
CRIME AND DEVIANCE OVER THE LIFE COURSE: THE SALIENCE OF ADULT SOCIAL BONDS*

ROBERT J. SAMPSON

University of Illinois at Urbana-Champaign

JOHN H. LAUB

Northeastern University

Analyzing the natural histories of two samples of boys that differ dramatically in childhood delinquency, we test a model of crime and deviance over the life course. The first hypothesis is that childhood antisocial behavior predicts problems in adult development across a wide variety of dimensions. Second, we argue that social bonds in adulthood — to work and family — explain changes in crime and deviance over the life span. The longitudinal data were reconstructed from the Gluecks' classic study of delinquent and non-delinquent males from childhood to age 32. Childhood delinquency is linked to adult crime, alcohol abuse, general deviance, economic dependency, educational failure, unemployment, divorce, and even charges in the military. Despite this continuity, job stability and strong marital attachment in adulthood inhibit adult criminal and deviant behavior. The results support a model of informal social control that recognizes both stability and change in antisocial behavior over the life course.

Sociological criminology has neglected early childhood characteristics, and consequently has not come to grips with the link between early childhood behaviors and later adult outcomes (Caspi, Bem, and Elder 1989; Farrington 1989; Gottfredson and Hirschi 1990). Although criminal behavior peaks in the teenage years, there is substantial evidence of early delinquency as well as continuation of criminal behavior over the life course. By concentrating on the teenage years, sociological perspectives on crime fail to address the life-span implications of childhood behavior (Wilson and Herrnstein 1985). At the same time, criminologists have not devoted much attention to what Rutter (1988, p. 3) calls "escape from the risk process," limiting our understanding of desistance from crime and the transitions from criminal to noncriminal behavior.

To address these limitations, we develop a theoretical model of age-graded informal social control to account for persistence and desis-

tance in criminal behavior. Our basic thesis is that while continuity in deviant behavior exists, social ties in adulthood — to work, family, and community — explain changes in criminality over the life span. Our model acknowledges the importance of early childhood behaviors while rejecting the implication that later adult factors have little relevance (Wilson and Herrnstein 1985). We contend that social interaction with adult institutions of informal social control has important effects on crime and deviance. As such, ours is a "sociogenic" theoretical model of adult crime and deviance. This model is examined using a unique longitudinal data set that follows two samples of delinquent and nondelinquent boys from early adolescence into their thirties.

THE LIFE COURSE PERSPECTIVE

The life course has been defined as "pathways through the age differentiated life span," where age differentiation "is manifested in expectations and options that impinge on decision processes and the course of events that give shape

* Direct all correspondence to Robert J. Sampson, Department of Sociology, University of Illinois, Urbana, IL 61801. An early version of this paper was presented at the annual meeting of the American Sociological Association in San Francisco, California on August 11, 1989.

The data were derived from the Sheldon and Eleanor Glueck archives of the Harvard Law School Library, which are currently on long-term loan to the Henry A. Murray Research Center of Radcliffe College. The project was supported in part by grants

from the National Institute of Justice (87-IJ-CX-0022 and 89-IJ-CX-0036). We would like to thank the reviewers and editor of *ASR* for helpful comments on a previous draft. The support of the Henry A. Murray Research Center and Erin Phelps is also gratefully acknowledged, as is the research assistance of Kenna Kiger and Sandra Gauvreau.

to life stages, transitions, and turning points" (Elder 1985, p. 17). Two central concepts underlie the analysis of life course dynamics. A *trajectory* is a pathway or line of development over the life span such as worklife, marriage, parenthood, self-esteem, and criminal behavior. Trajectories refer to long-term patterns of behavior and are marked by a sequence of life events and transitions (Elder 1985, pp. 31-2). *Transitions* are specific life events that are embedded in trajectories and evolve over shorter time spans (e.g., first job or first marriage). Some of them are age-graded and some are not. What is often assumed to be important is the timing and the ordering of significant life events (Hogan 1980).

These two concepts are related: "the interlocking nature of trajectories and transitions, within and across life stages . . . may generate turning points or a change in course" (Elder 1985, p.32). Adaptation to life events is crucial: "The same event or transition followed by different adaptations can lead to different trajectories" (Elder 1985, p. 35). This perspective implies both a strong connection between childhood events and experiences in young adulthood, and that transitions or turning points can modify life trajectories — they can "redirect paths."

Criminology and the Life Course

Criminology has been slow to recognize the importance of the life-course perspective (Hagan and Palloni 1988). Not only are the data needed to explore such relationships sparse (see Blumstein, Cohen, Roth, and Visher 1986), some researchers argue that ordinary life events (e.g., getting married, becoming a parent) have little effect on criminal behavior. Gottfredson and Hirschi argue that crime rates decline with age "whether or not these events occur" and note "that the longitudinal/developmental assumption that such events are important neglects its own evidence on the stability of personal characteristics" (1987, p. 604; see also Hirschi and Gottfredson 1983).

The extent of stability and change in behavior and personality attributes over time is one of the most complex and hotly debated issues in the social sciences (Brim and Kagan 1980; Dannefer 1984). The research literature in criminology contains evidence for both continuity *and* change over the life course. Reviewing over 16 studies on aggressive behavior, Olweus

(1979, pp. 854-5) found "substantial" stability: The correlation between early aggressive behavior and later criminality averaged .68 for the studies reviewed. A similar review concluded that a "consensus" in favor of the stability hypothesis had been reached: "Children who initially display high rates of antisocial behavior are more likely to persist in this behavior than children who initially show lower rates of antisocial behavior" (Loeber 1982, p. 1433).

In probably the most influential study, Heusmann, Eron, and Lefkowitz (1984) studied the aggressiveness of 600 subjects, their parents, and their children over a 22-year period. They found that early aggressiveness predicted later antisocial behavior, including criminal behavior, spouse abuse, traffic violations, and self-reported physical aggression and conclude that, whatever its causes, "aggression can be viewed as a persistent trait that . . . possesses substantial cross-situational constancy" (1984, p. 1120). Other work has also demonstrated the effects of early life experiences on adult behavior (McCord 1979; Farrington 1986; Robins 1966, 1978).

At the same time, there is evidence for change over the life course. While studies show that antisocial behavior in children is one of the best predictors of antisocial behavior in adults, "most antisocial children do not become antisocial as adults" (Gove 1985, p. 123). Robins (1978) found identical results in her review of four longitudinal studies. A follow-up of the Cambridge-Somerville Youth study found that "a majority of adult criminals had no history as juvenile delinquents" (McCord 1980, p. 158). Cline (1980) states that although there is "more constancy than change . . . there is sufficient change in all the data to preclude simple conclusions concerning criminal career progressions" (p. 665). He concludes: "There appears to be far more heterogeneity in types and patterns of deviant and criminal behavior than previous work has suggested. There is evidence that many juvenile offenders do not become career offenders" (pp. 669-70).

In the context of personality characteristics, Caspi (1987) found that although the tendency toward explosive behavior in childhood was "re-created across the age-graded life course, especially in problems with subordination (e.g., in education, military, and work settings) and in situations that required negotiating interpersonal conflicts" (e.g., marriage), "invariant action patterns did not emerge across the age-

graded life course" (1987, p. 1211). Using a prospective longitudinal design to study the underclass, Long and Vaillant (1984) found both discontinuity and continuity across three generations of subjects:

For the men in this study, the transmission of their parents' chaotic or dependent life styles was not inevitable or even very likely. If their backgrounds are accepted as having the characteristics of an underclass, then the study refutes the hypothesis that the chances of escape from such a class are minimal. The transmission of disorganization and alienation that seems inevitable when a disadvantaged cohort is studied retrospectively appears to be the exception rather than the norm in a prospective study that locates the successes as well as the failures (p. 344; see also Vaillant 1977).

Some criminological research also suggests that salient life events influence behavior and modify trajectories. A follow-up of 200 Borstal boys found that marriage led to "increasing social stability" (Gibbens 1984, p. 61). Knight, Osborn, and West (1977) discovered that while marriage did not reduce criminality, it reduced some antisocial behavior (e.g., drinking, drug use, etc.). Osborn (1980) examined the effect of leaving London on delinquency and found that subjects who moved had a lower risk of re-offending when compared with a similar group who stayed in London. And there is some evidence that episodes of unemployment lead to higher crime rates (Farrington, Gallagher, Morley, St. Ledger, and West 1986).

CHILDHOOD BEHAVIOR AND INFORMAL SOCIAL CONTROL OVER THE LIFE COURSE

Recognizing the importance of both stability and change in the life course, our model focuses on two propositions. First, we contend that childhood antisocial behavior (e.g., juvenile delinquency, conduct disorder, violent temper tantrums) is linked to a wide variety of troublesome adult behaviors including criminality, general deviance, offenses in the military, economic dependency, educational failure, employment instability, and marital discord. These long-term relationships are posited to occur independent of traditional variables such as social class background and race/ethnicity. As Hagan and Palloni (1988) argue (see also Hagan 1989, p. 260), delinquent and criminal events "are linked into life trajectories of broader significance, whether those trajectories

are criminal or noncriminal in form" (p. 90). Because most research by criminologists has focused either on the teenage years or adult behavior limited to crime, this hypothesis has not been definitively studied.

