What have we Learned from Longitudinal Studies of Work and Crime?

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Abstract This review paper considers the connection between employment and criminal behavior. We first examine theories that suggest a link between work and crime at different life course stages. Next, longitudinal studies and statistical approaches to specifying the relationship are discussed. Results of existing studies are organized into discussions of work intensity and adolescent delinquency, job characteristics and crime, and unemployment and crime rates. We then offer a more focused discussion of ex-offenders and reentry. The paper concludes with a brief summary of what has been learned, suggesting that investments in longitudinal investigations have yielded important new knowledge about when and how work matters for crime and delinquency.

Employment has long been viewed as a solution to problems of crime and delinquency. In this chapter, we evaluate this longstanding faith in work as a means to prevent delinquency among adolescents, mitigate the connection between poverty and crime, and reduce recidivism among previously active criminal offenders.

In 2003, roughly 6.9 million Americans were under some form of correctional supervision (Bureau of Justice Statistics, 2004). Each year, more than 600,000 inmates join four million probationers and 750,000 parolees already under community supervision (USDOJ, 2004a,b). How well these former inmates, probationers, and parolees fare once they return to the community is of central concern to criminologists, corrections officials, and policy makers. In addition to those currently involved in the legal system, a large group of adolescents are at risk for delinquency involvement that may lead to more serious crimes as young adults. Finally, to the extent that crime is related to the availability of quality legal work, the number of persons in conditions of poverty or unemployment is likely to be related to the creation of new offenders. The U.S. Census Bureau estimated that 12.5 percent of Americans live in poverty and 6 percent were unemployed in 2003 (Bureau of Labor Statistics, 2004; US Bureau of the Census, 2004). Though these populations overlap with those under correctional supervision, these estimates suggest a potentially large number of Americans "at risk" for criminal involvement. In this paper, we evaluate the extent to which beliefs about work as a crime prevention tool are supported by social scientific evidence.

A. M. Liberman, *The Long View of Crime: A Synthesis of Longitudinal Research.*

The swelling percentage of state and federal budgets devoted to policing and corrections underscores the need for policy makers to access solid social scientific evidence on the determinants of crime and recidivism. In response to these needs, social scientists have long focused on work as a key determinant of desistance or movement away from crime. Employment is a natural focus for social scientists and policy makers, as it is more easily manipulated in policy interventions than other important social influences (such as marriage or friendship networks), it is a social role of major importance, and it reduces the economic attraction of crime for potential offenders.

Just as employment has been a common site of research for criminologists, studies that exploit longitudinal data have also been a natural choice for measuring within- and across-person changes in crime over time. In this paper, we first explore why work is likely to affect crime and recidivism, paying particular attention to the most important dimensions of employment for crime reduction. We next briefly review a range of statistical innovations useful for studying work and crime with longitudinal data. We then describe classic research on work and crime utilizing cross-sectional evidence and link these studies to more recent results from longitudinal studies. Specifically, we summarize results from studies of work and crime among adolescents, ex-offenders, and other populations "at-risk" for crime, as well as providing a brief review of research on aggregate-level trends in crime and macroeconomic conditions. Finally, we conclude by asking whether longitudinal studies are worth the considerable time and expense they require, as balanced against the knowledge they have yielded to date.

Why Study Work?

Why might work be related to criminal offending? Classic research in criminology is suggestive of a variety of mechanisms linking work and crime. We begin by discussing the remunerative qualities of employment. At its most basic, paid work provides legal income for potential offenders.

Economic and Rational Choice Theories

Economic or rational choice theories of crime suggest that income earned from legal employment will reduce the attraction of offending for financial gain (Becker, 1968; Cornish & Clarke, 1986; Ehrlich, 1973; Freeman, 1992). In classic economic theory, choice is the central mechanism linking work and crime. Beyond providing financial incentives for conforming, legal work may also increase the costs of crime. The possibility of arrest may serve as a greater deterrent for employed offenders relative to those who are not employed because arrest and concomitant punishment may result in the loss of a valued job (see, e.g., Sherman & Smith, 1992).

Structural Strain and Differential Opportunity Theories

Structural strain theories (Merton, 1938) suggest that crime results when legitimate pathways to economic and social success are blocked. Similarly, one variant of differential opportunity theory argues that access to illegitimate as well as legitimate opportunities varies considerably across persons (Cloward & Ohlin, 1960), with each person positioned along two opportunity structures, one involving legitimate work and the other illegal opportunities. These theories place the *relative* gains available from legal and illegal work at center stage. Beyond the mere presence or absence of employment, studies in this tradition emphasize the quality of employment in relation to crime. Investigations have examined the impact of income inequality (Blau & Blau, 1982), concentration in the secondary labor market (Crutchfield, 1989; Crutchfield & Pitchford, 1997), the stability of employment (Sampson & Laub, 1993), and its overall quality (Uggen, 1999) on criminal behavior. Trends in area crime rates have also been linked to trends in macroeconomic conditions in a number of studies (Allan & Steffensmeier, 1989; Britt, 1997; Massey & Denton, 1993; Morenoff & Sampson, 1997; Sampson, 1987; Wilson, 1996).

Social Control and Bonding Theories

Other theories of crime do not assign a causal role to employment in itself, but to the social bonds that employment creates for workers. Social control or bonding theories describe the bonds that work engenders as the central mechanism linking work and crime. Travis Hirschi's (1969) social control theory argues that commitment to conventional lines of action (such as work) and involvement in legal work among young adults is associated with fewer delinquent acts. Young working adults thus have a "stake in conformity" that renders crime less attractive (Briar & Piliavin, 1965; Toby, 1957). Among adolescents who work, Sheldon and Eleanor Glueck have shown that delinquents tend to work in jobs with less supervision relative to non-delinquents (Glueck & Glueck, 1950). Social interaction at work is also likely to increase the "informal social controls" to which potential offenders are subject (Sampson & Laub, 1993), and connections made through work may replace deviant peer networks with law-abiding friends. Thus, crime and work are related to the extent that work exerts social control over potential offenders and creates pro-social bonds for young adults.

Routine Activities

Finally, routine activities theories shift the emphasis from the individual effects of work to the structural impact of employment on everyday life (Cohen & Felson, 1979). Osgood, Wilson, O'Malley, Bachman, and Johnston argue that this approach

"shifts attention away from the personal histories of offenders toward the dependence of crime on opportunities presented by the routine activities of everyday life" (1996: 635). The routine activities approach also anticipates differing effects of employment on crime. For example, unemployment may reduce crime by decreasing the numbers of hours people spend outside of their homes (thereby allowing them to protect their homes from burglary). Alternatively, those who are employed have fewer hours to devote to crime themselves.

Self-Control Theories

Though numerous theories of crime anticipate a "real" relationship between crime and employment (whether positive or negative), others argue that such a finding may be spurious due to common or correlated causes. Gottfredson and Hirschi (1990) maintain that many of the putative connections between crime and employment are the result of selection bias. In their view, criminals and non-criminals are differentiated primarily by their levels of self-control, with offenders having far less of it than non-offenders. According to this view, low self-control predicts crime over time as well as the likelihood of finding and maintaining high-quality employment. Thus, non-criminals self select into more and better employment opportunities. From this viewpoint, statistical associations or relationships between employment and crime are likely the result of unmeasured variation in levels of self-control.

Work, Crime, and the Life Course Perspective

While most classic theories of crime suggest that employment may reduce crime, more recent investigations have shown greater complexity in the relationship. Life course theories suggest that the effects of employment on crime or recidivism are age-graded and contingent upon particular stages within the life course. For example, some types of work may reduce crime only for some types of offenders (see, e.g., Blokland & Nieuwbeerta, 2005). Moreover, the work-crime relationship may be dependent on age, gender, marital and parental status, and a host of other life course contingencies. Travis Hirschi (1969) argues that while commitment and involvement in work is beneficial for young adults, *over-involvement* in work at a young age may be detrimental. More recent research has supported this argument; adolescents who are over-invested in work relative to school are more likely to engage in delinquency (Bachman & Schulenberg, 1993; but see Paternoster, Bushway, Brame, & Apel, 2003). Similarly, in a study of recently released inmates, drug addicts, and high school dropouts, Uggen (2000) finds significant effects of work *only* for offenders age 26 or older. It is likely that family connections also play a role in conditioning the effect of employment on crime (Uggen, Wakefield, & Western, 2005). The presence of a spouse or child may intensify the positive effects of employment (Laub & Sampson, 2003; Sampson & Laub, 1993).

