, which is conducted by the Institute for Social Research at the University of Michigan. Each year, large, nationally representative samples of 8th, 10th, and 12th graders are drawn from 135 public and private high schools and from 155 middle schools (see Johnston et al., 2008a, 2008b). We use longitudinal data from the 8th-grade cohorts who were sampled initially in 1992 and 1993. Approximately 90 percent of the 8th

graders responded to the baseline survey during those years, with nearly all nonresponse a result of absence from school. Twenty percent of youth (approximately 4,000 students) from a random subsample of each class cohort then were selected to complete follow-up surveys in the 10th and 12th grades. Students who had the highest risk of dropping out of high school before graduating (e.g., students with low parental educational attainment, low GPAs, high rates of truancy, and prior grade retention) were oversampled in the follow-up surveys (see Bachman et al., 2008).

Our longitudinal analysis is based on youth who were in the sample during the 8th grade and who completed a follow-up survey during the 10th or 12th grade. Approximately 81 percent of students completed the first follow-up survey and 67 percent completed the second. Survey nonresponse in follow-up waves reduced our longitudinal data set from 12,000 to 9,479 student/wave measurements. We also restricted our longitudinal sample to those youth who provided information on both the explanatory and outcome variables. Because our substantive interest is in the effect of working during secondary school (Steinberg and Cauffman, 1995), of the remaining 7,869 cases, we restricted our analysis sample to youth who currently were attending school. We omitted 352 occasions when youth were early graduates (13 during the 10th grade and 339 during the 12th grade) and 485 occasions when youth had dropped out of high school (130 during the 10th grade and 355 during the 12th grade). Most of our analyses include approximately 3,500 students followed across 7,000 student/wave measurements. Survey questions regarding delinquency were asked only to a random half of the sample, whereas all respondents were asked the questions concerning substance use.

Prior investigations of the Monitoring the Future data found that 8th graders who were not retained in the later surveys were more likely to be male, non-White, and of low academic promise than those students who completed the follow-up surveys (Bachman et al., 2008). We address panel attrition as follows: First, our strategy of analysis does not require observations across all waves of the study (Raudenbush and Bryk, 2002). Second, to reduce potential bias from nonrandom sample attrition, in additional analyses, we included gender, race/ethnicity, and parental education as predictors of the intercept and time equations in our multilevel models (Raudenbush and Bryk, 2002: 199–200). The inclusion of these sociodemographic variables to some parameters in the multilevel analyses did not change our substantive pattern of findings (analyses not shown but available upon request). Finally, our use of sample weights to adjust for attrition and the oversampling of youth with high academic risk in the follow-up surveys (for example, see Bachman et al., 2008) did not change our results.

DELINQUENCY AND SUBSTANCE USE

To assess the robustness of the effects of paid work on juvenile delinquency and substance use, we consider a range of self-reported behaviors that are illegal for juveniles, including violence and other violations of the criminal code, as well as heavy drinking and marijuana use. Delinquent behavior is a summary composite of three violent offenses (including assault and robbery) and four property offenses (referring to theft and vandalism). For each item, responses ranged from "0" to "5 or more" occasions during the last 12 months. The measure of marijuana use ranges from "no use in past year" to "40 or more occasions in the prior month." The measure of heavy drinking is based on the number of times respondents reported having five or more drinks in a row during the past 2 weeks. This measure ranges from "none" to "10 or more times." These items have been shown to have high validity and reliability (Johnston et al., 2008a).

Not surprisingly, the delinquency and substance-use measures had skewed distributions. For instance, 78 percent of respondents reported no marijuana use or heavy drinking over the past 12 months, and 43 percent did not commit any of the delinquent acts during that same period. We addressed these limited distributions through ordinal logistic regression by first collapsing the frequency of marijuana use into three response categories (0 times, 1–2 times, or 3 or more times) and by collapsing the frequency of heavy drinking into three categories (0 times, 1–2 times, or 3 or more times). The multiple-item measure of delinquency was summed and collapsed into four categories (none at all, 1–2 times, 3–4 times, or 5 or more times).

Table 1 provides descriptive statistics by grade level for the delinquency and substance-use measures as well as all our time-varying measures that we describe in the next section.