Second, we argue that social bonds to adult institutions of informal social control (e.g., family, education, neighborhood, work) influence criminal behavior over the life course despite an individual's delinquent and antisocial background. We seek to identify the transitions embedded in individual trajectories that relate to adult informal social control, and contend that childhood pathways to crime and deviance can be significantly modified over the life course by adult social bonds.

The important institutions of social control vary across the life span: in childhood and adolescence these are the family, school, and peer groups; in the phase of young adulthood they are higher education and/or vocational training, work, and marriage; and in later adulthood, the dominant institutions are work, marriage, parenthood, and investment in the community.

Within this framework, our organizing principle derives from social control theory (Durkheim 1951; Hirschi 1969; Kornhauser 1978): crime and deviance result when an individual's bond to society is weak or broken. We argue that changes that strengthen social bonds to society in adulthood will thus lead to less crime and deviance; changes that weaken social bonds will lead to more crime and deviance. Unlike most life-course research, we emphasize the *quality* or *strength* of social ties more than the occurrence or timing of specific life events. For example, while we agree with Gottfredson and Hirschi (1990, pp. 140-1) that marriage *per se* does not increase social control, a strong attachment to one's spouse and close emotional ties increase the social bond between individuals and, all else equal, should lead to a reduction in criminal behavior. Similarly, employment *per se* does not increase social control. It is employment coupled with job stability, job commitment, and ties to work that should increase social control and, all else equal, lead to a reduction in criminal behavior (see also Crutchfield 1989, p. 495). Therefore, we maintain that it is the *social investment* or social capital (Coleman 1988) in the institutional relationship, whether it be in a family, work, or community setting, that dictates the salience of informal social control at the indi-

vidual level.

Our model assumes that life-event transitions and adult social bonds can modify quite different childhood trajectories. Whether or not adult development is "uniform and constant" is a controversial issue. Dannefer (1984) sharply critiques existing models of adult development, drawn primarily from biology and psychology, for their "ontogenetic" focus. He argues that ontogenetic models fail to see human development as "socially organized and socially produced, not only by what happens in early life, but also by the effects of social structure, social interaction, and their effects on life chances throughout the life course" (p. 106).

At the same time, sociological models tend to ignore important elements of developmental psychology and biology. Baltes and Nesselrode (1984) criticize models that overemphasize the "intraindividual plasticity (modifiability)" of development and neglect "the first half of life" (p. 842). They go on to acknowledge the importance of "interindividual homogeneity (as reflected in developmental universals)" (1984, p. 845). Our model seeks to integrate these perspectives by bringing the formative period of early childhood back into the picture, and by positing that individuals can change through interaction with key social institutions.¹

DATA

We are currently engaged in a long-term project analyzing data from Sheldon and Eleanor Glueck's *Unraveling Juvenile Delinquency* (1950) and their subsequent follow-up studies (Glueck and Glueck 1968). These data are uniquely suited to our analytical goals due to the sampling design, the extensive measurement of key theoretical concepts, the long-term nature of the follow-up, and the historical context.

The Gluecks' research design began with samples of delinquent and nondelinquent boys born between 1924 and 1935. The *delinquent* sample comprised 500 10- to 17-year-old white males from Boston who, because of their persistent delinquency, were committed to one of two correctional schools in Massachusetts. The *nondelinquent* sample, or what they called a "control-group" (Glueck and Glueck 1950, p.

14), was made up of 500 10- to 17-year-old white males from the Boston public schools. Nondelinquent status was determined on the basis of official record checks and interviews with parents, teachers, local police, social workers and recreational leaders, as well as the boys themselves. The sampling procedure was designed to maximize differences in delinquency and by all accounts was successful. For example, the average number of convictions in the delinquent sample was 3.5. The nondelinquent boys were different from the Boston youth remanded to reform school, "but compared with national averages the men in this study did *not* represent a particularly law-abiding group" (Long and Vaillant 1984, p. 345). Although clearly not a random selection, the samples appear to be representative of their respective populations at that time.

Boys in the two samples were matched on a case-by-case basis according to age, race/ethnicity, general intelligence, and neighborhood socioeconomic status (for details see Glueck and Glueck 1950, pp. 33-9; Laub and Sampson 1988). These classic variables are widely thought to influence both delinquency and official reaction. Boys in each sample grew up in high-risk environments characterized by poverty, social disorganization, and exposure to delinquency and antisocial conduct (Glueck and Glueck 1950, pp. 30-2).

From 1940 to 1965, the Gluecks' research team collected data on these individuals. They were originally interviewed at an average age of 14, at age 25, and again at age 32. On average, then, the original subjects were followed for 18 years. Data were collected for all three time periods for 438 of the 500 delinquents and 442 of the 500 nondelinquent controls (88 percent). The follow-up success was 92 percent when adjusted for mortality — relatively high by current standards (see e.g., Wolfgang, Thornberry, and Figlio 1987).

During the first wave, a wide range of biological, psychological, and sociological information concerning each boy and his life from birth until adolescence was gathered. The second wave field investigation and interview began as each subject approached his 25th birthday and concerned the period from age 17 to 25 (the juvenile court in Massachusetts had jurisdiction up to the 17th birthday). The third wave interview covered the period from age 25 to 32. The second and third wave interviews concentrated on social factors, including criminal his-

¹ Our model does not assume that early childhood differences in delinquency and antisocial behavior stem from ontogenetic (i.e., nonsociological) processes. We return to this point later.

ories. Data are available on life transitions relating to living arrangements, schooling, employment, work habits, marital status, leisure-time activities, companionship, and participation in civic affairs. The data on criminal justice interventions (e.g., all arrests, convictions, and dispositions including actual time served) pertain to the period from first contact to age 32.

The data were gathered through detailed investigations by the Gluecks' research team and included interviews with the subjects and their families, employers, teachers, and neighbors, as well as criminal justice and social welfare officials. The field investigation involved meticulously culling information from the records of public and private agencies that had any involvement with the family. In the first follow-up, an average of 12 sources of information were used for the delinquents and nine for the controls. Not surprisingly, delinquent subjects and their families were more likely to generate contact with various social agencies. In the second follow-up, an average of nine sources of information were used for the delinquents and seven sources for the controls (Glueck and Glueck 1968, p. 47). The basic data represent the comparison, reconciliation, and integration of these independently derived sources of information.

Despite this rich body of longitudinal data, the Gluecks' main analyses were cross-sectional (Glueck and Glueck 1950). Their attention to the follow-up data was sparse and the resulting book (Glueck and Glueck 1968) was a simple descriptive overview of the samples. Fortunately, the Gluecks' coded data and raw interview records were stored in the Harvard Law School Library. A major effort of our project has been devoted to coding and computerizing the full longitudinal data set. The reconstruction and validation of these data involved numerous steps, reported in detail elsewhere (Laub, Sampson, and Kiger 1990; Sampson and Laub, forthcoming).

Measures of Childhood Antisocial Behavior and Adult Crime

We measure antisocial behavior during childhood and adolescence in three ways: (1) official delinquency status as determined by the sampling design of the Glueck study; (2) a composite scale (ranging from 0 to 30) of self, parent, and teacher reports of delinquency and

other misconduct that captures both unofficial delinquency as well as incidents known to the police; and (3) temper tantrums — indicating the extent to which a child engaged in violent and habitual temper tantrums while growing up. The latter measure refers to tantrums that were “the predominant mode of response” by the child to difficult situations growing up (Glueck and Glueck 1950, p. 152). This indicator of childhood tantrums corresponds to one used by Caspi (1987).

Adult crime and deviance was investigated in the follow-up interviews for both groups, including excessive use of alcohol and/or drugs as well as general deviance (e.g., frequent involvement in gambling, illicit sexual behavior, use of prostitutes). The Gluecks' coding scheme indicated the presence or absence of these problem behaviors during each follow-up, and hence our resulting measures are dichotomous.

From the official criminal history, we determined whether the subject had an arrest during each follow-up period. Identical dichotomous variables were constructed for the delinquent and control groups. Because men in the delinquent group committed much more adult crime than the controls (see also footnote 9), we reconstructed complete criminal histories of delinquents from first arrest to age 32 (e.g., date, type of charge or charges, and the sequence of arrests as well as the dates of any incarceration). From this information we created overall measures of crime frequency — the number of arrests divided by the number of days free in the community during the periods from birth to age 17, from ages 17 to 25, and from ages 25 to 32. These measures were then converted to average annual rates for each period (i.e., frequency of arrests per year free). By considering only time free in the community, our measures of crime frequency for the delinquents are more precise than those traditionally used in criminological research.

Since the period of the study included World War II and the Korean War, a majority of the men served in the military (67 percent). At the first follow-up, data were collected on the official military experience of each subject using interviews and records from the appropriate military service, Selective Service, State Adjutant General, Veterans Administration, and Red Cross. Our measure of the subject's criminal/deviant behavior in the military (e.g., AWOL, desertion, theft, etc.) captures illegal conduct that came to the attention of authorities.