The life course perspective naturally lends itself to longitudinal analyses of work and crime. Life course models using longitudinal data distinguish among individuals in the effects of work on crime as well as compare the effects of work on specific individuals over time. In the next section of the paper, we outline the common statistical approaches and methodological innovations aimed at overcoming confusion regarding the temporal ordering of causal effects and selection into work and crime. We also summarize findings from studies of work and crime at the individual and aggregate levels. In particular, we highlight innovations that use longitudinal data to discriminate among the causal mechanisms described above, as well as methods that attend to problems of selectivity into employment and crime, and concerns about causal ordering and spuriousness.

Longitudinal Studies of Work and Crime

The reliance of early studies on cross-sectional data has rendered them better-suited for describing correlations between work and crime than for drawing causal inferences. While useful, studies using cross-sectional data are unable to test some of the most complex issues involving work and crime, such as temporal order, differential selection into employment, reciprocal effects between work and offending, and elaboration of causal mechanisms (Thornberry & Krohn, 2003). First, when work and crime are measured at the same time, the analysis is unable to adequately describe which variable is the cause and which variable is the effect. Second, in cases in which a significant association is detected between work and crime, cross-sectional data offer no way of determining whether those least likely to commit crime are also those who select into employment opportunities (e.g., Gottfredson & Hirschi, 1990). Third, it is likely that crime and work are reciprocally related (Hagan, 1993; Thornberry & Christenson, 1984). Finally, the causal processes predicted by major theories of crime are most easily tested when measures of deviance in addition to various demographic characteristics can be measured prior to beginning employment. In response to these difficulties, social scientists have increasingly turned to longitudinal designs in order to adequately measure and test these competing arguments. We review these longitudinal studies below, summarizing some of the major research efforts in this area in the chapter Appendix.

Classic cohort studies heralded a wave of longitudinal research on crime. Sheldon and Eleanor Glueck followed 500 delinquent boys who were matched with a control group to analyze the impact of family, work, and attachment on delinquent outcomes (Glueck & Glueck, 1930, 1937, 1943). Sampson and Laub, (1993; Laub & Sampson, 2003) updated these data, and applied modern statistical analyses to develop a social control theory of crime which focuses on the social bonds of work. Wolfgang, Figlio, and Sellin's analysis of a cohort of men born in 1945 in Philadelphia (1972) refocused attention on individual careers in crime and found a positive relationship between spells of unemployment and arrest. Farrington and West's Cambridge Study in Delinquent Development (Farrington, 1986; West & Farrington, 1977) followed 411 boys from London from the age of eight. In 1976, the National Youth

Survey began following over 1,700 adolescents who are now between 39 and 45 years old (Elliott, Huizinga, & Ageton, 1985).

These classic studies have given way to more recent large-scale longitudinal studies (e.g., Thornberry & Krohn, 2003) as well as a host of smaller, community studies (e.g., Mortimer, 2003) and improved study designs. Classic longitudinal studies generally selected individuals from a birth cohort and followed them for a number of years, collecting multiple observations on crime, work, and other important events. This design has been criticized for its inability to distinguish between age, period, and cohort effects. It also tends to be costly and is often plagued by problems of selective attrition (see Farrington, Ohlin, & Wilson, 1986; Tonry, Ohlin, & Farrington, 1991 for a detailed discussion). In response, researchers have adopted accelerated longitudinal designs which follow several cohorts over a period of years (Sampson, Morenoff, & Raudenbush, 2002; Tonry et al., 1991). Accelerated designs allow researchers to distinguish cohort and period effects and tend to be less costly because the data collection time is shortened.

Data from these recent studies have been used to test increasingly complex hypotheses about how employment influences crime at the individual and aggregate levels. Yet, longitudinal studies tend to be much costlier than smaller, cross-sectional analyses and many have claimed that they are not worth the expense. In an especially strong review, Hirschi and Gottfredson argue that the costs of longitudinal research substantially outweigh its benefits, noting that the "design has been oversold to criminology at high substantive and economic costs" (1986: 582; see also Gottfredson & Hirschi, 1986). Since longitudinal studies remain an expensive way of collecting data, it is necessary to take stock of their findings and justification for their continued use.

Statistical Approaches to Measuring the Relationships Between Work and Crime

Though experimental research remains the gold standard for evaluating employment and crime (Campbell & Stanley, 1966), programs of this kind are relatively rare. In the absence of random assignment to work, analysts have adopted numerous statistical correction techniques to account for differences across persons in order to estimate "true" employment effects. A major concern in analyses of employment concerns the non-random selection of persons into jobs and the impact of prior acts of deviance on the probability of both getting a job and committing more crime. If an analysis shows a relationship between employment and crime for any one individual, this in and of itself is not strong evidence of an employment effect. This is especially true in studies of offenders as those with prior criminal experience may be least likely to select into legal employment (Freeman, 1997; Pager, 2003; Western, 2002). A wealth of research has demonstrated that people who don't work are systematically different than those who do (just as offenders may be systematically different from non-offenders) and analysts have developed a number of statistical techniques to deal with this problem of selectivity into employment.

Cross-Sectional Approaches to Work and Crime

Covariate Adjustment

Covariate adjustment refers to attempts to name and measure all factors associated with crime that could be plausibly influence selection into work as well. For example, OLS regression approaches that include "controls" for age, gender, race, or social class will adjust work effects for these factors. Of course, other important variables may be omitted, such as ambition or motivation. Covariate adjustment is a common statistical method used by researchers using cross-sectional data to attempt to account for the characteristics that account for criminal involvement as well as employment. While useful, this approach is highly dependent upon researchers choosing the "right" variables to control for and, when used with cross-sectional data, does little to advance knowledge on the causal ordering of work and crime.

Longitudinal Approaches to Work and Crime

Lagged Dependent Variables

Longitudinal data is useful for the selectivity problems described above as it often includes multiple measures of crime and employment over time. While work may influence crime, analysts have also shown that crime influences later work experiences (Caspi, Wright, Moffitt, & Silva, 1998; Hagan, 1993). Utilizing multiple measures of work and crime allows analysts to estimate the effect of work on crime, net of prior criminal acts (e.g., Huiras, Uggen, & McMorris, 2000). Lagged dependent variable models generally predict crime at time 3 using work at time 2 and crime at time 1 as covariates. By including a prior crime measure, or a "lagged" dependent variable, such approaches reduce the influence of stable factors that may be driving both processes (though time-varying factors related to both work and crime remain a threat to analyses of this type). This lagged dependent variable approach represents a substantial advance over covariate adjustment alone. It therefore leads to stronger tests of employment effects and firmly establishes temporal sequencing.

Selection Models for Across-Individual Comparisons

When studying the effects of employment conditions on crime, analysts are limited to a "working" subgroup that may not be representative of the entire sample. Put simply, analyses of work hours, wage rates, or job quality are complicated by the fact that not everyone works and that access to "good" jobs is not randomly distributed across the population. This problem is exacerbated in a sample of former or current

offenders as this group is especially likely to be unemployed. Heckman (1976, 1979; see also Winship & Mare, 1992) provides a two-step method for correcting for sample selectivity. One first estimates a selectivity coefficient with a model predicting entry into employment. This produces a selectivity coefficient which is then included as a regressor in the second stage of analysis which might predict crime or recidivism. The results of the second stage of the analysis allow researchers to partially control for any observed employment effects by accounting for the fact that not everyone works (e.g., Paternoster et al., 2003; Uggen, 1999; Warren, LePore, & Mare, 2000).

A related method, propensity score matching, also uses a two-step procedure to correct for sample selectivity (Rosenbaum & Rubin, 1983; see also Harding, 2003 for an example on differential selection into neighborhoods and later outcomes and Morgan, 2001 for an example on selection into schools). Analysts first predict entry into employment using demographic information, prior labor market experience, or other expected predictors of employment. Workers and non-workers are then "matched" on the resulting propensity scores (with those who have no close match in the sample dropped from the analysis) and a model of crime is then estimated. Propensity score matching models ensure that, to the extent possible, researchers are making an "apples to apples" comparison of workers with similarly-situated non-workers. Estimated work effects on crime can therefore be more reliably attributed to employment.

Researchers may also use endogenous switching regression models, which estimate the effects of being on one "work track" versus another (Mare & Winship, 1988; Winship & Mare, 1992). For example, offenders may be more likely to work in the secondary labor market (consisting primarily of low-skill, low-wage jobs) relative to the primary labor market (consisting of jobs with higher wages, educational requirements, and more stability relative to the secondary labor market) (Crutchfield & Pitchford, 1997; Western, 2002). A switching regression would reallocate primary sector workers to the secondary sector and re-estimate work effects on crime. An analyst interested in the effect of arrest or criminal punishment on later wages (e.g., Western, 2002) may further suspect that the effect of arrest on wages is unlikely to be the same across these two markets because arrest also substantially predicts in which part of the labor market offenders are likely to work. The endogenous switching regression approach simultaneously predicts the effect of arrest on wages while also accounting for the sector of the labor market each worker is in.