PREFERRED AND ACTUAL WORK HOURS

Routine activity and social control perspectives predict a positive relationship between delinquency and paid work involvement during the school year. By contrast, joblessness for in-school youth could reflect low self-control (i.e., jobs involve unacceptable restraints), status frustration, or a strong orientation toward school-centered activities rather than toward work. To address these distinct predictions, we distinguish five employment patterns based on the students' *actual* and *preferred* hours of work during the school year. Respondents were asked "on the average over the school year, how many hours per week do you work in a paid job?" Work hours thus indicate the average hours of paid work during the entire school year, as often movement occurs in and out of the labor force

Table 1. Description of Measures and Descriptive Statistics by Grade Level

	Description	8th Grade Mean or Percent	8th Grade SD	10th Grade Mean or Percent	10th Grade SD	12th Grade Mean or Percent	12th Grade SD	Number of Cases
Delinquency and substance use								
Delinquent behavior	Summary composite of three violent and four property offenses during the past year	1.30	1.22	1.13	1.18	.93	1.12	3,508
Heavy drinking	Number of times respondent had five or more drinks in a row during the past two weeks	.26	.57	.26	.58	.39	.67	6,831
Marijuana use	Frequency of marijuana use in the past year	.17	.48	.41	.71	.54	.79	7,032
Work hours and preferences								
Not working (prefer no work)	Students' actual and preferred hours of work	3%		4%		2%		7,032
Not working (prefer moderate hours)	during the school year	38%		24%		12%		7,032
Not working (prefer intensive hours)		11%		34%		22%		7,032
Moderate work hours		44%		25%		34%		7,032
Intensive work hours		5%		13%		30%		7,032
Explanatory variables								
Risk-taking	Attitudes toward risky and dangerous activities	.00	1.02	.06	.98	–.10	.99	7,032
Commitment	GPA and expectations of college matriculation and graduation	.01	1.01	–.03	.97	.20	.95	7,032
Attachment	Attitudes toward school and teachers, school effort, and closeness to parents	–.01	1.00	.01	1.02	.08	.96	7,032
Unstructured socializing	Frequency of going to parties, going on dates, spending evenings out, etc.	.01	.98	–.03	1.02	.02	.98	7,032

ABBREVIATION: SD = standard deviation.

NOTE: Percentages in 8th grade work hours and preferences sum to 101% due to rounding.

over the course of a year. Respondents answered on an 8-point scale coded "0," "5 or less hours," "6 to 10," "11 to 15," "16 to 20," "21 to 25," "26 to 30," or "31 or more hours." For youth who did not work, we consider how many hours per week they wish they could work during the school year. The item asks respondents to "think about the kinds of paid jobs that people your age usually have. If you could work just the number of hours that you wanted, how many hours per week would you prefer to work?" Respondents answered with the same response categories as for actual work hours.

Based on their work status, hours, and preferences, for each school year, youth were assigned to one of the following mutually exclusive categories: 1) *intensive workers* averaged more than 20 hours per week during the school year; 2) *moderate workers* averaged 1–20 hours per week; 3) *nonworkers who prefer intensive work* were not employed during the school year but wished they could have worked 20 or more hours per week; 4) *nonworkers who prefer moderate work* also did not work during the school year, but they preferred to work 1–20 hours per week; and 5) *nonworkers who preferred not to work*.[3] The 20-hour mark widely is considered the point at which employment becomes excessive for in-school American youth, interfering with other activities and increasing problem behaviors (National Research Council, 1998).

During the 8th grade (table 1), most students either worked moderately or wished they could do so. Only 5 percent of teenagers worked more than 20 hours per week during the 8th grade school year. In the 10th grade, the largest group was jobless students who wished for intensive hours of work (34 percent). Youth were less likely to work moderately and more likely to work intensively in the 10th grade (13 percent).[4] By the 12th grade, most youth were employed (64 percent), and almost one third of youth averaged more than 20 hours per week during the school year. High-school

3. We did not analyze the preferred hours for employed youth because they rarely preferred to work a different number of hours. Of high-intensity workers, 82 percent preferred that level of employment and only 2 percent of workers preferred not to work. Also, many economists use the term "preferences" in reference to time-stable individual differences. We consider our application for the term appropriate because the item asks what respondents would prefer; 89 percent of respondents changed preferences across waves, and many studies show social influences on preferences (e.g., Bowles, 1998).