Measures of Adult Social Bonds

Our key independent variables are *job stability*, *commitment*, and *attachment to spouse*, measured at both follow-ups. Information for these measures was collected during the home interview and corroborated whenever possible by record checks.² Job stability is measured by a standardized, composite scale of three intercorrelated variables — employment status, stability of most recent employment, and work habits. Employment status measures whether the subject was employed at the time of the interview; employment stability measures length of time employed on present or most recent job (ranging from less than 3 months to 48 months or more); and the work habits variable was based on a three-point scale. Individuals were classified as having poor work habits if they were unreliable in the work setting or if they failed to give any effort to the job; fair work habits were characterized by a generally good job performance except for periodic absences from work or periods of unemployment as chosen by the subject; good work habits were evidenced by reliable performance on the job as noted by the employer as well as instances in which the subject was considered an asset to the organization.³

An individual's commitment to occupation-related goals may influence job stability. Our measure of commitment at Time 2 is derived from interviews with the subject and significant others and combines three related variables: work, educational, and economic ambitions (Glueck and Glueck 1968, pp. 124-6). Subjects with low commitment expressed no particular work, educational, or economic aspirations. They had not thought about further

² Descriptive statistics on key source variables collected during each follow-up period for both delinquent and control groups are found in Glueck and Glueck (1968, pp. 71-130). Further descriptive data on constructed variables are available from the authors upon request.

³ For job stability and several other measures (e.g., general deviance and drinking) the data at Time 2 refer to the previous five years — age 20 to 25 — or to most recent job rather than the entire age 17-25 span. However, even though the measurement lags do not correspond exactly to causal lags, we believe this is not a major problem because our strategy assumes only that these measures reflect average levels during the periods 17-25 and 25-32 (see also Plewis 1985, p.60).

schooling or had vague educational ambitions. Subjects with high commitment expressed a strong desire for further schooling (academic, vocational, or professional), and were eager to better themselves and their families (e.g., to become a professional, gain more income, etc.). At Time 3, commitment is a composite scale combining work ambitions and ambitions generally. Work ambition captures efforts to improve occupational status between ages 25-32. These efforts focus on behaviors beyond working hard or joining a union, such as additional on-the-job training or taking courses or civil service exams. The second component of commitment at Time 3 is a measure of the subject's general aspirations.

The third key independent variable in our analysis is attachment to spouse. At Time 2, we use a composite measure derived from interview data describing the general conjugal relationship between the subject and his spouse during the period plus the subject's attitude toward marital responsibility (Glueck and Glueck 1968, pp. 84-8). A weak attachment was indicated by signs of incompatibility such as a brief period of separation, divorce or separation, or desertion. These individuals were also neglectful of marital responsibilities, financial as well as emotional. In contrast, subjects who were strongly attached displayed close, warm feelings toward their wives, or were compatible in a generally constructive relationship. These individuals assumed marital responsibilities. At Time 3, attachment to spouse is a composite scale derived from interview data describing the general conjugal relationship during the follow-up period plus a measure of the cohesiveness of the family unit. The measure of conjugal relations at Time 3 is the same as for Time 2. Family cohesiveness assesses the extent to which the family unit was characterized by an integration of interests, cooperativeness, and overall affection for each other. This measure was not available at Time 2.

Taken together, these measures capture the quality or strength of an individual's ties to important institutions of informal social control — family, work, and the community at large. They are also reliable — Cronbach's alpha reliabilities at Time 2 and Time 3 are, respectively, .65 and .78 for job stability, .90 and .91 for marital attachment, and .68 and .70 for commitment. In addition to using multiple indicators of key concepts and composite scales with good reliabilities, we took other steps to

Table 1. Relationship Between Childhood Antisocial Behavior and Adult Behavioral Outcomes

Adult Behavior	Childhood Antisocial Behavior						
	Official Delinquency		Delinquency Reported by Self, Parent, Teacher			Temper Tantrums	
	No	Yes	Low (0-3)	Medium (4-13)	High (14-30)	No	Yes
% Charged in military, ages 17-25	20	64	18	35	70	33	62
% Excessive alcohol/ drug use, ages 17-25	11	41	7	23	47	22	37
% Excessive alcohol/ drug use, ages 25-32	9	35	6	19	40	19	31
% General deviance, ages 17-25	5	25	5	15	24	11	29
% General deviance, ages 25-32	6	30	5	18	30	14	33
% Arrested, ages 17-25	20	76	15	48	80	41	72
% Arrested, ages 25-32	14	61	10	36	66	32	58
% High school graduate by age 25	34	2	39	13	2	22	3
% Economically dependent, ages 17-25	6	29	5	17	31	14	29
% Economically dependent, ages 25-32	11	39	8	21	44	19	43
% Unstable employment, ages 17-25	5	38	2	20	41	15	41
% Unstable employment, ages 25-32	5	37	3	16	41	15	38
% Divorced/separated, ages 17-25	5	22	5	9	26	12	21
% Divorced/separated, ages 25-32	12	27	10	15	33	16	32

Note: All relationships significant at $p < .05$.

ensure the validity of measures. For example, we investigated the longitudinal and construct validity of both individual items and scales. In all cases, the results supported the contention that the job stability, marital attachment, and commitment scales were related both concurrently and predictively in a manner consistent with substantive expectations. Note also that the Glueck data differ from conventional survey research in which measurement error, especially on attitudes and moral beliefs, is often large (see Matsueda 1989). The Gluecks' data integrate multiple sources of information for *individual* items. Moreover, the items used here refer almost exclusively to behavioral outcomes rather than attitudes.

Missing Data

Although the Gluecks' original study involved 1,000 subjects, 12 percent are not in the follow-up interviews either because of death or because they could not be located. Some measures were deemed by the Gluecks to be inapplicable to the 880 subjects who were followed to age 32. For instance, the components of job

stability and marital attachment were not assessed for men in institutions (mostly prison) or in the military for a significant portion of a time period. Because we cannot determine the social bonds of long-term prisoners or military personnel, men with inapplicable information on one or more of our key measures were excluded from multivariate analysis. Of the approximately 150 delinquents excluded, the vast majority were institutionalized — less than 40 were excluded because of prolonged military service. For the controls, 50 of the 442 followed to age 32 were deemed inapplicable by the Gluecks; the majority of these exclusions stemmed from military service. Of the cases remaining for analysis, missing data was not a serious problem, averaging about 10 percent for the delinquent group and 5 percent for the control group.⁴

⁴ To determine whether the exclusion of subjects due to inapplicable or missing data biased our analysis, all multivariate models were replicated using both pairwise deletion and mean substitution of missing data. The results were substantively similar for both the delinquent and control groups and our major conclusions remain.

PATTERNS OF STABILITY AND CHANGE

Combining data from the two Glueck samples, we first examine the long-term relationship between childhood delinquency and antisocial behavior and a wide range of later adult behaviors. Table 1 displays the results of cross-tabulations arrayed to reveal the pattern and magnitude of relationships.⁵ The pattern is quite remarkable — all relationships are statistically significant,⁶ in the predicted direction, and substantively large.

For official delinquency, all seven indicators of adult crime and deviance are much more prevalent among men who were childhood delinquents. For example, 64 percent of official delinquents were charged while in the military compared to only 20 percent of those with no official delinquency in childhood. Although rarely studied in previous research, the military is particularly interesting because it represents a relatively homogeneous yet distinctive social environment in which to explore differences in criminal behavior. The same pattern holds for reports of excessive drinking and general deviance — on average, childhood delinquents were four times more likely than nondelinquents to later abuse alcohol or exhibit deviant behavior. Similarly, arrests in both young and later adulthood are three to four times greater among childhood delinquents.

Results are similar for the other two measures of childhood antisocial behavior, the unofficial (i.e., parent, teacher, self) reports of delinquency and temper tantrums. In all cases, the relationships are monotonic across categories of reported childhood delinquency and in many cases are stronger than those for official delinquency. Boys with high rates of reported delinquency are five times more likely to have been arrested at ages 17-25 than boys with low reported rates of juvenile misbehavior, and almost seven times more likely to be arrested in later adulthood (ages 25-32). Even childhood temper tantrums exhibit a strong relationship with adult criminality, although to a lesser ex-

tent than delinquency. Regardless of the measure of childhood delinquent/antisocial behavior there is a powerful relationship with adult misbehavior.

The long-term effects of juvenile delinquency are not limited to adult criminal behavior. Seven adult behaviors spanning economic, educational, employment, and family domains are also strongly related to adolescent delinquency.⁷ Antisocial subjects were much less likely to finish high school by age 25. For both delinquency measures, delinquent boys were at least seven times more likely than nondelinquents to have a history of unstable employment as adults. A similar pattern emerges for economic dependence (e.g., welfare) and divorce among those ever married — delinquents were three to five times more likely to be divorced or receive welfare as adults.

In short, childhood delinquent behavior has a significant relationship with a wide range of adult criminal and deviant behaviors, including charges initiated by military personnel, reports of involvement in deviance and excessive drinking, and arrest by the police. The same childhood antisocial behaviors are also predictive of economic, family, educational, and employment problems up to eighteen years later. These results are robust as to measurement of delinquency. Because of the matched design, they cannot be explained in terms of original differences between delinquents and nondelinquents in age, intelligence, socioeconomic status, and race/ethnicity — variables often associated with stratification outcomes. Clearly, the boys in the Gluecks' delinquent and nondelinquent samples exhibited behavioral consistency well into adulthood (Glueck and Glueck 1968).