Selection Models for Within-Individual or Within-Area Comparisons

The methods described above are typically used when comparing across offenders and non-offenders with respect to some other variable, such as work status, job quality, or number of hours worked. An alternative approach often used in conjunction with longitudinal data is a within-person (or within-area) change model.

Within-person change models ask whether (and under what conditions) people are offending during times in which they are working (or not working). Pooled cross-sectional time series designs, such as fixed and random effects models, relate within-individual changes in employment status to crime (or vice versa), while controlling for all stable within-individual characteristics (see Bushway, Brame, & Paternoster, 1999 for a detailed comparison of random and fixed effects models; Paternoster et al., 2003; Uggen & Thompson, 2003). A related method linking between and within-person models is hierarchical linear modeling in which a within-person fixed or random effects models is first estimated. The parameters estimated from the within-person change model may then be used as the dependent variables in the between-person model (Bryk & Raudenbush, 1992; Osgood et al., 1996). Both the pooled cross-sectional time series and hierarchical approaches allow researchers to examine the effects of work on crime while accounting for individual differences in criminal propensity (e.g., Gottfredson & Hirschi, 1990).

Results from Longitudinal Studies of Work and Crime

The next section of the paper reviews research on work and crime using longitudinal data. We focus not only on the presence or absence of employment, but also on the important aspects of employment such as work intensity or hours, work environment, and labor market sector that may be related to crime.

Studies of Adolescents and Young Adults in the General Population

Work Intensity and Delinquency

Early criminological theory often suggested that adolescent work experiences would be beneficial by providing income for extracurricular activities, increasing supervision of adolescents, and providing work experiences that would be valuable in adulthood. Empirical research, however, has shown work to be most beneficial to adults (e.g., Sampson & Laub, 1993; Uggen, 2000; Wright, Cullen, & Williams, 2002). For juveniles, a number of studies have found negative effects of work experiences, particularly those described as *intensive* (usually measured as working 20 or more hours per week) (Bachman & Schulenberg, 1993; Staff & Uggen, 2003; Wright & Cullen, 2000; Wright et al., 2002; but see Johnson, 2004 for evidence of race differences in the effect of intensive work). Whereas the adoption of a prosocial identity centered around work may foster desistance in adults (e.g., Matsueda & Heimer, 1997) among adolescents, valuing intensive work roles over school roles often results in decreased educational performance, attainment and aspirations (Bachman & Schulenberg, 1993; Mortimer & Finch, 1986; Steinberg & Cauffman, 1995; Steinberg & Dornbusch, 1991). Too much work at too early an age may also encourage a precocious transition to adult roles (e.g., Hirschi, 1969;

Krohn, Lizotte, & Perez, 1997; Rindfuss, Swicegood, & Rosenfeld, 1987). Though some work experience is in many ways beneficial to adolescents, too much work appears to increase delinquency (D'Amico, 1984; Marsh, 1991; Mortimer & Finch, 1986; Shanahan Shanahan, Finch, Mortimer, & Ryu, 1991; Steinberg & Dornbusch, 1991; Steinberg, Fegley, & Dornbusch, 1993).

Empirical research on adolescent employment and delinquency emphasizes not only the presence or absence of employment and the number of hours worked, but also how work hours are spaced out over time. Mortimer (2003) describes adolescent work in terms of its intensity as well as its duration. Adolescents may engage in work of low duration and low intensity (such as babysitting), low duration and high intensity (for example, a full-time summer job), high duration and low intensity (a regular job less than 20 hours per week), or high duration and high intensity (a regular job more than 20 hours per week). Mortimer's analysis of the effects of work on problem behaviors and alcohol abuse suggests that low intensity work of substantial duration ("steady" work) is most advantageous for a variety of outcomes, as well as the overall transition to adulthood (2003; see also Staff, 2004).

Cross-sectional studies on adolescent work intensity have been subject to many of the criticisms described above. Perhaps adolescents who work intensively are different from adolescents who do not in ways that are systematically related to delinquency (Gottfredson & Hirschi, 1990; Paternoster et al., 2003; Warren et al., 2000). Adolescents who work intensively may be less invested in school to begin with and more likely to engage in delinquency even in the absence of intensive work (Greenberger & Steinberg, 1986). Adolescents experiencing difficulty in other arenas, such as school or family life, may also seek out intensive work. In a 1993 study, Hagan and Wheaton show that youth who are experiencing trouble at home may marry or become parents early as a way of escaping their adolescence. Intensive work may also be sought out as a way to precociously enter adult roles. In short, there are a multitude of reasons to suspect that adolescents who are working intensively are both systematically different from those who are not and more likely to be delinquent even in the absence of work.

Empirical research has established the ways in which intensively working adolescents differ from their peers. Using data from the Monitoring the Future study, a nationally representative survey of high school seniors with annual follow-ups for a subset of respondents, Bachman and Schulenberg (1993) show that intensive work (working 20 or more hours per week) is positively correlated with potentially harmful or delinquent behaviors (smoking, drinking, and drug use, aggression, theft, victimization, trouble with police), even while controlling for prior deviance. Moreover, students with poor educational success are most likely to work intensively later on in high school. Steinberg et al. (1993) also exploit longitudinal data to show that adolescents who work intensively are in fact different from those who do not. Intensive workers were less engaged in school and least supervised by their parents prior to working intensively.

Though research supports a self-selection or propensity component in the effect of intensive work on delinquency (see especially Apel et al., 2007; Apel, Paternoster, Bushway, & Brame, 2006; Paternoster et al., 2003), longitudinal research has also established that working intensively also has an independent

effect on educational attainment, performance, and delinquency, even when prior school difficulty and problems at home are controlled. Ploeger (1997) used the National Youth Survey described earlier and reported that work was associated with a number of delinquent or problem behaviors for adolescents (substance use, alcohol use, and aggression), even after controlling for prior levels of delinquency. A number of other studies using longitudinal data have further clarified the relationship between work intensity and delinquency while controlling for measures of prior deviance and differential selection into work (McMorris & Uggen, 2000; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Staff & Uggen, 2003; Steinberg & Dornbusch, 1991).

Employment Characteristics and Delinquency

Numerous studies have identified particular characteristics of jobs that might account for the negative impact of work intensity on crime. In general, observers remark on the overall poor quality of adolescent employment opportunities for social capital and skill development (Wright & Cullen, 2004; but see Staff & Uggen, 2003). In addition, Ploeger (1997) notes that adolescents who work are more likely to come into contact with older, delinquent peers at work and are thus exposed to more opportunities for delinquency. Osgood (1999) and Osgood and Anderson (2004) argue from the routine activities perspective that working intensively substantially increases the amount of unstructured time adolescents spend with peers, thereby increasing their opportunities for delinquency.

Recent research has examined the relationship between delinquency and the types of jobs in which adolescents typically work (Shover, 1996; Staff & Uggen, 2003; Wright & Cullen, 2000). Using cross-sectional data, Wright and Cullen (2000) find no relationship between work environment and delinquency but a significant association between adolescent employment, contact with older delinquent peers, and increased delinquency (see also Ploeger, 1997). Similarly, using a prospective, community study of adolescent development (Mortimer, 2003), adjusting for sample selection into work (Heckman, 1976, 1979), and including measures of prior delinquency, Staff and Uggen (2003) found that some types of employment in adolescence reduced delinquency while others appeared to increase it. Potentially problematic jobs are characterized by autonomy, high wages, and status among peers. Better jobs from a delinquency-reduction perspective, are those most compatible with educational obligations, those offering numerous opportunities to learn new skills which could be used in other jobs, and those unlikely to include substantial contact with delinquent peers. A related study using the same community survey found that workers in jobs that fit their long-range career goals are less likely to commit workplace crime, even after controlling for prior acts of workplace deviance and general crime (Huiras et al., 2000). Job quality appears to be important for young adults as well as adolescents. Using lagged dependent models and Heckman-style corrections for sample selection to account for prior crime, work, and background factors, Wadsworth (2006) finds that job quality, more than income, is related to reduced crime.

All in all, the relationship between work and crime is complex for adolescents and many of the complicating questions have been at least partially resolved through the innovative use of longitudinal data. The use of sample selection corrections and inclusion of measures of prior deviance have helped better describe the selection of adolescent into work, work hours, and work environments. In sum, work can be beneficial for adolescents insofar as work hours are moderated, work does not detract from age-appropriate social roles (in school and within the family), and does not include significant associations with older, delinquent peers. Recent work comparing covariate adjustment, lagged dependent variable, and pooled cross-sectional time series models by Paternoster et al. (2003), however, challenges even the formerly secure finding that high work intensity increases crime among adolescents, raising further questions about our abilities to adequately control for selection into work. Moreover, though research supports similar deleterious effects of work for boys and girls (Heimer, 1995), Johnson (2004) finds the positive effect of intensive work on delinquency is most applicable to white youth (see also Newman, 1999).