4. Although the percentage of moderate workers dropped from the 8th to the 10th grade (see table 1), the average hours worked per week increased. Whereas approximately 21 percent of the moderate workers in the 8th grade worked 1–5 hours per week, only 6 percent of 10th graders worked 1–5 hours per week. This finding reflects the typical types of informal jobs available for 14-year-olds, such as babysitting and lawn work; such jobs become less attractive with age during adolescence.

seniors who were jobless were more likely to prefer intensive rather than moderate hours of work. Interestingly, teenagers rarely were jobless *and* had no desire for work (ranging from 2 to 4 percent during the 8th, 10th, and 12th grades).

TIME-VARYING EXPLANATORY AND CONTROL VARIABLES

As potential explanatory variables for the relationships of work with delinquency and substance use, we include time-varying measures of unstructured socializing and social bonds. Unstructured socializing is a composite of the frequency of riding around in a car for fun, getting together with friends informally, going to parties or other social events (a 5-point scale from "never" to "everyday"), going on dates (a 6-point scale from "never" to "more than three times a week"), and spending evenings out for fun and recreation (a 6-point scale from "less than one evening per week" to "six or seven evenings per week"). For all composite measures, each item was transformed into a z score, and then the items were averaged (Cronbach's α for unstructured socializing ranges from .66 to .70 across the three time points).

The time-varying measures of social bonds in this analysis reference attachment and commitment. According to Hirschi (1969), attachment incorporates ties to both significant others (e.g., parents and teachers) and conventional institutions (e.g., school and clubs). Our measure of attachment indicates whether the respondent enjoys being in school, hates being in school (reverse coded), tries to do his or her best work in school, finds schoolwork interesting, and fails to turn in assignments (reversed coded). The responses to these items range on a 5-point scale from "never" to "almost always." The attachment measure also includes an item indicating whether respondents feel like they could talk to their parents if they were having problems in their life (a 3-point scale ranging from "no" to "yes, for most or all of my problems"). Cronbach's α ranges from .72 to .76. Commitment to school is based on the following items: school grades on a 9-point scale from "D" to "A," how likely respondents feel that they will go to college, and how likely they feel they will graduate from college (both on a 4-point scale from "definitely will not" to "definitely will"). Cronbach's α ranges from .78 to .80.

Finally, we include a time-varying attitudinal measure of risk-taking to control for a potential spurious link between paid work and problem behaviors. Favorable attitudes toward risky and dangerous activities in part reflect low self-control in that respondents with high levels of self-control tend to be cautious (Gottfredson and Hirschi, 1990). Risk-taking references how much respondents agree with the statements "I get a real kick out of doing things that are a little dangerous" and "I like to test myself every now and then by doing something a little risky," with

responses on a 5-point scale that range from "disagree" to "agree" (see, e.g., Schulenberg et al., 2005). Cronbach's α ranges from .76 to .82. Although attitude toward risk often is considered an indicator of a time-stable self-control construct, this variable did change during the observation period for most respondents (84 percent). We therefore take the more conservative approach of treating it as a time-varying predictor variable, thereby more thoroughly controlling for any association of this aspect of self-control with the other time-varying variables. Although this measure is limited to two items, it is associated strongly with problem behavior (for delinquent behavior, $r = .35$; for heavy alcohol use, $r = .21$; and for marijuana use, $r = .21$).

SOCIODEMOGRAPHIC MEASURES

To assess whether the effects of paid work vary by sociodemographic factors, we include measures of gender, race/ethnicity, and socioeconomic background. Race and ethnicity are measured using four dummy variables referencing Blacks, Whites, Hispanics, and other races. Parental educational attainment is based on the average educational level of the mother and father. Approximately 53 percent of the sample is male, 17 percent are African American, 15 percent are Hispanic, 55 percent are White, and 13 percent are coded as other race/ethnicity. The average educational level of the respondents' parents is a high-school degree.

FINDINGS

We present our empirical findings in two parts. Our first goal is to understand the plausible causal roles of the potential explanatory variables of social bonds and unstructured socializing in relation to employment during the secondary school years. For this purpose, we first show bivariate correlations between the explanatory variables and the work categories, and then we repeat those comparisons in terms of within-individual change over time. Our second goal is to understand how changes in work hours and preferences correspond with changes in delinquent behavior and substance use, as well as whether changes in the explanatory variables account for any relationship between work and deviance.