Adult Social Bonds

In Table 2 we examine how the social factors of *job stability*, *commitment* to educational, work, and economic goals (i.e., aspiration), and *attachment* to spouse among those ever married (all measured for ages 17-25) modify the tendency to persist in deviant and troublesome behaviors over the life span. Because the

⁵ The total number of cases in Table 1 ranges from a minimum of 482 (ever-married subsample) to 929 (total follow-up sample at Time 2); no percentage is based on fewer than 100 cases.

⁶ Tests of statistical significance are technically not appropriate given the research design. We place greater emphasis on the magnitude of relationships (Laub and Sampson 1988, p. 361).

⁷ Although crime/deviance is the major outcome of interest, these other domains illustrate the generality of the link between childhood delinquency and troublesome adult behaviors. As with our key independent variables, these measures were derived from home interviews as well as record checks (Glueck and Glueck 1968, pp. 75, 81, 92, 100).

Table 2. Relationship Between Adult Social Bonds and Adult Crime and Deviance, Controlling for Official Delinquency Status in Childhood

Adult Crime and Deviance	Delinquent Group			Control Group		
	Low	Medium	High	Low	Medium	High
	Job Stability, Ages 17-25					
% Excessive alcohol, ages 17-25	57	24	15*	32	8	5*
% Excessive alcohol, ages 25-32	53	19	11*	27	6	4*
% General deviance, ages 17-25	31	13	9*	12	4	3*
% General deviance, ages 25-32	47	17	8*	17	7	2*
% Arrested, ages 17-25	91	62	60*	36	17	17*
% Arrested, ages 25-32	74	47	32*	36	11	9*
	Occupational Commitment, Ages 17-25					
	Weak	Strong		Weak	Strong	
% Excessive alcohol, ages 17-25	50	21*		21	5	
% Excessive alcohol, ages 25-32	43	16*		15	4	
% General deviance, ages 17-25	29	15*		10	3*	
% General deviance, ages 25-32	37	14*		8	5	
% Arrested, ages 17-25	82	64*		34	12*	
% Arrested, ages 25-32	70	47*		22	10*	
	Attachment to Spouse, Ages 17-25					
	Weak	Strong		Weak	Strong	
% Excessive alcohol, ages 17-25	53	17*		46	4*	
% Excessive alcohol, ages 25-32	47	11*		32	6*	
% General deviance, ages 17-25	31	8*		12	4*	
% General deviance, ages 25-32	54	16*		36	7*	
% Arrested, ages 17-25	87	58*		61	15*	
% Arrested, ages 25-32	76	34*		39	12*	

* $p < .05$

matched-sample research design maximized differences in delinquency, a within-group analysis controls for original position on delinquency. By definition, the delinquent group sample contains youth who were all delinquent. For them, our goal is to examine the social factors related to subsequent variation in this status. For the control subjects, who were not officially delinquent as juveniles, we also examine whether social bonds in adulthood explain adult crime and deviance.

Job stability in young adulthood has a large inverse relationship with each measure of adult crime and deviance for both the delinquent and nondelinquent samples.⁸ Moreover, young-adult

⁸ In Table 2, job stability is trichotomized to permit visual display of the pattern and magnitude of the relationships. Because of skew, the attachment

job stability has substantial *predictive* power, exhibiting very large negative effects on alcohol use, general deviance, and arrest in the subsequent 25-32 age period. For both samples, subjects with low job stability at ages 17-25 were at least four times more likely to have severe alcohol problems in later adulthood and at least five times more likely to have engaged in deviant behavior compared to those with high job stability. It thus seems unlikely that adult crime itself can account for the patterns observed. Because these relationships obtain within both samples, the results cannot be dis-

and commitment measures are dichotomized. The number of cases ranges from a minimum of 224 for the ever-married subsample at Time 2 to 437 for occupational commitment at Time 2. All of the percentages are based on at least 30 cases.

missed on the basis of a “stability” or “self-selection” argument that antisocial children simply replicate their antisocial behavior as adults — that delinquent kids invariably continue their interactional styles in adult spheres of life, and hence have incompatible relations with family, work, and other institutions of social control (Caspi 1987). Rather, it appears that job stability in adulthood significantly modifies trajectories of crime and deviance regardless of strong differences in childhood delinquent and antisocial conduct.

Adult commitment to conventional educational and occupational goals results in a similar pattern. Subjects with high aspirations and efforts to advance educationally and occupationally were much less likely to engage in deviant behavior, use alcohol excessively, or be arrested at ages 17-25 and 25-32.

The pattern is consistent for the relationship between attachment to spouse and adult crime among those ever married (approximately 50 percent of each sample). All relationships are in the expected direction, significant, and substantively large. As with job stability and commitment, the influence of attachment to wife at ages 17-25 is salient not only in the concurrent period but in the later 25-32 period as well.

The evidence strongly suggests that informal social controls in young adulthood are significantly and substantially related to adult antisocial behavior, regardless of childhood delinquency. The “ontogenetic” model’s emphasis on stability, though partially confirmed in Table 1, is clearly insufficient as an explanatory model for the life course. Social bonds to the adult institutions of work, education, and the family exert a powerful influence on adult crime and deviance.

MODELS OF ADULT CRIME AMONG ORIGINAL DELINQUENTS

A major question may be raised concerning these results — do individual differences in crime within the delinquent and control groups confound the results? The most delinquent subjects in the delinquent group may have self-selected themselves into later states of job instability, conflict-ridden marriages, and crime (Caspi 1987). Similarly, despite the absence of an official record, the nondelinquent subjects were not equally nondelinquent.

We address this question through a multivariate strategy that controls for prior delin-

quency and crime in four ways. First, analyses are conducted separately for the two samples, thereby controlling for official delinquency status. Second, in the delinquent sample we control for the frequency of crimes committed in adolescence using the average number of arrests per year free in the community between birth and age 17. Because this rate adjusts for the opportunity to commit crime (i.e., takes account of incarceration time), it is probably the best overall measure of adolescent criminal “propensity” for the delinquent group (the control group by definition had zero). Third, when analyzing crime at ages 17-25 for both the delinquent and control groups, we control for the extent of reported delinquency. Fourth, when analyzing crime at ages 25-32 for the delinquent group, we control for arrest frequencies per year free at ages 17-25. For the nondelinquent group, we control for a dichotomous indicator of arrest.⁹ Therefore, both official and unofficial delinquency are explicitly controlled within the two samples that themselves differ markedly in terms of initial delinquency and adult outcomes.

This research strategy is a strict test of the independent effects of adult social ties on adult crime and deviance. Moreover, this research strategy is directly linked to our theoretical goal as it allows examination of change in crime and delinquency. That is, because prior levels of crime are controlled and the analysis is conducted separately for each group, the resulting multivariate models permit assessment of the independent effects of adult social ties on changes in adult criminality not accounted for by prior “propensities” or labeling effects.¹⁰

⁹ Data on time served by the control group were not available so we cannot measure frequency rates per time free. However, this seems unlikely to matter since subjects in the control group had relatively few arrests in adulthood — only 20 percent had ever been arrested between 17-25. Because of this infrequent and skewed outcome, we use a dichotomous measure of crime at ages 17-25 as the major control variable in the analyses for crime at ages 25-32.

¹⁰ This strategy follows recent recommendations for analyzing longitudinal data. As Plewis (1985, pp. 59-60) notes, in the equation $y_2 = a + b_1y_1 + b_2x_1 + e$, the parameter b_2 measures “the effect of x_1 on a change in y .” The idea that change is examined only with the computation of change scores (e.g., $y_2 - y_1$) is simply incorrect; in fact, the latter can have serious disadvantages (see also Kessler and Greenberg 1981). The measures of prior crime and delinquency are considered exogenous because of the long time

Table 3 presents results for the delinquent group of multivariate analyses of general deviance, excessive drinking, arrest, and crimes per year free in young adulthood. The dichotomous nature of the first three measures violates the assumptions of ordinary least-squares (OLS) regression. For these measures, maximum-likelihood (ML) logistic regression is used, which, unlike log-linear analysis, preserves the interval nature of the majority of our predictor variables (see Aldrich and Nelson 1984). The unstandardized logistic coefficients in Table 3 represent the change in the log-odds of exhibiting antisocial behavior associated with a unit change in the exogenous variable. Because the units of measurement of the independent variables are not consistent, we also present the ML t-ratios of coefficients to standard errors (Aldrich and Nelson 1984, p. 55). For comparative purposes, we present OLS coefficients and t-ratios for the interval-level measure of arrests per year free (logged to reduce skew); beta weights are discussed in the text.¹¹

Model 1 displays results for all men in the delinquent group. In assessing the effects of adult social bonds, we control for marital status and income in addition to measures of official and unofficial (reported) juvenile delinquency. Our measure of income for each subject is the weekly gross earnings derived from legitimate

intervals in the Gluecks's follow-ups and the differing sources of measurement for childhood and adult crime. For example, the Time 1 measures refer to behavior in childhood and adolescence (both parent-self-teacher reported and juvenile-justice recorded) whereas the Time 2 measures refer to adult behavior in the late teens and early twenties as recorded in adult interviews and by the adult criminal justice system. This differs from the usual situation in panel data where short (e.g., yearly) lags using identical measurement schemes often induce autocorrelation, leading to biased estimates (see e.g., Matsueda 1989; Plewis 1985, p. 136; Markus 1979). Not surprisingly, then, preliminary two-stage least-squares regression of Time 3 crime/deviance, using Time 1 delinquency as an instrumental variable for Time 2 crime/deviance, produced results substantively consistent with this analysis. (Correction for autocorrelation in the age 17-25 analyses is precluded by the lack of plausible instrumental variables.) Because of these results, the long-term nature of the follow-ups, and the theoretically-based model specification that assigns a substantive role to prior crime/delinquency in generating later behavior (see also Allison, forthcoming), we enter Time 1 and Time 2 crime/delinquency as independent variables.