Paternoster and colleagues examine intensive working with a random and fixed-effect analysis and propensity-score matching (see also Brame, Bushway, Paternoster, & Apel, 2004) and trajectory based (Apel et al., 2007) models. The results of these models suggest that selection into intensive work is responsible for much of the earlier observed relationship between intensive working and crime. In the most rigorous statistical attempt to date to address sample selection issues, Paternoster et al. (2003) use the National Longitudinal Survey of Youth and find no effect of intensive work on dichotomous indicators of substance use and delinquency, net of other relevant covariates (see also Brame et al., 2004). Currently, research on adolescent employment and delinquency leaves a number of open questions regarding the impact of job characteristics, group differences, and selection effects in need of resolution, most likely with longitudinal data and replicated across several data sources.

Studies of the General Population

Unemployment and Crime: Aggregate-Level Research

Beyond work and crime relationships at the individual-level, crime rates are likely to be influenced by labor market conditions and the unemployment rate. Contrary to work effects at the individual-level on adolescent delinquency, aggregate-level research suggests that unemployment is positively associated with crime and delinquency for young adults. Allan and Steffensmeier (1989) show that both unemployment and underemployment of young adults is positively associated with crime (see also Shover, 1996; Sullivan, 1989). Similarly, Crutchfield (1989) shows that an abundance of secondary labor market jobs is associated with higher crime rates. In an analysis of 16 to 24 year-old males, Freeman and Rodgers (1999) show that crime fell in areas with the largest declines in unemployment.

The relationship between crime and macroeconomic conditions is the subject of debate and represents an area in which causal order and process is the source of much disagreement. Criminological theory offers competing predictions on the direction of the relationship between unemployment and crime. Economic choice and opportunity theories suggest that unemployment will cause more crime as financial need rises and potential offenders are unable to meet their needs with income from legal work (Cantor & Land, 1985; Cloward & Ohlin, 1960; Ehrlich, 1973; Greenberg, 1985). Alternatively, routine activities theories (e.g., Cohen & Felson, 1979) suggest that crime may fall during times of economic downturn when more people remain home during the day (reducing home burglaries) and spend less time outside the home engaging in leisure activities at night (reducing their chances of victimization). Additionally, both processes may be operating simultaneously, resulting in no observed relationship between unemployment and crime. Cantor and Land (1985) make just such an argument in that contemporaneous unemployment is likely to decrease opportunities for crime but lagged unemployment is related to increased motivations to commit crime (see also Britt, 1994, 1997).

In a review of available research, Chiricos (1987) reports inconsistent results regarding unemployment and crime (see also Land, Cantor, & Russell, 1995). Few studies found the expected positive relationship between unemployment and crime at the national level. Results are more consistent at lower levels of aggregation, most likely owing to the more homogenous populations in city and county units. In most studies, unemployment is positively related to crime, though it more strongly influenced property crime relative to violent crime. Many analyses using cross-sectional data yield results in which the causal order between unemployment and crime is unclear. Unemployment may cause crime, crime may cause unemployment (Caspi & Moffitt, 1995; Hagan, 1993; Thornberry & Christenson, 1984), or the two may be reciprocally related. In order to more clearly differentiate the temporal order of crime and unemployment, numerous studies have used time series data across a number of geographic areas and included both lagged and contemporaneous measures of unemployment. This strategy is analogous to the within-person change models discussed earlier in that they allow for researchers to control for time-stable characteristics of an area while also establishing the temporal order of crime and unemployment.

Using lagged and contemporaneous measures of unemployment, Britt (1994, 1997) and Cantor and Land (1985) find a negative effect of unemployment on crime but a positive lagged unemployment effect. Employment of poor quality is also positively related to crime. Researchers have also noted a potential ecological fallacy in aggregate studies of unemployment and crime. Though aggregate-level research has demonstrated a positive relationship between lagged unemployment rates and crime rates and a negative relationship between contemporaneous unemployment rates and crime rates, these results do not show that unemployed individuals commit more crime than the employed as a result of economic downturns. Individual-level studies using the Cambridge Study of Delinquent Development (West and Farrington) and the National Longitudinal Survey of Youth (1979) have shown that this is in fact the case. Farrington, Gallagher, Morley, Ledger and West (1986) found increased criminal involvement among young adults during times of unemployment.

Crutchfield and Pitchford (1997) show that youths employed in the secondary labor market are more likely to commit crime relative to those in more high quality, stable jobs. Crime among secondary labor market workers was especially high in areas of high secondary labor market concentration (Crutchfield & Pitchford, 1997). Using both area and individual-level variables, Bellair, Roscigno and McNulty (2003) link greater opportunity in the low-wage labor market to increases in violent crime among adolescents.

The routine activities approach has also been validated at the individual-level. Osgood (1999) and colleagues (1996) use fixed-effect within-person change models to show that young adults who spend relatively large amounts of unstructured time with peers are more likely to engage in crime. Similarly, Fergusson, Horwood, and Woodward use a fixed-effects specification to link spells of unemployment to increases in crime and substance use among young adults (2001). Finally, also using a fixed-effects model, Uggen and Thompson (2003) find a positive effect of local unemployment rates on illegal earnings, but this effect is reduced to non-significance when individual employment characteristics are included in the models.

Overall, results from area studies of macroeconomic conditions and crime suggest that unemployment has a lagged and a contemporaneous effect on crime. Additionally, concentrated employment opportunities of low quality, so-called underemployment, is also associated with increased crime, even when selection into work and other background characteristics are controlled.

Ex-Offenders, Current Offenders, and "At-Risk" Populations

Work and Crime Among Former Offenders

The effect of employment on crime is especially important to practitioners working with ex-offenders or other groups deemed to be at high risk for crime. Offenders with prior criminal histories may commit more crime in the absence of quality, legal employment as they are most likely to possess "criminal capital" (Hagan, 1993). Ex-offenders are most likely to experience short spells of employment, supplemented by short spells of illegal work (Cook, 1975; Fagan, 1995). Offenders are typically less skilled than other workers, less educated, and experience high levels of discrimination in the labor market as a result of their criminal history or race (Pager, 2003). Offenders may earn more from illegal work than legal work for many types of crime (Freeman, 1992, 1997; Freeman & Holzer, 1986; Grogger, 1995; Wilson & Abrahamse, 1992).

The special problems of reentering ex-offenders, the poorly educated, or other at-risk populations has been the focus of much of the experimental research on crime and employment, where results have been decidedly mixed. England's APEX program and Michigan's Comprehensive Offender Manpower Program and Transitional Aid Research Project provided job placement and counseling

for ex-offenders and found no difference in recidivism rates across treatment and control groups (Berk, Lenihan, & Rossi, 1980; Soothill, 1974). On the other hand, the National Supported Work Demonstration reported very weak effects of work on crime (Piliavin & Gartner, 1981). Supported Work randomly assigned ex-offenders, ex-addicts, youth dropouts, and AFDC recipients to subsidized employment. A reanalysis of the Supported Work data found that the effects of work on crime were age-graded, with work reducing recidivism only for older participants (Uggen, 2000). Evaluations of the Job Corps program, using random assignment and matched comparison designs, provided intensive job training and placement and reported reduced arrest rates and higher wages for those who completed the program (Cave, Doolittle, Bos, & Toussaint, 1993; Schochet, Burghardt, & Glazerman, 2000).

In a review of experimental evidence on work and crime, Bushway and Reuter (1997) conclude with a point we discussed earlier; providing employment to offenders and at-risk groups works only for some kinds of offenders in some situations. The available evidence suggests that residential job training programs (such as Job Corps) are useful for preventing arrest among high school dropouts and that providing employment opportunities is especially helpful for older offenders (Uggen, 2000). It also likely that the null effects of employment on crime noted in some experimental and quasi-experimental research designs are related to the types of employment opportunities offered to participants. These jobs are generally of low quality and training programs may not do enough to overcome pre-existing deficits in education, job skills, and work experience to reduce crime to any great degree (Bushway & Reuter, 1997). Using a statistical correction for selection into employment with the Supported Work sample, Uggen (1999) finds that, as with adolescents, jobs of high quality are associated with less crime (see also Crutchfield & Pitchford, 1997; Shover, 1996). Thus job programs for those at-risk for crime (ex-offenders, drug addicts, youth dropouts) may be more successful when they attend to human capital deficiencies and offer a path into high quality employment.