PRECURSORS AND CORRELATES OF PAID WORK HOURS AND PREFERENCES

We assessed the association of work hours and preferences with social bonds and unstructured socializing both through correlations (see table 2) and regressions controlling for stable characteristics that might render the relationship spurious (see table 3). We will concentrate on the unstandardized coefficients for the within-individual regressions of social

bonds and unstructured socializing on work hours, work preferences, and risk-taking. The measure of risk-taking was not used as an outcome variable because we had no reason to expect that employment would affect levels of self-control. Furthermore, in analyses not presented here, we found that work hours and preferences are not predictive of changing levels of risk-taking during adolescence.

The results presented in table 3 indicate that unstructured socializing is related to actual employment rather than to preferences for employment, whereas attachment and commitment have comparable relationships with both. The first two rows of table 3 isolate the relationship of bonds and unstructured socializing with preferences for work (rather than actual employment). When youth were jobless but preferred intensive hours of work, they had significantly lower commitment and attachment than when they were jobless but preferred moderate hours of work (the reference category). In contrast, the average level of unstructured socializing did not differ significantly when youth who were not employed preferred different levels of unemployment. Turning to relationships with actual employment, working a moderate number of hours, in comparison with preferring to do so but not actually working, is associated with greater unstructured socializing but minimal difference in social bonds. Actually working intensively coincided with more unstructured socializing and weaker bonds than did not working and preferring moderate hours. Because this comparison reflects differences in both preferences and actual work, however, it is less informative. From the overall pattern of results in table 3, it seems that employment might have a causal effect on unstructured socializing; however, changes in social bonds are more likely to stem from factors affecting the preference to work rather than from the actual experience of employment.

EFFECTS OF PAID WORK HOURS AND PREFERENCES DURING ADOLESCENCE

We now turn to the analyses relating deviance to work and the other explanatory variables. The findings for delinquent behavior, heavy drinking, and marijuana use are presented separately in tables 4, 5, and 6, respectively. The first model in each table examines these relationships without controlling for stable individual differences. The reference category for the employment and work preference dummy variables remains not working but preferring moderate hours because this is the most common nonwork status. Model 2 then controls for the between-individual variation in work hours and preferences to produce within-individual relationships, as well as controlling for risk-taking as a time-varying variable. The remaining models add (stepwise) social bonds (model 3) and unstructured socializing (model 4) to assess their contributions to the relationship

Table 2. Correlations of Predictor Variables

	1	2	3	4	5	6	7	8	9
Work hours and preference[a]									
1. Not working (prefer no work)	1.00								
2. Not working (prefer moderate hours)	–.11	1.00							
3. Not working (prefer intensive hours)	–.10	–.32	1.00						
4. Moderate work hours	–.13	–.43	–.39	1.00					
5. Intensive work hours	–.07	.24	–.22	–.29	1.00				
Explanatory Variables									
6. Risk-taking	–.01	–.07	.03	.03	.01	1.00			
7. Commitment	.00	.08	–.09	.07	–.08	–.15	1.00		
8. Attachment	–.02	.05	–.05	.03	–.04	–.27	.43	1.00	
9. Unstructured socializing	–.04	–.11	–.01	.07	.07	.25	–.08	–.13	1.00

NOTE: N = 7,032 person years.

[a]Work hours and preference are coded as dichotomous variables in our analyses, although we still include them in the correlation matrix to give the reader a sense of relationship strength.

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Table 3. Unstandardized Coefficients from Within-Individual Regressions of Social Bonds and Unstructured Socializing on Teenage Work Hours and Preferences

	Social Bonds		Unstructured Socializing
	Commitment	Attachment	
	b (SE)	*b* (SE)	*b* (SE)
Work hours and preferences [a]			
Not working (prefer no work)	–.135	–.111	–.076
	(.071)	(.077)	(.075)
Not working (prefer intensive hours)	–.137***	–.078*	.048
	(.032)	(.037)	(.039)
Moderate work hours	–.018	.004	.090**
	(.027)	(.032)	(.033)
Intensive work hours	–.181***	–.162**	.186***
	(.043)	(.050)	(.049)
Risk-taking	–.049***	–.126***	.146***
	(.014)	(.017)	(.018)
Variance components			
Intercept	.595	.428	.431
Year	.062	.049	.043

[a]The reference category is nonworkers who prefer moderate work. Numbers in parentheses are standard errors (SE). N = 3,581 (7,032 occasions).
*$p < .05$; **$p < .01$; ***$p < .001$.

between deviance and teenage employment. Although not shown in tables 4, 5, and 6, we controlled for time in all models to address changing work and leisure patterns with age. Supplemental analyses indicated that the rate of change in delinquency and substance did not vary significantly across individuals, so these models do not include this variance component.