¹¹ Aldrich and Nelson (1984, pp. 56-9) criticize

Table 3. Coefficients and T-Ratios for Regression of Crime and Deviance in Young Adulthood on Juvenile Delinquency and Young Adult Social Bonds: Delinquent Group

Independent Variables	Crime and Deviance in Young Adulthood (Ages 17-25)			
	General Deviance	Excessive Drinking	Arrest	Arrests Per Year Free
Model 1 (all men, N = 258)				
<i>Juvenile (age < 17):</i>				
Arrests per year free	-.05 (-.07)	.60 (1.08)	2.27 (2.63)*	.43 (4.21)*
Unofficial delinquency	-.01 (-.28)	.11 (3.06)*	.08 (2.16)*	.02 (2.80)*
<i>Young adult (ages 17-25):</i>				
Income	-.19 (-1.53)	-.10 (-.98)	-.17 (-1.38)	-.03 (-1.42)
Marriage	-.44 (-1.23)	-.16 (-.54)	-.61 (-1.77)	-.06 (-1.10)
Commitment	-.03 (-.40)	-.12 (-1.90)	-.05 (-.64)	-.00 (-1.10)
Job stability	-.20 (-2.72)*	-.21 (-3.15)*	-.24 (-2.44)*	-.06 (-4.85)*
"R ² "	.10	.17	.15	.25
Model 2 (ever-married men, N = 160)				
<i>Juvenile (age < 17):</i>				
Arrests per year free	-.72 (-.65)	.86 (1.16)	1.80 (1.84)	.39 (3.51)*
Unofficial delinquency	-.03 (-.61)	.12 (2.75)*	.07 (1.53)	.01 (1.95)
<i>Young adult (ages 17-25):</i>				
Income	-.03 (-.16)	-.05 (-.34)	-.31 (-1.97)	-.02 (-1.08)
Commitment	.00 (.03)	-.09 (-1.06)	-.16 (-1.38)	-.00 (-1.13)
Job stability	-.17 (-1.51)	-.07 (-.68)	-.12 (-.82)	-.04 (-2.63)*
Attachment to spouse	-1.36 (-2.26)*	-1.10 (-2.42)*	-1.21 (-2.31)	-.16 (-2.33)*
"R ² "	.12	.18	.18	.27

* p < .05

Note: For General Deviance, Excessive Drinking, and Arrest, the table entry is the maximum-likelihood coefficient and t-ratio (coefficient/standard error); for Arrests Per Year Free, the entry is the OLS coefficient and t-ratio.

"psuedo" measures of explained variance in logistic models. However, because ML logistic models are substantively compatible with OLS models, we present the R² derived from OLS regression as an overall indicator of explanatory power for all models (denoted in Tables 3-6 as "R²").

occupations (Glueck and Glueck 1968, p. 95). A dummy variable for marital status indicates whether marriage alone is an inhibiting factor in adult crime. The results are rather clear — once other factors are controlled, income and marriage do not have significant effects on adult crime and deviance.

On the other hand, job stability shows consistent effects for all indicators of crime and deviance — all coefficients are at least two times their standard errors. Job stability has the largest effect on the most precise estimate of crime — the number of arrests per year free in the community at ages 17-25 (t-ratio = -4.85). This is particularly important given that two measures of delinquency are controlled and exhibit significant direct effects. More precisely, the number of arrests per year free as a juvenile and the measure of unofficial delinquency yield betas of .23 and .16, respectively, whereas the standardized effect of job stability is -.31.

Model 2 in Table 3 examines the effect of attachment to wife among men who were (or had been) married.¹² The results suggest that it is cohesiveness that is central rather than marriage *per se*. Marital attachment has significant negative effects on all measures of crime and deviance, net of other factors. Among ever-married men, the influence of job stability declines in magnitude — it has a significant negative effect only on crime frequency. Similar results obtained when we examined arrests in the latter half of the first follow-up (i.e., at ages 22-25). Therefore, the data suggest the importance of both job stability and attachment to wife as factors promoting reductions in crime that are not explained by the original designation as delinquent.

It is possible that crime itself may have influenced observed levels of attachment and job stability. To address this issue, the predictive effects of social bonds were examined. The results mirrored those in Table 3 (analysis not shown). For example, job stability in young adulthood had the largest overall effect on crime frequency at ages 25-32 (t-ratio = -4.63, beta = -.27), controlling for crime frequency in the prior (age 17-25) period. Moreover, marital attachment had significant and consistent negative effects on changes in crime frequency. In fact, for crime frequency at ages 25-32, both job stability and attachment to spouse were significant net of prior crime and other factors.

¹² The sub-sample is defined in terms of a variable

Table 4. Coefficients and T-Ratios for Regression of Crime and Deviance in Later Adulthood on Young Adult Crime and Social Bonds at Ages 17-25 and Ages 25-32: Delinquent Group

Independent Variables	Crime and Deviance in Later Adulthood (Ages 25-32)			
	General Deviance	Excessive Drinking	Arrest	Arrests Per Year Free
Model 1 (all men, N = 231)				
Arrest rate, ages 17-25	.06 (.46)	.78 (3.73) [*]	.86 (2.95) [*]	.14 (7.55)
Income, ages 17-25	-.04 (-.27)	.22 (1.53)	.03 (.27)	.01 (.50)
Married, ages 17-25	.57 (1.47)	-.16 (-.40)	-.18 (-.51)	.08 (1.76)
Commitment, ages 17-25	.14 (1.66)	-.22 (-2.59) [*]	.07 (.92)	-.01 (-.92)
Commitment, ages 25-32	-.47 (-2.33) [*]	-.47 (-2.44) [*]	-.16 (-1.19)	-.02 (-1.23)
Job stability, ages 17-25	-.08 (-.99)	.09 (.97)	-.11 (-1.25)	-.03 (-2.50)
Job stability, ages 25-32	-.41 (-3.33) [*]	-.39 (-3.29) [*]	-.32 (-3.40) [*]	-.05 (-3.89)
"R ² "	.24	.34	.32	.47
Model 2 (ever-married men, N = 188)				
Arrest rate, ages 17-25	.12 (.80)	.84 (3.40)	.79 (2.49) [*]	.12 (6.61)
Income, ages 17-25	.04 (.26)	.32 (1.91)	.10 (.74)	.02 (1.14)
Commitment, ages 17-25	.22 (2.12) [*]	-.21 (-1.95)	.15 (1.61)	.00 (.32)
Commitment, ages 25-32	-.43 (-1.84)	-.31 (-1.40)	-.10 (-.70)	-.01 (-.45)
Job stability, ages 17-25	-.10 (-1.07)	.09 (.82)	-.12 (-1.23)	-.03 (-2.53)
Job stability, ages 25-32	-.19 (-1.27)	-.18 (-1.26)	-.25 (-2.23)	-.02 (-1.41)
Attachment to spouse, ages 25-32	-.45 (-3.42) [*]	-.48 (-3.57) [*]	-.30 (-2.54)	-.07 (-4.45)
"R ² "	.32	.40	.33	.51

^{*} $p < .05$

Note: For General Deviance, Excessive Drinking, and Arrest, the table entry is the maximum-likelihood coefficient and t-ratio (coefficient/standard error); for Arrests Per Year Free, the entry is the OLS coefficient and t-ratio.

(marriage) that has no effect on crime. See Stoltzenberg and Relles (1990) for a recent discussion of the pitfalls associated with methods commonly used to correct for potential sample selection bias in sociological research. See also footnote 4.

In Table 4 we explore the independent effects of social bonds in later adulthood (ages 25-32) on antisocial behavior in later adulthood, controlling for prior levels of crime, income, marriage, job stability and commitment. Again, rather than compute change scores, we enter (where feasible) both the prior and concurrent (i.e., Time 2 and Time 3) measures of social bonds, allowing us to estimate their causal effects over time (Plewis 1985, pp. 56-61; Kessler and Greenberg 1981). For all men in the delinquent group (Model 1), the results indicate that controlling for prior levels, job stability in later adulthood has relatively large negative effects for each indicator of crime and deviance. For crime frequency at ages 25-32, both prior and current job stability have significant negative effects. It thus appears that prior levels and relative increases in job stability have negative effects on change in adult criminality. Commitment to conventional occupational goals also inhibits general deviance and drinking, but not arrest or crime frequency.