Beyond the deficits restricting the job opportunities of offenders, a substantial research literature has also documented the strong effects of criminal punishment on later employment. Using the National Longitudinal Survey of Youth, a fixed effects model, and a comparison of subgroups, Western (2002) shows that incarceration reduces later earnings and employment opportunities by disrupting connections with potential employers (e.g., Granovettor, 1973; Hagan, 1993). Incarceration reduces human capital because it diminishes work experience. Pager (2003) documents significant labor market discrimination against those with a criminal conviction (see also Bushway, 1998). Punishment may also intensify the forces pushing offenders into unemployment and low quality work and make recidivism more likely. There is some support for the idea that criminal justice interventions may be more effective among offenders with a stable work history. Employed sex offenders may be more likely to respond to treatment (Kruttschnitt, Uggen, & Shelton, 2000) and the impact of arrest in domestic violence cases may be partially dependent on the employment status of the offender (Sherman & Smith, 1992).

Conclusion

Taking Stock: What do we know?

Longitudinal studies of crime have yielded several empirical generalizations concerning the effects of employment. The longitudinal design has also allowed researchers to control for a number of confounding influences including differential selection effects and prior levels of offending. A number of studies also describe important features of employment that condition the relationship between work and crime. First, employment effects are likely to be age-graded, with intensive work causing disruptions in adolescent development and the provision of a basic job opportunity especially beneficial among older criminal offenders. Second, criminal justice interventions tend to undermine the employment opportunities of those punished even though employed offenders may be most amenable to treatment interventions. Finally, employment quality may be more important for crime reduction than the simple presence or absence of a job, as many of those at high risk for crime are likely to also have substantial opportunities in the illegal labor market open to them.

Despite all the research suggesting work and crime are related and the important methodological complications involved in measuring this relationship, longitudinal data have been underutilized and are often analyzed cross-sectionally. Moreover, the differences across longitudinal studies depending on the varying methods used to correct for sample selection also underscore the need for increased experimental designs that include true random assignment to employment. Loeber and Farrington (this volume) offer a compelling argument and a study design for longitudinal data collections that include experimental treatment evaluations (see also Tonry et al., 1991). They outline numerous threats to validity in non-experimental designs that are only partially overcome by the corrections described in this paper, such as interpreting causal effects that are actually the result of history and maturation and the confounding effects of testing and instrumentation (Tonry et al., 1991: 35–36).

More research that combines a longitudinal design with random assignment is needed because we also suspect that the effects of employment are potentially contingent on other social roles, such as marriage, parenthood, or community involvement (Uggen, Manza, & Behrens, 2004; see also Siennick & Osgood, this volume). Married offenders may have an extra incentive to remain in legal work (Sampson & Laub, 1993), involvement in legal work may also cement bonds between offenders and their children (Edin, Nelson, & Paranal, 2001), and community involvement in conjunction with legal work may enhance prosocial identity development (Maruna, 2001; Matsueda & Heimer, 1997).

Longitudinal research in employment and crime has surely advanced knowledge beyond that available from cross-sectional studies. While few empirical generalizations have been firmly established in the literature, longitudinal studies have helped isolate the areas of greatest consensus and controversy. They have also "raised the bar" for non-experimental designs to more rigorously account for the selection processes that place criminals and non-criminals into different employment statuses.

Further longitudinal analyses can help reveal how changing life circumstances, such as employment characteristics, are linked to changes in crime and recidivism.

Continuing Methodological Challenges, Complexity, and Public Policy Implications

We began this paper by commenting on the prevailing faith by criminologists, policy makers, and the general public regarding the relationship between work and crime. Our review of scientific evidence on this question suggests that both optimism and caution are warranted. Overall, the research literature demonstrates a complex relationship between work and crime at the aggregate and individual levels of analysis. Work is important for *some* groups, at *particular* life stages, and is more consequential in some areas relative to others – thus *when* and *where* work opportunities occur in the lives of at-risk adolescents, former offenders, or in particular neighborhoods is of most consequence.

We note that one of the most firmly established findings in the area, the positive relationship between work intensity and delinquency, has recently come under challenge from analysts using methods that elegantly account for the selection of young people into jobs (e.g., Apel et al., 2006; Paternoster et al., 2003). Recent research also suggests that analysts in the future ought to pay greater attention to the attributes of employment opportunities for adolescents as opposed to merely the presence and amount of work. Employment that is compatible with adolescents' school roles and career aspirations may be useful, even if those jobs require significant investments of time. Overall, the research literature on adolescent employment and delinquency suggests that hard and fast limits on the availability of employment or hours worked per week may be too simplistic.

The life course perspective and research on those returning to the community from correctional supervision also result in more complexity in the relationship between work and desistance from crime. This literature demonstrates the particular responsiveness of older offenders to employment opportunities, even those of relatively low quality. Unfortunately, many job programs currently have age limits that restrict program participation to those under the age of twenty-five (for example, Job Corps).

Providing employment opportunities for ex-offenders is no panacea, however, and evaluation of job programs for former inmates suggests that policy makers may need to re-conceptualize the definition of program success and lower their expectations for what work can (and cannot do). For example, the National Supported Work Demonstration reduced crime among those who received jobs, but did nothing to reduce substance abuse. As we have demonstrated in this paper, employment is more than a mere job. Beyond income, work connects adolescents to their peers (both delinquent and "straight"), offers informal social networks that may conflict with crime, and provides ex-offenders with pro-social roles. All of these aspects of work may reduce crime among ex-offenders; at the same time, employment also provides an income with which to sustain prior substance abuse.

The complexities described above are particularly important to consider given that employment represents one of the few areas in which governments, schools, prisons, or communities are able to intervene significantly in the lives of potential and current offenders. For example, while we cannot provide individuals with spouses, we are able to increase the chances that they will become employed after leaving prison by enhancing their skills through expanded educational or training initiatives in prison. Such policies would represent a shift in current focus, but would also represent a significant cost to the public. Solid policy guidance from longitudinal studies is sorely needed in an era of increasing imprisonment rates. While we believe that the literature reviewed above supports the idea that employment can reduce crime, it also suggests that the relationship is quite complex, varying across time, space, and individuals. In light of the high crime and imprisonment rates in the United States, the salience of employment to criminal offenders, and the continuing political viability of jobs programs, further investment in longitudinal and experimental research on the relationship between work and crime is clearly merited.

Acknowledgment The authors thank Kim Gardner and Sarah Shannon for their invaluable assistance in completing this chapter.

References

Allan, E., & Steffensmeier, D. (1989). Youth, underemployment, and property crime: Differential effects of job availability and job quality on juvenile and young adult arrest rates. *American Sociological Review*, *54*, 107–123.

Apel, R., Brame, R., Bushway, S. D., Haviland, A., Nagin, D., & Paternoster, R. (2007). Unpacking the relationship between adolescent employment and antisocial behavior: A matched samples comparison. Unpublished Manuscript, University of Maryland Department of Criminology and Criminal Justice.

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.

Bachman, J. G., & Schulenberg, J. (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*, 220–235.

Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*, *76*, 169–217.

Bellair, P. E., Roscigno, V. J., & McNulty, T. L. (2003). Linking local labor market opportunity to violent adolescent delinquency. *Journal of Research in Crime and Delinquency*, *40*, 6–33.

Berk, R. A., Lenihan, K. J., & Rossi, P. H. (1980). Crime and poverty: Some experimental evidence from ex-offenders. *American Sociological Review*, *45*, 766–786.

Bernburg, J. G., & Krohn, M. D. (2003). Labeling, life chances, and adult crime: The direct and indirect effects of official intervention in adolescence on crime in early adulthood. *Criminology*, *41*, 1287–1318.

Blau, J. R., & Blau, P. M. (1982). The cost of inequality: Metropolitan structure and violent crime. *American Sociological Review*, *47*, 114–129.

Blokland, A., & Nieuwbeerta, P. (2005). The effects of life circumstances on longitudinal trajectories of offending. *Criminology*, *43*, 1203–1240.

Brame, R., Bushway, S. D., Paternoster, R., & Apel, R. (2004). Assessing the effect of adolescent employment on involvement in criminal activity. *Journal of Contemporary Criminal Justice*, *20*, 236–256.

Briar, S., & Piliavin, I. (1965). Delinquency, situational inducements, and commitment to conformity. *Social Problems*, *13*, 35–45.

Britt, C. L. (1994). Crime and unemployment among youths in the United States, 1958–1990: A time series analysis. *American Journal of Economics and Sociology*, *53*, 99–109.

Britt, C. L. (1997). Reconsidering the unemployment and crime relationship: Variation by age group and historical period. *Journal of Quantitative Criminology*, *13*, 405–428.

Bryk, A., & Raudenbush, S. (1992). *Hierarchical linear models*. Thousand Oaks, CA: Sage Publications.