Consistent with long-standing findings, when stable individual differences were not controlled (model 1), deviance was associated with actual employment, and we find an association of deviance with preferences for employment. Delinquency, marijuana use, and heavy drinking were significantly higher for adolescents who spent long hours on the job compared with adolescents who were jobless but preferred moderate hours of work. An association with work, holding preference constant, is evident in that youth who work a moderate number of hours also report higher rates of delinquency and substance use compared with youth who prefer to do so

Table 4. Unstandardized Coefficients from Within-Individual Regressions of Delinquent Behavior on Teenage Work Hours and Preferences and Mediating Variables

	Model 1	Model 2	Model 3	Model 4
Work hours and preferences[a]				
Not working (prefer no work)	.077	–.309	–.285	–.286
	(.238)	(.301)	(.309)	(.319)
Not working (prefer intensive hours)	.250*	.242	.189	.163
	(.105)	(.133)	(.136)	(.138)
Moderate work hours	.204*	.152	.148	.116
	(.092)	(.117)	(.118)	(.119)
Intensive work hours	.519***	.451**	.363*	.284
	(.123)	(.154)	(.158)	(.160)
Time-varying explanatory and control variables				
Risk-taking		.349***	.328***	.301***
		(.060)	(.062)	(.062)
Commitment			–.117	–.114
			(.074)	(.075)
Attachment			–.255***	–.238**
			(.065)	(.066)
Unstructured socializing				.322***
				(.062)
Variance component				
Intercept	1.512	1.198	1.073	1.053
Estimates of within-individual relationships	No	Yes	Yes	Yes

[a]The reference category is nonworkers who prefer moderate work. Numbers in parentheses are standard errors. N = 1,788 (3,508 occasions).
*p < .05; **p < .01; ***p < .001.

but were not actually working. Note also the following statistically significant links with the preference for work: Among youth who are not working, those who wish they could work just a little engage in less delinquency and substance use than those who want to be employed intensively.

Controlling for spuriousness resulting from stable individual differences and risk-taking[5] (model 2) alters but does not eliminate relationships of deviance with actual and preferred employment. The pattern of results differs across the three outcomes, with delinquent behavior and marijuana

5. Risk-taking significantly predicts delinquency, heavy drinking, and marijuana use (tables 4, 5, and 6). Yet controlling for risk-taking has little consequence for the magnitudes of differences between the various employment and work preference groups.

Table 5. Unstandardized Coefficients from Within-Individual Regressions of Heavy Alcohol Use on Teenage Work Hours and Preferences and Mediating Variables

	Model 1	Model 2	Model 3	Model 4
Work hours and preferences[a]				
Not working (prefer no work)	.440*	.160	.089	.058
	(.182)	(.225)	(.233)	(.253)
Not working (prefer intensive hours)	.320**	.146	.068	–.025
	(.093)	(.120)	(.123)	(.128)
Moderate work hours	.418***	.218*	.198	.173
	(.084)	(.110)	(.113)	(.117)
Intensive work hours	.687***	.432**	.316*	.218
	(.106)	(.138)	(.142)	(.149)
Time-varying explanatory and control variables				
Risk-taking		.350***	.308***	.248***
		(.055)	(.057)	(.062)
Commitment			–.087	–.065
			(.065)	(.068)
Attachment			–.320***	–.308***
			(.058)	(.062)
Unstructured Socializing				.688***
				(.061)
Variance component				
Intercept	.858	.778	.770	.624
Estimates of within-individual relationships	No	Yes	Yes	Yes

[a]The reference category is nonworkers who prefer moderate work. Numbers in parentheses are standard errors. N = 3,517 (6,831 occasions).
*p < .05; **p < .01; ***p < .001.