Model 2 in Table 4, confined to ever-married males, suggests that marital attachment at ages 25-32 is a significant and substantively important explanation of crime in later adulthood.¹³ Men with close ties to their spouses at ages 25-32 had much lower levels of crime and deviance than men with discordant relations, net of other factors including prior adult crime. The independent effect of marital attachment on crime frequency at ages 25-32 is especially large (t-ratio = -4.45, beta = -.31). The latter compares to a beta of .38 for prior arrest rate at ages 17-25. Moreover, the t-ratios for marital attachment are larger than those for the prior arrest rate in explaining general deviance and excessive drinking. Thus, marital attachment is an important factor in explaining later adult patterns of crime — at least as important as prior levels of crime. Job stability, as in previous models, is reduced in predictive power among ever-married men. The data again suggest a two-

¹³ Marital attachment at ages 17-25 was considered in a preliminary estimation of model 2 but it had insignificant effects and the sample size was considerably reduced because half of the men had not yet married. Moreover, the prior and concurrent measures of marital attachment were quite highly correlated, suggesting substantial stability in marital cohesiveness among the married men. Therefore, we use attachment to spouse at ages 25-32 as the main indicator to increase sample size and reduce multicollinearity.

Table 5. Maximum Likelihood Coefficients and T-Ratios for Logistic Regression of Crime and Deviance in Young Adulthood on Unofficial Juvenile Delinquency and Young Adult Social Bonds: Control Group (No Official Juvenile Record)

Independent Variables	Crime and Deviance in Young Adulthood (Ages 17-25)		
	General Deviance	Excessive Drinking	Arrest
Model 1 (all men, N = 395)			
<i>Juvenile (age < 17):</i>			
Unofficial delinquency	.11 (1.46)	.21 (3.60)*	.21 (4.45)*
<i>Young adult (ages 17-25):</i>			
Income	.26 (1.58)	-.05 (-.42)	.04 (.48)
Marriage	-.36 (-.75)	-.56 (-1.47)	-.12 (-.43)
Commitment	-.27 (-2.65)*	-.35 (-3.94)*	-.23 (-3.22)*
Job stability	-.27 (-2.30)*	-.37 (-3.72)*	-.11 (-1.34)
"R ² "	.06	.19	.10
Model 2 (ever-married men, N = 211)			
<i>Juvenile (age < 17):</i>			
Unofficial delinquency	.07 (.60)	.13 (1.37)	.13 (2.00)*
<i>Young adult (ages 17-25):</i>			
Income	.58 (2.07)*	-.24 (-1.19)	-.03 (-.20)
Commitment	.19 (.76)	-.06 (-.37)	-.04 (-.38)
Job stability	-.31 (-1.57)	-.31 (-2.03)*	-.09 (-.73)
Attachment to spouse	-1.36 (-1.57)	-2.30 (-3.99)*	-1.84 (-3.75)*
"R ² "	.06	.28	.16

* p < .05

part explanation: for the majority of men, job stability is central in explaining adult desistance from crime; however, this effect is reduced among those who were ever married, for whom attachment to wife assumes greater relative importance. Once marital attachment and job stability are taken into account, the effect of commitment is relatively weak.

To further validate these findings, all models for the delinquent group were replicated using event history analysis. Cox proportional hazards models (Allison 1984, pp. 33-42) were used to examine time-to-failure — the number of

days to first arrest in the periods 17-25 and 25-32.¹⁴ The event history results, when compared to results in Table 4 for crime frequency, are very similar. For example, the t-ratios for the direct effects of job stability at ages 17-25 and 25-32 on the log-hazard rate of first arrest after age 25 were -2.08 and -3.06, respectively (Model 1). Similarly, the t-ratio for the effect of marital attachment on the log-hazard rate for ages 25-32 crime was -2.44 (Model 2). These results suggest that the general conclusions are robust to the specific quantitative technique used.

ADULT CRIME AND DEVIANCE AMONG ORIGINAL NONDELINQUENTS

We turn to an analysis of adult crime and deviance among the men in the control group — a sample that differs dramatically from the one just examined. Table 5 begins with the two-fold model of young adult crime. The results for all men in the control group (Model 1) indicate that variations in reported but unofficial childhood delinquency predict excessive drinking and arrest in young adulthood. Although some of the officially nondelinquent boys committed delinquencies, these unofficial acts were generally minor (e.g., truancy, smoking). Independent of these prior differences in juvenile delinquency, job stability has a significant negative effect on general deviance and excessive drinking but not on arrest. The pattern for commitment to conventional goals is more consistent: High commitment in young adulthood reduces involvement in all three antisocial behaviors. As in the delinquent sample, the effects of income and marriage are not significant.

In Model 2, which is restricted to ever-married men, attachment to spouse has large independent effects on excessive drinking and arrest in young adulthood. The effects of commitment are eliminated in the married subsample, while job stability has a significant negative effect only on excessive drinking. The model for general deviance is rather weak in explanatory power — the only significant factor is the positive effect of income. Except for this one anomaly, the general pattern is similar

¹⁴ If a person was incarcerated on his 17th or 25th birthday, the calculation was from point of release until first arrest within each age group. Age at release was therefore controlled in these models. Persons not arrested by the end of each follow-up were treated as censored.

Table 6. Maximum Likelihood Coefficients and T-Ratios for Logistic Regression of Crime and Deviance in Later Adulthood on Young Adult Crime and Social Bonds at Ages 17-25 and Ages 25-32: Control Group (No Official Juvenile Record)

Independent Variables	Crime and Deviance in Later Adulthood (Ages 25-32)		
	General Deviance	Excessive Drinking	Arrest
Model 1 (all men, N = 367)			
Arrest, ages 17-25	.51 (.95)	2.27 (4.63)*	1.12 (3.12)*
Income, ages 17-25	.05 (.24)	-.01 (-.04)	.12 (.97)
Married, ages 17-25	.70 (1.25)	.36 (.74)	.13 (.37)
Commitment, ages 17-25	.08 (.58)	-.01 (-.04)	.09 (.96)
Commitment, ages 25-32	-.48 (-2.10)*	-.33 (-1.79)	-.28 (-2.27)*
Job stability, ages 17-25	-.19 (-1.34)	-.18 (-1.43)	-.20 (-1.98)*
Job stability, ages 25-32	-.33 (-2.21)*	-.31 (-2.44)*	-.29 (-3.21)*
"R ² "	.14	.30	.26
Model 2 (ever-married men, N = 298)			
Arrest, ages 17-25	.73 (1.12)	2.06 (3.55)*	.80 (1.82)
Income, ages 17-25	.08 (.35)	.03 (.16)	-.11 (-.73)
Commitment, ages 17-25	.17 (.80)	.03 (.05)	.10 (.76)
Commitment, ages 25-32	-.54 (-1.83)	-.00 (-.02)	-.25 (-1.70)
Job stability, ages 17-25	-.13 (-.69)	-.17 (-1.12)	-.17 (-1.32)
Job stability, ages 25-32	.13 (.65)	-.42 (-2.56)*	-.32 (-2.82)*
Attachment to spouse, ages 25-32	-.80 (-3.64)*	-.26 (-1.58)	-.09 (-.71)
"R ² "	.24	.32	.27

* $p < .05$

to the delinquent group — job instability and weak marital attachment are directly related to adult crime and deviance. These results are also replicated in predictive models (data not shown). For example, job stability at ages 17-25 has large negative effects on deviance, drinking, and arrest at ages 25-32 (t-ratios = -3.24, -3.05, and -4.16, respectively).

Table 6 presents models for the control group analogous to those in Table 4 for the delin-

Table 7. OLS Regression of Breadth of Involvement in Crime and Deviance from Age 17 to 32 on Juvenile Delinquency and Social Bonds in Young Adulthood: Delinquent Group and Control Group

Independent Variables	Crime and Deviance, Ages 17-32					
	Delinquent Group			Control Group		
	b	Beta	t-ratio	b	Beta	t-ratio
Model 1 (all men)						
<i>Juvenile (age < 17):</i>						
Arrests per year free ^a	1.30	.18	3.38*	—	—	—
Unofficial delinquency	.06	.15	2.78*	.12	.25	5.36*
<i>Young adult (ages 17-25):</i>						
Income	-.12	-.10	-1.71	.00	.01	.23
Marriage	-.20	-.06	-.97	-.06	-.02	-.47
Commitment	-.05	-.07	-1.18	-.14	-.18	-3.84*
Job stability	-.27	-.37	-5.89*	-.20	-.28	-5.69*
<i>R</i> ²		.31			.22	
<i>Number of cases</i>		246			376	
Model 2 (ever-married men)						
<i>Juvenile (age < 17):</i>						
Arrests per year free ^a	1.08	.15	2.24*	—	—	—
Unofficial delinquency	.05	.14	2.01*	.04	.08	1.35
<i>Young adult (ages 17-25):</i>						
Income	-.06	-.05	-.69	-.01	-.01	-.20
Commitment	.00	.00	.02	-.01	-.02	-.29
Job stability	-.17	-.21	-2.54*	-.22	-.27	-4.26*
Attachment to spouse	-1.44	-.40	-4.77*	-1.51	-.40	-6.32*
<i>R</i> ²		.39			.35	
<i>Number of cases</i>		150			204	

* $p < .05$ ^a Not included in model specifications for the control group because these men had no arrests prior to sample selection.

quent sample. Model 1 for all men displays the results of the logistic regression of the three dichotomous measures of crime at ages 25-32 on prior arrest and prior and contemporaneous measures of adult social bonds. As in the previous models, income and being married tell us almost nothing in terms of later adult crime. By contrast, both commitment to occupation and job stability at ages 25-32 have significant negative effects on crime independent of arrest and social ties at ages 17-25. These data suggest that increased bonds to work and education lead to less crime and deviance in later adulthood.