Bureau of Justice Statistics. (2004). Corrections statistics: summary findings. *Washington DC: Bureau of Justice Statistics*. Retrieved October 1, 2004 from www.ojp.usdoj.gov/bjs/correct.htm

Bureau of Labor Statistics. (2004). Labor force statistics from the current population survey: Annual averages in the unemployment rate. *Washington DC Bureau of Labor Statistics*. Retrieved October 1, 2004 from http://stats.bls.gov/cps/home.htm

Bushway, S. D. (1998). The impact of an arrest on the job stability of young white american men. *Journal of Research in Crime and Delinquency*, *35*, 454–479.

Bushway, S. D., Brame, R., & Paternoster R. (1999). Assessing stability and change in criminal offending: A comparison of random effects, semi-parametric, and fixed effects modeling strategies. *Journal of Quantitative Criminology*, *15*, 23–61.

Bushway, S., & Reuter, P. (1997). Labor markets and crime risk factors. In L. Sherman, D. Gottfredson, D. MacKenzie, J. Eck, P. Reuter, & S. Bushway (Eds.), *Preventing crime: What works*, *what doesn't*, *what's promising*. Washington, DC: Office of Justice Programs, US Department of Justice.

Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.

Cantor, D., & Land, K. C. (1985). Unemployment and crime rates in the post World War II united states: A theoretical and empirical analysis. *American Sociological Review*, *53*, 317–322.

Caspi, A, & Moffitt, T. E. (1995). The continuity of maladaptive behavior: From description to understanding in the study of antisocial behavior. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychology*, *volume 2: Risk*, *disorder*, *and adaptation* (472–511). New York: Wiley.

Caspi, A., Wright, B. R. E., Moffitt, T. E., Silva, P.A. (1998). Early failure in the labor market: Childhood and adolescent predictors of unemployment in the transition to adulthood. *American Sociological Review*, *63*, 424–451.

Cave, G., Doolittle, F., Bos, H., & Toussaint, C. (1993). *JOBSTART: Final report on a program for high school dropouts*. New York: Manpower Demonstration Research Corp.

Chiricos, T. G. (1987). Rates of crime and unemployment: An analysis of aggregate research evidence. *Social Problems*, *43*, 187–212.

Cloward, R. A., & Ohlin, L. (1960). *Delinquency and opportunity*. Glencoe, IL: Free Press.

Cohen, L., & Felson, M. (1979). Social change and crime rates. *American Sociological Review,* 44, 588–608.

Cook, P. J. (1975). The correctional carrot: Better jobs for parolees. *Policy Analysis,* 1, 11–54.

Cornish, D. B., & Clarke, R. V. (1986). *The reasoning criminal*. New York: Springer-Verlag.

Crutchfield, R. D. (1989). Labor stratification and violent crime. *Social Forces*, *68*, 489–512.

Crutchfield, R. D., & Pitchford, S. (1997). Work and crime: The effects of labor stratification. *Social Forces*, *76*, 93–118.

D'Amico, R. (1984). Does employment during high school impair academic progress? *Sociology of Education*, *57*, 152–164.

Edin, K., Nelson, T. J., & Paranal, R. (2001). Fatherhood and incarceration as potential turning points in the criminal careers of unskilled men. *Institute for Policy Research Working Paper* WP-01-02. Northwestern University.

Ehrlich, I. (1973). Participation in illegitimate activities: A theoretical and empirical investigation. *Journal of Political Economy*, *81*, 521–565.

Elliott, D. S., Huizinga, D. H., & Ageton, S. S. (1985). *Explaining Delinquency and Drug Use.* Beverly Hills, CA: Sage Publications.

Fagan, J. (1995). Legal work and illegal work: Crime, work, and unemployment. In B. Weisbrod & J. Worthy (Eds.), *Dealing with urban crisis: Linking research to action*. Evanston, Ill.: Northwestern University Press.

Farrington, D. P. (1986). Age and crime. *Crime and Justice: An Annual Review of Research*, *7*, 29–90.

Farrington, D. P., Gallagher, B., Morely, L., St., Ledger, R. J., West, D. J. (1986). Unemployment, school leaving, and crime. *The British Journal of Criminology*, *26*, 335–356.

Farrington, D. P., Ohlin, L. E., & Wilson, J. Q. (1986).*Understanding and controlling crime*. New York: Springer-Verlag.

Fergusson, D. M., Horwood, L. J., & Woodward, L. J. (2001). Unemployment and psychosocial adjustment in young adults: causation or selection? *Social Science Medicine*, *53*, 305–320.

Freeman, R. B. (1992). Why do so many young men commit crimes and what might we do about it? *Journal of Economic Perspectives*, *10*, 22–45.

Freeman, R. B. (1997). *When earnings diverge: Causes*, *consequences*, *and cures for the new inequality in the US.* Washington, DC: Commissioned by the Committee on New American Realities of the National Policy Association.

Freeman, R. B., & Holzer, H. J. (1986). *Black youth employment crisis*. Chicago: University of Chicago Press.

Freeman, R. B., & Rodgers, W. M., III. (1999). Area economic conditions and the market outcomes of young men in the 1990s expansion. *National Bureau of Economic Research Working Paper 7073*. Cambridge, MA: National Bureau of Economic Research.

Glueck, S., & Glueck, E. (1950). U*nraveling juvenile delinquency*. Cambridge, MA: Harvard University Press.

Glueck, S., & Glueck, E. (1930). *500 criminal careers*. New York: Alfred A. Knopf.

Glueck, S., & Glueck, E. (1937). *Later criminal careers*. New York: Commonwealth Fund.

Glueck, S., & Glueck, E. (1943). *Criminal careers in retrospect*. New York: Commonwealth Fund.

Gottfredson, M., & Hirschi, T. (1990). *A general theory of crime*. Palo Alto, CA: Stanford University Press.

Gottfredson, M., & Hirschi, T. (1986). The true value of lambda would appear to be zero: An essay on career criminals, criminal careers, selective incapacitation, cohort studies, and related topics. *Criminology*, *24*, 185–210; 213–234.

Granovettor, M. (1973). The strength of weak ties. *American Journal of Sociology*, *78*, 1360–1380.

Greenberg, D. F. (1985). Age, crime, and social explanation. *American Journal of Sociology*, *91*, 1–12.

Greenberger, E., & Steinberg, L. D. (1986). *When teenagers work: The psychological and social costs of teenage employment*. New York: Basic Books.

Grogger, J. T. (1995). The effect of arrests on the employment and earnings of young men. *Quarterly Journal of Economics*, *110*, 51–72.

Hagan, J. (1993). The social embeddedness of crime and unemployment. *Criminology*, *31*, 465–492.

Hagan, J., & Wheaton, B. (1993). The search for adolescent role exits and the transition to adulthood. *Social Forces*, *71*, 955–980.

Harding (2003). Jean valjean's dilemma: The management of ex-convict identity in the search for employment. *Deviant Behavior*, *24*, 571–595.

Heckman, J. J. (1976). The common structure of statistical models of truncation, sample selection and limited dependent variables and a sample estimator for such models. *Annals of Economic and Social Measurement*, *5*, 475–492.

Heckman, J. J. (1979). Sample selection as specification error. *Econometrica*, *45*, 153–161.

Heimer, K. (1995). Gender, race, and the pathways to delinquency. In J. Hagan & R. D. Peterson (Eds.), *Crime and inequality* (140–173). Stanford, CA: Stanford University Press.