use associated no more strongly with actual employment than with preferences for employment. Heavy alcohol use, in contrast, is associated only with actual employment and not with preferences. The relationship between marijuana use and employment preferences is apparent in the significant coefficient for not working while preferring intensive hours (compared with not working and preferring moderate hours); this same coefficient is not statistically significant for heavy alcohol use and delinquency (t ratios = 1.22 and 1.82, respectively), although it is important to note that the magnitude of the effect on delinquency changes by only 3 percent from model 1 to model 2 (i.e., [.250 - .242] / .250 = .032). Evidence of greater heavy alcohol use during actual employment comes from both the significant coefficient comparing working moderate hours with merely preferring such employment and from evidence of significantly more use

Table 6. Unstandardized Coefficients from Within-Individual Regressions of Marijuana Use on Teenage Work Hours and Preferences and Mediating Variables

	Model 1	Model 2	Model 3	Model 4
Work hours and preferences[a]				
Not working (prefer no work)	.556**	.453*	.433*	.446*
	(.177)	(.204)	(.208)	(.224)
Not working (prefer intensive hours)	.534***	.434***	.368**	.302*
	(.091)	(.117)	(.122)	(.126)
Moderate work hours	.255**	.094	.082	.052
	(.086)	(.108)	(.113)	(.116)
Intensive work hours	.458***	.184	.064	-.036
	(.109)	(.140)	(.145)	(.151)
Time-varying explanatory and control variables				
Risk-taking		.244***	.197***	.144*
		(.051)	(.053)	(.055)
Commitment			–.265***	–.263***
			(.064)	(.067)
Attachment			–.326***	–.325***
			(.056)	(.058)
Unstructured socializing				.437***
				(.056)
Variance component				
Intercept	1.370	1.255	1.277	1.192
Estimates of within-individual relationships	No	Yes	Yes	Yes

[a]The reference category is nonworkers who prefer moderate work. Numbers in parentheses are standard errors. N = 3,581 (7,032 occasions).
*p < .05; **p < .01; ***p < .001.

when actually working intensively versus preferring to work intensively (γ = .286, standard error ([SE] = .132, p = .03).[6] The differences in alcohol use during actual employment did not hold for marijuana use for moderate work and for intensive work, and they did not hold for delinquency and moderate work (see coefficients in tables 4 and 6). In fact, marijuana use was significantly higher when respondents preferred intensive work but were not employed than when they actually were employed for intensive hours (γ = –.249, SE = .127, p = .049). Preferences rather than actual employment also account for the significant coefficient indicating more delinquency during intensive employment than during nonemployment

6. Coefficients presented in the text but not the tables, such as this one, come from respecifications of the model with different reference groups.

when preferring moderate hours (table 4, γ = .451). Although respondents were not significantly more delinquent when employed intensively than when they only preferred intensive hours (γ = .208, SE = .145, p = .150), the magnitude of the effect on delinquency was similar with and without controlling for time-stable differences. In contrast, the difference in delinquency between intensive and moderate actual employment was statistically significant (γ = .299, SE = .138, p = .030) and of the same magnitude as the difference between mere preference for intensive hours and preference for moderate employment (table 4, γ = .242).[7]

The remaining models in tables 4, 5, and 6 assess the degree to which social bonds and unstructured socializing account for the significant relationships observed in model 2. Accounting for relationships with actual employment but not preferences would be consistent with the role of causal mediator, whereas accounting for the relationships of deviance with preferences would suggest that the factor is associated with selection into employment.

Results from model 3 show that when youth have stronger attachments to school and parents, they are less likely to be delinquent or engage in either type of substance use. Commitment to school also is associated negatively with all three measures of deviance, but only marijuana use is significant. Social bonds account for a portion of the relationships of work and work preferences with deviance. The coefficient relating intensive work to delinquency drops by approximately 20 percent (i.e., [.451 – .363] / .451 = .195); the coefficients relating moderate and intensive work to heavy drinking drop by 9 and 27 percent, respectively; the coefficient relating preferring no work to marijuana use drops by 4 percent; and the positive coefficient relating preferring intensive work to marijuana use is diminished by 15 percent. Social bonds toward school and parents thus account for a meaningful share of the associations of "intensive" work (both the preference and the actual hours) with delinquency and substance use, even after controlling for risk-taking and time-stable differences between students. Because our earlier analyses indicated that social bonds are equally a function of both actual and preferred work hours, it is more likely that these reductions reflect selection rather than causal mediation,