Among ever-married men (Model 2), job stability at ages 25-32 has a significant negative effect for arrest and excessive drinking.

Marital attachment has a significant negative effect only for general deviance.

COMPARATIVE MODELS OF PERSISTENCE IN ADULT CRIME AND DEVIANCE

We now compare the effects of adult social bonds on an overall measure of adult antisocial behavior for the delinquent and control groups. We constructed a scale by summing the indicators of excessive drinking, general deviance, and arrest over the entire 17-32 age span. This scale ranges from 0 to 6, and better reflects an individual's breadth of involvement in crime and deviance during adulthood than previous measures, especially for the control group in

which adult crime was relatively rare. The social control variables are determined from the interview at age 25 to reduce the possibility of reciprocal effects from deviancy itself.

For purposes of cross-group comparison, unstandardized ordinary least-squares coefficients, beta weights, and the ratios of coefficients to standard errors are displayed in Table 7. The results for all men (Model 1) are consistent across samples — independent of juvenile delinquency, the largest significant influence on overall adult crime is job stability. The standardized effect of job stability in young adulthood on adult crime is $-.37$ for delinquents and $-.28$ for nondelinquents. Model 2 based on ever-married men confirms previous analyses — income and commitment are unimportant in the presence of job stability and marital attachment. Job stability has significant and essentially identical negative effects on adult crime (compare unstandardized coefficients). Furthermore, the largest effect on overall adult criminal and deviant behavior for both groups is marital attachment — ever-married men with close ties to their spouses in young adulthood were much less likely to engage in adult crime and deviance than men with weak ties, net of other factors. The unstandardized coefficients for the two groups are similar and the beta weights are large and identical ($-.40$).¹⁵

We also estimated a model that compared persistent offenders with those who desisted completely (analysis not shown). We assigned a 1 to those who were arrested at ages 17-25 and 25-32, and a 0 to those with no adult arrests. There were 117 delinquent and 170 nondelinquent “occasional” offenders, i.e., men who had an arrest in one but not both periods. These were eliminated from the analysis to maximize the contrast. Because of the reduced sample size and the insignificant effects of income, marriage, and commitment in preliminary analyses, we estimated reduced models including only the measures of juvenile delinquency (both official and unofficial), marital

attachment, and job stability. The maximum-likelihood logistic coefficient for the independent effect of job stability on persistent deviance as an adult was $-.41$ for the delinquent group and $-.54$ for the nondelinquent group (t -ratio = -2.01 and -2.85 , respectively). The coefficients for marital attachment were -2.28 for delinquents and -2.52 for nondelinquents (t -ratio = -3.18 and -3.64 , respectively). Clearly, marital attachment and job stability substantially reduce the log-odds of persistence in crime among men with vastly different delinquent backgrounds.

Although boys in the two samples were matched, within each sample individuals varied on potentially important characteristics. IQ, measured by the Weschler-Bellevue test, was thus entered into the basic multivariate models, as was a measure of extroversion, a personality trait emphasized by the Gluecks (1950, p. 281).¹⁶ Alternative measures of socioeconomic status (e.g., economic dependency and occupational skill) were also examined. In no case was the substantive picture altered. The effects of IQ were notably inconsistent and weak. For example, in the models in Table 7 the effects of job stability and marital attachment remained unchanged, whereas the effects of IQ on young adult crime were not significant in model 1 or model 2 for delinquents. The models are therefore robust to alternative specifications, especially regarding individual-differences in childhood.¹⁷

¹⁶ Recall that race and gender do not vary by nature of the research design. In the follow-ups, age is also controlled since the independent and dependent variables refer to the same age period (i.e., ages 17-25 and ages 25-32). For example, even though a boy may have entered the study at age 12 and another at 16 (the range was 10-17), the follow-ups were conducted on or near the 25th and 32nd birthdays of both individuals and have the same reference period. Similarly, the frequency of juvenile crimes per year free for each boy refers to all offenses from birth to age 17.

¹⁷ We also calculated Variance Inflation Factors (VIF) for all models, defined as the reciprocal of $1 - R^2$ of each independent variable regressed on the vector of remaining independent variables (Fisher and Mason 1981, p. 109). The average VIF was only 1.5 and the largest was 2.5 for job stability at ages 17-25. Moreover, all bivariate correlations were less than .70 and the vast majority were less than .50. Taken together, these results suggest that multicollinearity does not seriously affect the conclusions.

¹⁵ The models in Table 7 are fully replicated when the combined crime and deviance scale is restricted to ages 25-32. For example, the standardized effects of young adult job stability and marital attachment on crime/deviance at ages 25-32 are $-.22$ and $-.37$, respectively, for the delinquent group (model 2). The corresponding coefficients for the control group are $-.31$ and $-.26$ (all $p < .05$). Reciprocity therefore does not account for the findings in Table 7.

CONCLUSION

Sociological explanations of crime and delinquency have recently come under strong attack. In probably the most widely cited critique, Wilson and Herrnstein (1985) chastise sociologists for ignoring the fact that crime and delinquency can be traced to early childhood. They argue that high-rate offenders begin deviant behavior very early in their lives, "well before" traditional sociological variables (e.g., labor markets, community, peer groups, marriage) "could play much of a role" (p. 311). We have offered a life-course model that does not deny early childhood differences, but at the same time recognizes that adult life events matter. The basic organizing principle derived from linking the life course perspective with social control theory is that both continuity and change are evident, and that trajectories of crime and deviance are systematically modified by social bonds to adult institutions of informal social control.

This thesis found broad support in a strict test. The delinquent and control groups in the Gluecks' original research design were markedly different in adolescent delinquency, and continued to differ over the life course. In fact, the Gluecks themselves, much like Wilson and Herrnstein (1985), argued that "The Past is Prologue" (1968, p. 168) and that early childhood differences in delinquency that persisted over time undermined sociological explanations of crime (Glueck and Glueck 1968, pp. 170-80). But the Gluecks ignored evidence of changes in criminal behavior within each group, nor did they explore what might account for such changes. Consistent with a model of adult development and informal social control, we have shown that job stability and marital attachment in adulthood are significantly related to changes in adult crime — the stronger the adult ties to work and family, the less crime and deviance among both delinquents and controls. The results were strong, consistent, and robust over a wide variety of measures and analytical techniques. The effects of job stability were independent of prior and concurrent levels of commitment (i.e., aspirations and ambitions), suggesting that labor-market instability rather than weak occupational commitment is a key factor in understanding adult crime and deviance.

Sociologists need not be hostile to research establishing early childhood differences in de-

linquency and antisocial behavior — influences that may persist well into adulthood. Indeed, the other side of continuity is change, and the latter appears to be systematically structured by adult bonds to social institutions. Our results raise serious questions about perspectives that focus exclusively on childhood and ignore the adult life-course. We hope that future research will explore other dimensions of adult social bonds. Historical changes in adult social roles may also provide insights into current patterns of adult crime. We believe that the historical context of the data can serve as a baseline to identify areas where research findings are consistent across time and, equally important, to identify areas where contemporary research may diverge (see also Elder 1974; Featherman, Hogan, and Sorenson 1984). For example, the men in the Glueck samples grew to young adulthood in a context of expanding economic opportunities after World War II (1947-1965). To what extent does job instability in a period of rapid deindustrialization and increasing secondary labor markets influence adult development (Crutchfield 1989)? Modern data sets can also take advantage of improvements in the measurement of the timing and duration of significant life events, permitting the use of more complex event-history techniques (Featherman and Lerner 1985; Hagan and Palloni 1988).

Finally, early childhood differences should not be ignored as a source of sociological explanation. Just because criminal tendencies emerge early in life does not mean they derive from psychological and/or constitutional differences. Family, school, and neighborhood processes (Laub and Sampson 1988; Sampson and Laub, forthcoming) may provide a sociological link to a complete life-course explanation of crime.

ROBERT J. SAMPSON is Associate Professor of Sociology at the University of Illinois, Urbana-Champaign. His major research interests are crime and deviance in the life course, contextual analysis, and community level theories of social organization. He is completing a book with John Laub based on an analysis of the longitudinal data reconstructed from the Gluecks' archives.

JOHN H. LAUB is Associate Professor in the College of Criminal Justice at Northeastern University in Boston. His current research interests include patterns of crime in the life course, the correlates of victimization, and the history of the criminological discipline.