Hirschi, T. (1969). *Causes of delinquency*. Berkeley, CA: University of California Press.
Hirschi, T., & Gottfredson, M. (1986). Age and the explanation of crime. *American Journal of Sociology*, *89*, 552–584.
Huiras, J., Uggen, C., & McMorris, B. (2000). Career jobs, survival jobs, and employee deviance: A social investment model of workplace misconduct. *The Sociological Quarterly*, *41*, 245–263.
Huizinga, D., Schumann, K., Ehret, B., & Elliott A. (2003). *The effect of juvenile justice system processing on subsequent delinquent and criminal behavior: A cross-national study*. Washington: Final Report to the National Institute of Justice.
Johnson, M. K. (2004). Further evidence on adolescent employment and substance use: differences by race and ethnicity. *Journal of Health and Social Behavior*, *45*, 187–197.
Krohn, M. D, Lizotte, A. J., & Perez, C. M. (1997). The interrelationship between substance use and precocious transitions to adult statuses. *Journal of Health and Social Behavior*, *38*, 87–103.
Kruttschnitt, C., Uggen, C., & Shelton, K. (2000). Predictors of desistance among sex offenders: The interaction of formal and informal social controls. *Justice Quarterly*, *17*, 61–87.
Land, K. C., Cantor, D., & Russell, S. T. (1995). Unemployment and crime rate fluctuations in post-World War II United States: Statistical time-series properties and alternate models. In J. Hagan & R. D. Peterson (Eds.), *Crime and inequality* (55–79). Stanford, CA: Stanford University Press.
Laub, J. H., & Sampson, R. J. (2003). *Shared beginnings*, *divergent lives: delinquent boys to age 70*. Cambridge, MA: Harvard University Press.
Loeber, R., & Farrington, D. P. (2008). Advancing knowledge about causes in longitudinal studies: Experimental and quasi-experimental methods. In A. M. Liberman (Ed.), *Longitudinal Research on Crime and Deliquency* (257–259). Newyork: Springer.
Mare, R. D., & Winship C. (1988). Endogenous switching regression models for the causes and effects of discrete variables. In J. S. Long (Ed.), *Common problemsflproper solutions: Avoiding error in quantitative research* (132–160). Newbury Park, CA: Sage Marini.
Marsh, H. L. (1991). A comparative analysis of crime coverage in newspapers from the United States and other countries from 1960–1989. *Journal of Criminal Justice*, *19*, 67–79.
Maruna, S. (2001). *Making good: How ex-convicts reform and rebuild their lives.* Washington, DC: American Psychological Association Books.
Massey, D. S., & Denton, N. (1993). *American apartheid*. Cambridge, MA: Harvard University Press.
Matsueda, R., & Heimer, K. (1997). A symbolic interactionist theory of role-transitions, role-commitments, and delinquency. In T. B. Thornberry (Ed.), *Developmental theories of crime and delinquency*. New Brunswick, NJ: Transaction Press.
Merton, R. K. (1938). Social structure and anomie. *American Sociological Review*, *3*, 672–682.
McMorris, B., & Uggen, C. (2000). Alcohol and employment in the transition to adulthood. *Journal of Health and Social Behavior*, *41*, 276–294.
Morenoff, J., & Sampson, R. J. (1997). Violent crime and the spatial dynamics of neighborhood transition: Chicago, 1970–1990. *Social-Forces*, *76*, 31–64.
Morgan, S. L. (2001). Counterfactuals, causal effect heterogeneity, and the catholic school effect on learning. *Sociology of Education*, *74*, 341–374.
Mortimer, J. T. (2003). *Working and growing up in America*. Cambridge, MA: Harvard University Press.
Mortimer, J. T., & Finch, M. D. (1986). The effects of part-time work on adolescent self-concept and achievement. In K. M. Borman & J. Reisman (Eds.), *Becoming a worker* (66–89). Ablex: Connecticut.
Mortimer, J. T., Finch, M. D., Ryu, S., Shanahan, M., & Call, K. (1996). The effects of work intensity on adolescent mental health, achievement, and behavioral adjustment: New evidence from a prospective study. *Child Development*, *67*, 1243–1261.
Newman, K. (1999). *No shame in my game: The working poor in the inner city*. New York: Alfred A. Knopf/The Russell Sage Foundation.

Osgood, D. W. (1999). Having the time of their lives: all work and no play? In A. Booth, A. C. Crouter, & M. J. Shanahan (Eds.), *Transitions to adulthood in a changing economy* (176–186). Praeger: Connecticut.

Osgood, D. W., & Anderson, A. L. (2004). Unstructured socializing and rates of delinquency. *Criminology*, *42*, 519–549.

Osgood, D. W., Wilson, J. K., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, *61*, 635–655.

Pager, D. (2003). The mark of a criminal record. *American Journal of Sociology*, *108*, 937–975.

Paternoster, R., Bushway, S., Brame, R., & Apel, R. (2003). The effect of employment on delinquency and problem behaviors. *Social Forces*, *82*, 297–335.

Piliavin, I., & Gartner, R. (1981). *The impact of supported work on ex-offenders*. The Institute for Research on Poverty and Mathematica Policy Research, Inc.

Ploeger, M. (1997). Youth employment and delinquency: Reconsidering a problematic relationship. *Criminology*, *35*, 659–675.

Rindfuss, R. C., Swicegood, C. G., & Rosenfeld, R. (1987). Disorder in the life course: How often and does it matter? *American Sociological Review*, *55*, 609–627.

Rosenbaum, P. R., & Rubin D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*, 41–55.

Sampson, R. J. (1987). Urban black violence: The effect of male joblessness and family disruption. *American Journal of Sociology*, *93*, 348–382.

Sampson, R. J., & Laub, J. H. (1993). C*rime in the making: Pathways and turning points through life.* Cambridge, MA: Harvard University Press.

Sampson, R. J., Morenoff, J. D., Raudenbush, S. (2002). Social anatomy of racial and ethnic disparities in violence. *American Journal of Public Health*, *95*, 224–232.

Schochet, P., Burghardt, J., & Glazerman, S. (2000). *National job corps study: The short-term impacts of job corps on participants' employment and later outcomes*. Princeton. NJ: Mathematica Policy Research, Inc.

Shanahan, M. J., Finch, M., Mortimer, J., & Ryu, S. (1991). Adolescent work experience and depressive effect. *Social Psychology Quarterly*, *54*, 299–317.

Sherman, L., & Smith, D. (1992). Crime, punishment, and stake in conformity: Legal and informal social control of domestic violence. *American Sociological Review*, *57*, 680–690.

Shover (1996). *Great pretenders: Pursuits and careers of persistent thieves*. Boulder CO: Westview.

Siennick, S.E, & Osgood, D. W. (2008). A review of research on the impact on crime of transitions to adult roles. In A. M. Liberman (Ed.), *Longitudinal Research on Crime and Deliquency* (160–186). Newyork: Springer.

Soothill, K. (1974). *The prisoner's release: A study of the employment of ex-prisoners*. London: Allen and Unwin.

Staff, J. (2004). *Precocious maturity and the process of occupational attainment*. Unpublished Dissertation. Department of Sociology, University of Minnesota.

Staff, J., & Uggen, C. (2003). The fruits of good work: early work experiences and adolescent deviance. *Journal of Research in Crime and Delinquency*, *40*, 263–290.

Steinberg, L., & Cauffman, E. (1995). The impact of employment on adolescent development. *Annals of Child Development*, *11*, 131–166.

Steinberg, L., & Dornbusch, S. M. (1991). Negative correlates of part-time employment during adolescence: replication and elaboration. *Developmental Psychology*, *27*, 304–313.

Steinberg, L, Fegley, S., & Dornbusch, S. M. (1993). Negative impact of part-time work on adolescent adjustment: Evidence from a longitudinal study. *Developmental Psychology*, *29*, 171–180.

Sullivan, M. (1989). *Getting paid: Youth crime and work in the inner city*. Ithaca, NY: Cornell University Press.

Thornberry, T. P., & Christenson, R. L. (1984). Unemployment and criminal involvement: An investigation of reciprocal causal structures. *American Sociological Review*, *49*, 398–411.

Thornberry, T. P., & Krohn, M. D. (Eds.). (2003). *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies*. New York: Kluwer Academic/Plenum Publishers.

Toby, J. (1957). Social disorganization and stake in conformity: Complementary factors in the predatory behavior of hoodlums. *Journal of Criminal Law*, *Criminology*, *and Police Science*, *48*, 12–17.

Tonry, M., Ohlin, L. E., & Farrington, D. P. (1991). *Human development and criminal behavior: new ways of advancing knowledge*. New York: Springer-Verlag.

Uggen, C. (1999). Ex-Offenders and the Conformist Alternative: A Job Quality Model of Work and Crime. *Social Problems*, *46*, 127–151.

Uggen, C. (2000). Work as a turning point in the lives of criminals: A duration model of age, employment, and recidivism. *American Sociological Review*, *65*, 529–546.

Uggen, C., Manza, J., & Behrens A. (2004). 'Less than the average citizen': Stigma, role transition and the civic reintegration of convicted felons. In S. Maruna & R. Immarigeon (Eds.), *After crime and punishment: Pathways to offender reintegration* (261–293). Cullompton: Willan.

Uggen, C., & Thompson, M. (2003). The socioeconomic determinants of ill-gotten gains: within-person changes in drug use and illegal earnings. *American Journal of Sociology*, *109*, 146–85.

Uggen, C., Wakefield, S., & Western, B. (2005). Work and Family Perspectives on Reentry. In J. Travis & C. Visher (Eds.), *Prisoner reentry and public safety in America* (209–243). Cambridge, UK: Cambridge University Press.

U. S. Census Bureau. (2004). Press release: Income stable, poverty up, numbers of Americans with and without health insurance rise, census bureau reports. Washington DC: Census Bureau.

U. S. Department of Justice. Bureau of Justice Statistics. (2004a). *Prison and jail inmates at midyear 2003*. Washington, DC: U.S. Government Printing Office.