7. Although our analyses differentiate among amounts of employment and distinguish preferences for employment as well as actual employment, we find in supplemental analyses that delinquency, heavy drinking, and marijuana use were not significantly higher when we conduct the same comparison as recent research by Apel et al. (2006) (i.e., between when respondents worked intensively compared with all other work statuses combined [for delinquency γ = .181, SE = .129, p = .16; for heavy drinking γ = .140, SE = .120, p = .25; and for marijuana γ = –.189, SE = .119, p = .11]).

with youth more likely both to prefer intensive employment and to engage in deviance during periods when their bonds are weak.

Our earlier analyses suggested that unstructured socializing might serve as a causal mediator because it was associated with actual employment rather than with mere preferences. Indeed, not only is unstructured socializing significantly associated with all three types of deviance, it accounts for additional portions of the relationships of actual work and work preferences to delinquency. Controlling for unstructured socializing (model 4) reduced the differences to statistical nonsignificance in delinquency and heavy alcohol use between times youth worked intensively and times they preferred to work moderately but were not actually working. The following reduction in relationships was similar to that for social bonds: 17 percent for the coefficient relating intensive work to delinquency (relative to model 2 and beyond the approximately 20 percent of the relationship explained by model 3); 23 and 11 percent of coefficients relating moderate and intensive work to heavy drinking, respectively; none of the coefficients relating preferring no work to marijuana use; and 15 percent of the coefficients relating preferring intensive work to marijuana use.[8]

Type of Employment

In additional analyses, we addressed whether characteristics of the job also might affect deviance. Our analyses begin in the 8th grade when "informal" jobs (e.g., babysitting, paper routes, lawn care activities, etc.) are common, and 15 percent of our sample worked in such jobs during the survey period. Adding a measure of informal versus formal employment to our regression equations did not change the pattern of findings, nor was it a statistically significant predictor of delinquency or substance use. We also considered the amount earned from employment as a possible predictor of delinquency and substance use. This measure was not related to the outcomes either, and including it in our models did not substantively change the pattern of results. Thus, our findings seem equally applicable to both formal and informal employment during secondary school and to jobs that carry higher and lower wages.

Testing for Differential Effects of Teenage Employment

To test for variations in the effects of teenage employment, we assessed whether the effect of paid work on deviance differed by gender, race, and socioeconomic background. Non-Whites and youth whose parents have lower levels of education were overrepresented among the jobless youth who preferred to work intensively. By contrast, nonworking youth who

8. We used the following formula to calculate the percentage reduction (using 17 percent as an example): ([.451-.284]/.451)-([.451-.363]/.451) = .17.

preferred not to work averaged the highest socioeconomic family background. We included gender, race, and parental education as predictors of both the overall levels of deviance and each time-varying indicator of work status and assessed whether these interactions significantly improved model fit. In analyses not shown, this test was statistically significant only once ($p < .05$) in more than 20 different model specifications, which is no more than expected by chance. Consistent with Apel et al. (2006), we find that the effect of paid work on delinquency and substance use does not significantly differ between boys and girls; among Whites, Blacks, and Hispanics; and between youth from more or less advantaged socioeconomic backgrounds.

DISCUSSION

Our goal has been to explain why youth who spend long hours on the job are more likely to engage in delinquency and substance use, as past research overwhelmingly has demonstrated. First, we used within-individual comparisons to rule out many preexisting factors that might explain the delinquency of high-intensity workers. These analyses provided evidence that differences in stable characteristics explained some, but not all, of the relationship between paid work and deviance. Second, we distinguished desired from actual work hours to consider the role of preferences as a reflection of time-varying selection factors (such as striving for adult-like status) that might be linked to high-intensity work, school engagements, and leisure activities. We found significantly higher rates of crime and substance use among nonemployed youth who preferred intensive versus moderate work, which suggests that at least part of the relationship between paid work and delinquency results from factors that lead youth to desire varying levels of employment. Third, to ensure our work pertains to the theoretical and policy discussions relevant to teenage employment, we limited our sample to adolescents enrolled in secondary school. Finally, we gave special attention to adolescents for whom high-intensity employment might be most important, namely males from disadvantaged backgrounds, but we found little evidence that the effect of paid work on delinquency varied across demographic groups.

