

Violent Recidivism and Chronicity in the 1958 Philadelphia Cohort

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In the present study the relationship between chronicity and violent recidivism is analyzed using longitudinal data from the 1958 Philadelphia cohort. The data reaffirm prior research findings that a small cadre of offenders commits the majority of crimes which involve serious harm to the community, yet it was found that the violent offenders accounted for a large share of the more serious index offenses. In addition, among violent delinquents there is a greater proportion of chronic offenders than among nonviolent delinquents. Chronic offenders were more likely than nonchronic offenders to repeat a violent offense. Violent recidivists also committed a large proportion of nonviolent index offenses. One might imply from the results of this study that a policy of selective incapacitation of high-rate offenders would substantially reduce the amount of violent crime as well as nonviolent crime.

KEY WORDS: violent delinquent; recidivism; chronicity; offense severity; selective incapacitation.

1. INTRODUCTION

Within the past few years the problem of violent crime by juveniles has become a major concern. Many criminal justice researchers have recommended a selective incapacitation policy, however, as Zimring has noted,

There is, at present, insufficient evidence of the extent to which youth violence is extensively concentrated in a relatively small pool of career offenders. (1979, p. 97)

Moreover, as Boland and Wilson (1978) have suggested, it is necessary to find characteristics that predict continued criminality. According to Petersilia,

For an incapacitation crime control strategy to be effective, we need to know, first, whether there is a group of offenders who commit large numbers of offenses over a substantial period, and second, whether we can identify them. (1980, p. 371)

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The most important finding from prior research concerning recidivism of juveniles is that chronic offenders account for the majority of serious crime in a community. For example, in the 1945 Philadelphia cohort Wolfgang *et al.* (1972) found that a small number (18% of delinquents) of high-rate or chronic offenders who commit five or more offenses were responsible for 60% of all the injury offenses. Similarly, Hamparian *et al.* (1978) found that chronics committed 45% of all violent offenses by delinquents in the Ohio cohorts. And in a New York study of violent delinquents, recidivists accounted for 82% of violent offenses (Strasburg, 1978). A replication of the first Philadelphia study has reaffirmed earlier results. Almost 23% of delinquents, or 7.5% of cohort members, committed 60% of all offenses by cohort members, 68% of index offenses, and 66% of injury offenses (Tracy *et al.*, 1985). In addition, it was found that members of the 1958 Philadelphia cohort were more violent and more recidivistic than their earlier counterparts (Wolfgang, 1983). It seems evident from prior research that a small proportion of high-rate offenders is responsible for a substantial proportion of offenses. The major problem with these studies is that they tell us very little about predicting recidivism and/or violent crime.

There have been few studies predicting the recidivism of juveniles. Most of the literature on prediction and risk assessment refers to predicting delinquency (see, for example, Glueck and Glueck, 1959). There have been numerous methodological criticisms concerning techniques used to predict delinquency. For example, Shannon (1985, p. 160) states,

We must emphasize that there is a difference between risk assessment, predicting that a given percentage of a later cohort will be delinquent or criminal based on the distribution of delinquency and crime in an earlier cohort, and predicting who in a cohort will do so at a later period based on the behavior that they exhibited during an earlier period.

Shannon also notes the serious problems of false negatives, false positives, and skewed marginal distributions. The results of his data analysis using the Racine birth cohorts show that even though a high-risk group can be identified from early felonies and major misdemeanors, the prediction of future serious criminal behavior will be overstated, most of the errors being false negatives.

Similar results have been reported by Haapanen and Jesness (1982), whose study consisted of a follow-up into adult years of 2683 youths from the California Youth Authority. Considering adult offenses by those who were serious juvenile delinquents, Haapanen and Jesness found that 94% were arrested at least once as an adult, 66% for violent offenses and 80% for a felony. In their study the prediction of later offensivity was based upon a melange of background, psychological, and behavioral characteristics such as a low socioeconomic status (SES), a large number of siblings,

a lower school grade, an early age at onset of delinquency, a long prior record, antisocial behavior, a low IQ, and a low level of maturity as measured by the I-scale. They found that prediction of violent/nonviolent using multiple regression techniques was better than prediction of chronic/non-chronic using these indicators. However, they caution that the high base rate of chronics among their sample (86%) may explain their high predictions.