REFERENCES

- Aldrich, John and Forrest Nelson. 1984. *Linear Probability, Logit, and Probit Models*. Beverly Hills, CA: Sage.
- Allison, Paul. 1984. *Event History Analysis*. Beverly Hills, CA: Sage.
- _____. Forthcoming. "Change Scores as Dependent Variables in Regression Analysis." In *Sociological Methodology 1990*, edited by Clifford Clogg. Oxford: Basil Blackwell Ltd.
- Baltes, Paul and John Nesselroade. 1984. "Paradigm Lost and Paradigm Regained: Critique of Dannefer's Portrayal of Life-Span Developmental Psychology." *American Sociological Review* 49:841-46.
- Blumstein, A., J. Cohen, J. Roth, and C. Visher (Eds.). 1986. *Criminal Careers and "Career Criminals"*. Washington, DC: National Academy Press.
- Brim, Orville G. and Jerome Kagan. 1980. "Constancy and Change: A View of the Issues." Pp. 1-25 in *Constancy and Change in Human Development*, edited by Orville G. Brim and Jerome Kagan. Cambridge: Harvard University Press.
- Caspi, Avshalom. 1987. "Personality in the Life Course." *Journal of Personality and Social Psychology* 53:1203-13.
- Caspi, Avshalom, Darryl J. Bem, and Glen J. Elder, Jr. 1989. "Continuities and Consequences of Interactional Styles Across the Life Course." *Journal of Personality* 57:375-406.
- Cline, Hugh F. 1980. "Criminal Behavior over the Life Span." Pp. 641-74 in *Constancy and Change in Human Development*, edited by Orville G. Brim and Jerome Kagan. Cambridge: Harvard University Press.
- Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* 94:S95-120.
- Crutchfield, Robert D. 1989. "Labor Stratification and Violent Crime." *Social Forces* 68:489-512.
- Dannefer, Dale. 1984. "Adult Development and Social Theory: A Paradigmatic Reappraisal." *American Sociological Review* 49:100-16.
- Durkheim, E. 1951. *Suicide* (translated by J. Spaulding and G. Simpson). New York: Free Press.
- Elder, Glen H., Jr. 1974. *Children of the Great Depression*. Chicago: University of Chicago Press.
- _____. 1985. "Perspectives on the Life Course." Pp. 23-49 in *Life Course Dynamics*, edited by Glen H. Elder, Jr. Ithaca, NY: Cornell Univ. Press.
- Farrington, David P. 1986. "Stepping Stones to Adult Criminal Careers." Pp. 359-84 in *Development of Antisocial and Prosocial Behavior*, edited by Dan Olweus, Jack Block, and Marian Radke-Yarrow. New York: Academic Press.
- _____. 1989. "Later Adult Life Outcomes of Offenders and Nonoffenders." Pp. 220-44 in *Children at Risk: Assessment, Longitudinal Research, and Intervention*, edited by M. Brambling, F. Losel, and H. Skowronek. New York: Walter de Gruyter.
- Farrington, David P., Bernard Gallagher, Lynda Morley, Raymond J. St. Ledger, and Donald J. West. 1986. "Unemployment, School Leaving, and Crime." *British Journal of Criminology* 26:335-56.
- Featherman, David, Dennis Hogan, and Aage Sorenson. 1984. "Entry in Adulthood: Profiles of Young Men in the 1950s." Pp. 160-203 in *Life-Span Development and Behavior*, edited by Paul Baltes and Orville Brim, Jr. Orlando: Academic Press.
- Featherman, David and Richard Lerner. 1985. "Ontogenesis and Sociogenesis: Problematics for Theory and Research About Development and Socialization Across the Lifespan." *American Sociological Review* 50:659-76.
- Fisher, Joseph and Robert Mason. 1981. "The Analysis of Multicollinear Data in Criminology." Pp. 99-125 in *Methods in Quantitative Criminology*, edited by James A. Fox. New York: Academic.
- Gibbens, T.C.N. 1984. "Borstal Boys After 25 Years." *British Journal of Criminology* 24:49-62.
- Glueck, Sheldon and Eleanor Glueck. 1950. *Unraveling Juvenile Delinquency*. New York: Commonwealth Fund.
- _____. 1968. *Delinquents and Nondelinquents in Perspective*. Cambridge: Harvard University Press.
- Gottfredson, Michael and Travis Hirschi. 1987. "The Methodological Adequacy of Longitudinal Research on Crime." *Criminology* 25:581-614.
- _____. 1990. *A General Theory of Crime*. Stanford, CA: Stanford University Press.
- Gove, Walter R. 1985. "The Effect of Age and Gender on Deviant Behavior: A Biopsychosocial Perspective." Pp. 115-44 in *Gender and the Life Course*, edited by Alice S. Rossi. New York: Aldine.
- Hagan, John. 1989. *Structural Criminology*. New Brunswick, NJ: Rutgers University Press.
- Hagan, John and Alberto Palloni. 1988. "Crimes as Social Events in the Life Course: Reconceiving a Criminological Controversy" *Criminology* 26:87-100.
- Hirschi, Travis. 1969. *Causes of Delinquency*. Berkeley, CA: University of California Press.
- Hirschi, Travis and Michael Gottfredson. 1983. "Age and the Explanation of Crime." *American Journal of Sociology* 89:552-84.
- Hogan, Dennis P. 1980. "The Transition to Adulthood as a Career Contingency." *American Sociological Review* 45:261-76.
- Huesmann, L. Rowell, Leonard D. Eron, and Monroe M. Lefkowitz. 1984. "Stability of Aggression Over Time and Generations." *Developmental Psychology* 20:1120-34.
- Kessler, Ronald and David Greenberg. 1981. *Linear Panel Analysis*. New York: Academic Press.
- Knight, B.J., S.G. Osborn, and D. West. 1977. "Early

- Marriage and Criminal Tendency in Males." *British Journal of Criminology* 17:348-60.
- Kornhauser, Ruth. 1978. *Social Sources of Delinquency*. Chicago: University of Chicago Press.
- Laub, John H. and Robert J. Sampson. 1988. "Unraveling Families and Delinquency: A Reanalysis of the Gluecks' Data." *Criminology* 26:355-80.
- Laub, John H., Robert J. Sampson, and Kenna Kiger. 1990. "Assessing the Potential of Secondary Data Analysis: A New Look at the Gluecks' Unraveling Juvenile Delinquency Data." Pp. 244-57 in *Measurement Issues in Criminology*, edited by Kimberly Kempf. New York: Springer-Verlag.
- Loeber, Rolf. 1982. "The Stability of Antisocial Child Behavior: A Review." *Child Development* 53:1431-46.
- Long, Jancis V.F. and George E. Vaillant. 1984. "Natural History of Male Psychological Health, XI: Escape from the Underclass." *American Journal of Psychiatry* 141:341-46.
- Markus, G. 1979. *Analyzing Panel Data*. Beverly Hills, CA: Sage.
- Matsueda, Ross. 1989. "The Dynamics of Moral Beliefs and Minor Deviance." *Social Forces* 68:428-57.
- McCord, Joan. 1979. "Some Child-Rearing Antecedents of Criminal Behavior in Adult Men." *Journal of Personality and Social Psychology* 37:1477-86.
- _____. 1980. "Patterns of Deviance." Pp. 157-65 in *Human Functioning in Longitudinal Perspective*, edited by S.B. Sells, Rick Crandall, Merrill Roff, John S. Strauss, and William Pollin. Baltimore: Williams and Wilkins.
- Olweus, Daniel. 1979. "Stability of Aggressive Reaction Patterns in Males: A Review." *Psychological Bulletin* 86:852-75.
- Osborn, S.G. 1980. "Moving Home, Leaving London, and Delinquent Trends." *British Journal of Criminology* 20:54-61.
- Plewis, Ian. 1985. *Analysing Change: Measurement and Explanation Using Longitudinal Data*. New York: Wiley.
- Robins, Lee. 1966. *Deviant Children Grown Up*. Baltimore: Williams and Wilkins.
- _____. 1978. "Sturdy Childhood Predictors of Adult Antisocial Behaviour." *Psychological Medicine* 8:611-22.
- Rutter, Michael. 1988. "Longitudinal Data in the Study of Causal Processes: Some Uses and Some Pitfalls." Pp. 1-28 in *Studies of Psychosocial Risk: The Power of Longitudinal Data*, edited by Michael Rutter. Cambridge: Cambridge University Press.
- Sampson, Robert J. and John H. Laub. Forthcoming. *Crime and Deviance Over the Life Course*. New York: Springer-Verlag.
- Stolzenberg, Ross and Daniel Relles. 1990. "Theory Testing in a World of Constrained Research Design: The Significance of Heckman's Censored Sampling Bias Correction for Nonexperimental Research." *Sociological Methods and Research* 18:395-415.
- Vaillant, George E. 1977. *Adaptation to Life*. Boston: Little, Brown, and Co.
- Wilson, James Q. and Richard Herrnstein. 1985. *Crime and Human Nature*. New York: Simon and Schuster.
- Wolfgang, Marvin, Terrence Thornberry, and Robert Figlio. 1987. *From Boy to Man: From Delinquency to Crime*. Chicago: University of Chicago Press.