Consistent with other researchers who question the causal effect on delinquency (e.g., Apel et al., 2007; Apel et al., 2008; Apel et al., 2006; Bachman and Schulenberg, 1993; Paternoster et al., 2003), our results highlight the role of selection. We found that among nonworking youth, those who wish they could work long hours are most delinquent. The preference for paid work often precedes actual employment (Bachman et al., 2008, table 1; Bachman et al., 2003), likely because some youth are constrained externally from holding a job (e.g., they are too young, they lack a

car, they have no prior work experience, etc.) or lack certain skills and motivations needed to translate that preference to actuality. The relatively high rates of delinquency and substance use among youth who preferred to work intensively might reflect a premature striving for adult status, especially among students who have weak bonds to family and school.

Self-control theory would predict a similar convergence between joblessness and a preference for long hours on the job among delinquent youth. The preference to work long hours could reflect desire for immediate gratifications, whereas actually working more than 20 hours per week requires diligence, tenacity, and effort. Yet self-control is not a plausible explanation for the relationships of preferences with deviance in model 2 of tables 4, 5, and 6, which controls for all stable individual differences (including self-control, as characterized by Gottfredson and Hirschi, 1990) and for within-person variation in risk-taking (going beyond their specification).

Why is marijuana use more frequent when adolescents prefer to work intensively but not when they actually do so? From a strain perspective, jobless teenagers who wished for intensive work would be especially frustrated. Not only did these youth have weak social bonds (shown in table 3), but additional analyses indicate that they are more likely to be non-Whites and to have parents with less education. This disjunction between actual work hours and preferences also might contribute to psychological strain (Agnew, 1992), which might be relieved by marijuana use. We also find that complete disengagement from the world of work (i.e., the jobless youth who do not wish to work) is associated with more marijuana use. Note, however, that this pattern does not hold for delinquency and heavy alcohol use.

Precocious development theory also would predict higher rates of marijuana use when youth are jobless but desire long hours on the job. According to Newcomb and Bentler (1988: 37), adolescent drug users have a strong drive to grow up quickly and enjoy a "pseudomaturity" of adult-like roles and privileges (e.g., work, autonomy, and money); yet drug use "interferes with the critical development of interpersonal skills, coping abilities, and cognitive sophistication, which are necessary to participate effectively in adult roles." Thus, youth might find it more difficult both to obtain and to maintain more adult-like work when they are using illicit drugs than when they merely are wishing for it.

Because social bonds were associated with both working intensive hours and the mere desire to do so, our findings cast doubt that social bonds explain any causal impact of employment on deviance. When youth have less interest and success in school and in other adolescent-centered activities (such as playing sports or participating in other extracurricular activities), they might be drawn to the autonomy, pay, and status that can come

from working (Bachman and Schulenberg, 1993). The association of social bonds with the mere preference for work counters the argument that the pay and status of work undermines the social control of the school or parents (Willis, 1977).

We found that when youth work long hours, they also spend relatively more time with their peers in unstructured and less supervised settings, but when they merely prefer intense work, they do not spend more time with their peers in this way. These results are consistent with Osgood's (1999) argument that employment provides young people with financial resources and with respect from parents that enable more unstructured socializing and autonomy from parental supervision. Thus, time spent in these activities at least partially might account for why work experience but not work preference influences heavy alcohol use in our analyses. Interestingly, our results also show that unstructured socializing mediates some effects of work on delinquency and alcohol use, despite the lack of significant overall effects.

In summary, past research on work and crime has been troubled by the problem of selection; how can the effects of paid work on delinquency and substance use be separated from character traits and other experiences of the individual? Although studies have offered sophisticated methodologies to address this issue, they largely have relied on comparing high-intensity workers with other youth. By also measuring preferred work hours when youth are not employed, we can understand better why intensive work frequently is associated with teenage transgressions. We believe that our strategy of identifying likely time-varying selection factors by investigating preferences as well as actual experiences holds considerable potential for research into a wider range of topics as well. Future research should consider whether preference for statuses such as marriage or military service also might contribute to changes in crime and other outcomes during adolescence and the transition to young adulthood.

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