U. S. Department of Justice. Bureau of Justice Statistics. (2004b). *Probation and parole in the United States*, *2003*. Washington, DC: U.S. Government Printing Office.

Wadsworth, T. (2006). The meaning of work: Conceptualizing the deterrent effect of employment on crime of young adults. *Sociological Perspectives*, *49*, 343–368.

Warren, J. R., LePore, P. C., & Mare, R. D. (2000). Employment during high school: consequences for students' grades in academic courses. *American Educational Research Journal*, *37*, 943–969.

West, D. J., & Farrington, D. P. (1977). *The delinquent way of life*. London: Heinemann.

Western, B. (2002). The impact of incarceration on wage mobility and inequality. *American Sociological Review*, *67*, 526–546.

Wilson, W. J. (1996). *When work disappears: the world of the new urban poor*. Chicago, IL: The University of Chicago Press.

Wilson, J. Q., & Abrahamse, A. (1992). Does crime pay? *Justice Quarterly*, *9*, 359–377.

Winship, C., & Mare, R. (1992). Models of sample selection bias. *Annual Review of Sociology*, *18*, 327–350.

Wolfgang, M. E., Figlio, R. M., & Sellin, T. (1972). *Delinquency in a birth cohort. (Studies on crime and justice*). Chicago: The University of Chicago Press.

Wright, J. P., & Cullen, F. T. (2000). Juvenile involvement in occupational delinquency. *Criminology*, *38*, 863–896.

Wright, J. P., & Cullen, F. T. (2004). Employment, peers, and life-course transitions. *Justice Quarterly*, *21*, 183–205.

Wright, J. P., Cullen, F. T., & Williams, N. (2002). The embeddedness of adolescent employment and participation in delinquency. *Western Criminology Review*, *4*, 1–19.

Appendix Key findings by study and method

	Study (place, time, n)	Age, race, gender	Cites	Method	Findings
1	National Longitudinal Survey of Youth (NLSY) 1997	12–16 in Wave 1; white, black, Hispanic; male and female	Apel et al. (2006)	Random effects Poisson	Intensive work increases delinquency and drug abuse but transition to intensive work does not lead to an increase in either.
			Wadsworth (2006)	Lagged dependent variable models, Heckman-style selection correction	Quality of job has stronger influence on economic and noneconomic crime than income, job stability, education, and other background factors.
			Paternoster et al. (2003)	Random-effect probit, fixed-effect logit regressions, propensity-score matching model	No effect of intensive work on dichotomous indicators of substance use and delinquency; selection into intensive work is responsible for much of relationship between intensive work & crime
			Western (2002)	Fixed effects model, comparison of subgroups	Incarceration reduces later earnings & employment opportunities via disrupting connections with potential employers
			Wright et al. (2002)	OLS regression, path models	Work most beneficial to adults, potentially detrimental to youth
			Crutchfield and Pitchford (1997)	OLS regression	High quality, stable jobs = less crime

2	National Youth Survey (NYS); n=1,700; 1976-	Adolescents now 39–45 yrs. old	Ploeger (1997)	OLS regression	Pos. rel. btwn work & crime, esp. w/drugs & alcohol, selection bias
			Bushway (1998)	Differences in differences	Arrest can lead to minor problems in labor market beyond current or past crimes
3	Youth Development Study (YDS); St. Paul, MN; n = 1,000; 1988-	African-American, Hispanic, White; high school seniors	Staff and Uggen (2003)	Regression w/statistical controls, lagged dependent variables, other indicators of prior deviance, hazard rate for selection to employment based on a Heckman sample selectivity model	Some types of employment in adolescence decrease delinq. while others increase it
			Huiras et al. (2000)	Static score regression	Career stakes & job satisfaction exert independent effects even when prior deviance statistically controlled
			McMorris and Uggen (2000)	Static score regression models	Long work hours increase adolescent drinking
			Mortimer (2003)	Regression analyses; qualitative interviews	Low intensity, steady work is most advantageous
			Mortimer et al. (1996)	Probit, LIMDEP	High intensity work increases adolescent drinking

(continued)

Appendix (continued)

	Study (place, time, n)	Age, race, gender	Cites	Method	Findings
4	Gluecks; n = 500; Boston, MA; 1930-	Boys 7–32, 7–70 white males	Sampson and Laub (1993)	Regression, probability models, logistic regression, event history analysis	Crime and work are related to the extent that work exerts social control over potential offenders and creates prosocial bonds for young adults.
			Laub and Sampson (2003)	Life history interviews; hierarchical statistical models of change (Poisson)	Bonds to work encourage desistence among adults (informal social control)
5	Cambridge Study in Delinquent Development, n = 411; London; 1961–1981	Boys 8–46; white males	Farrington et al. (1986)	Poisson, GLIM	Crime rates higher during periods of unemployment in subjects' lives
			Hagan (1993)	Poisson regression, logit models, path models	Criminal embeddedness influences later unemployment
6	Philadelphia birth cohort 1945; n = 9,945	Men born in 1945	Wolfgang et al. (1972)	Probability models; matrix tests	Positive relationship between unemployment & arrest
			Thornberry and Christensen (1984)	Reciprocal causal model	Employment & crime mutually influence each other over life span
7	Monitoring the Future; n = 70,000; U.S.; 1985–1989	High school seniors	Bachman and Schulenberg (1993)	Multiple classification analysis	Intensive work (20+ hrs/wk) positively correlated with potentially harmful or delinq. behavior
			Osgood et al. (1996)	Fixed effects panel model	Unstructured social activities increase crime, drug/alcohol use, dangerous driving

8	National Supported Work Demonstration; 1975–1977; n = 3,000+	Mean 25 yrs old, 92% male, 76% African-American	Piliavin and Gartner (1981)	Regression, probability models, Tobit models	Weak effects of work on crime
			Uggen (2000)	Event history analysis	Significant effects of work only for older offenders
			Uggen and Thompson (2003)	Pooled cross sectional time series analysis	Criminal earnings are sensitive to embeddedness in conforming work and family relationships, criminal experience, and the perceived risks and rewards of crime
			Uggen (1999)	Two-equation probit models	High job quality decreases likelihood of criminal behavior among group of high risk offenders
9	National Longitudinal Study of Adolescent Health; n = 90,000; U.S.; 1994–1996, 2001–2002	White, African-American, Cuban, Chinese	Johnson (2004)	Conditional change models	Effect of intensive work on delinquency is most applicable to white youth
			Bellair et al. (2003)	Logistic regression, HLM	Low-wage, service sector employment opportunity increases likelihood of violent delinquency. Somewhat mediated by school achievement and attachment
10	Wisconsin & N. California high schools; n = 1800; 1987–1989	10 and 11th grade students; male and female; White, African-American, Asian, Hispanic	Steinberg et al. (1993)	MANOVA, ANCOVA	Intensive workers (20+ hrs/wk) are less engaged in school and less supervised by parents prior to working intensively

(continued)

Appendix (continued)

	Study (place, time, n)	Age, race, gender	Cites	Method	Findings
11	Dunedin multidisciplinary health and human development study, n = 1,000, 1972	13-, whites, males and females	Caspi and Moffitt (1995)	Various categorical and continuous statistical approaches	Unemployment may cause crime, crime may cause unemployment
			Caspi et al. (1998)	Life History Calendar; tobit models	Failure to account for prior social, psychological, and economic risk factors may lead to inflated estimates of the effects of unemployment on future outcomes
12	Bremen, Germany, n = 1660, 1989	9th–10th grade students, males and females	Huizinga, Schumann, Ehret and Elliott (2003)	Cross tabs, logistic regression, odds ratios	Juvenile sanctions are related to reduced chances for stable, skilled jobs
13	Denver Youth Study, n = 1528, 1988	Ages 7–15, White, African-American, Hispanic, males and females	Huizinga et al. (2003)	Cross tabs, logistic regression, odds ratios	Juvenile sanctions are related to increased unemployment
14	Dutch national crime survey (NSCR), n = 2,951 & Criminal Career and Life-Course Study, n=4,615, 1977	12–72, 15–30	Blokland and Nieuwbeerta (2005)	Semi-parametric group-based models	Life circumstances (including employment) influence criminal behavior but differ across offender groups

15	Christchurch Health and Development Study, n = 1265, 1977-	12–21, white males and females	Fergusson et al. (2001)	Fixed effects regression	Exposure to unemployment significantly associated with increased risks in crime and substance use
16	Rochester Youth Development Study, n = 1000, 1987	13.5–22 years old, males, females, white, African-American, Hispanic	Bernburg and Krohn (2003)	Logistic regression	Police and juvenile justice interventions positively and significantly affect periods of unemployment in adulthood; educational attainment mediates some of the effect