The current literature on the prediction of violence has as many problems as the earlier literature on the prediction of delinquency. The study of California Youth Authority wards by Wenk *et al.* (1972) reported a high false-positive rate (94%). Wenk *et al.* followed subjects for 15 months after release and used variables such as prior record of violence and psychiatric diagnoses. Similar results have been reported for adult populations (Kozol *et al.*, 1973; Steadman and Cocozza, 1974; Thornberry and Jacoby, 1979; van Dine *et al.*, 1979). Thus, Monahan (1978) has concluded, based on his review of the literature, that the prediction of violent behavior is difficult and dangerous.

There are also many problems with prior studies which examine correlates of recidivism such as race and socioeconomic status. First, the results of prior studies are inconsistent. For example, Thornberry (1971) found that race and SES were related to recidivism. However, Meade (1973) stated that neither race nor SES predicts recidivism. Uncovic and Duksay (1969) found that race, but not SES, was related to recidivism. In his study Thomas (1977) suggested that legal factors, such as disposition at first offense and type of offense, were more important than sociodemographic variables such as race, sex, and SES. Another problem of many of these prior studies is that they are cross-sectional rather than longitudinal. Furthermore, measures of recidivism vary from repeat offensivity to repeat arrest for the same crime.

Studies of adult offenders have provided some support for a policy of selective incapacitation of high-rate offenders. Using self-report data of prison inmates, Greenwood (1982) distinguished between "intermittents" and "intensives," i.e., those with low and high offending rates. Furthermore, Greenwood identified several factors as indicators of future criminality such as recent imprisonment, recent unemployment, age at first conviction, recent drug use, and juvenile delinquency status. The most recent work by Chaiken and Chaiken (1982) identified high crime-rate offenders as "violent predators" who specialize in robbery, assault, and drug dealing. In comparison, using official records to follow the criminal careers of violent offenders in the Ohio cohort, Miller *et al.* (1982) found no evidence of offense specialization. Nonetheless, they did find a pattern of nonviolence interspersed with one or two violent offenses and stated that violent criminals were largely property and public-order criminals. Concerning recidivism, they make the

following observation:

What is more interesting about the careers, however, is that the more arrests that offenders have, the greater the likelihood that they will eventually be arrested for a violent offense. (1982, p. 81)

Data from the 1958 Philadelphia cohort were analyzed by Tracy and Figlio (1983) to study chronic recidivism. Using several techniques, they found that chronicity could be predicted using criminal career measures of age at onset, severity of early offenses, and number of offenses by age 15 years. The results of logistic regression showed a false-positive rate of 20% and a false-negative rate of 40%, but the overall percentage of correct predictions using only three factors—early age at onset, three offenses by age 15 years, and severity of the second offense, was 65%. Tracy and Figlio caution us, however, that this simple model needs to be tested further.

Cross-cultural evidence of a relationship between violence and chronicity comes from a birth-cohort study of men in Copenhagen (Guttridge *et al.*, 1983). Not only did the study find a greater likelihood of violent crime among recidivists, but also it found that violent offenders begin at an earlier age and tend to commit offenses for several years before the onset of violence. Furthermore, it was found that an increase in the number of violent offenses was correlated with a greater number of a variety of other offenses.

The methodological techniques of prior research on deterrence and incapacitation have been questioned. Moreover, prior research does not provide adequate support for a policy of selective incapacitation. In a study of adult offenders Shinnar and Shinnar (1975) estimated the incapacitative effect to be about 25%. Yet Cohen (1978) argues that if current criminal-justice policies were implemented, the incapacitative effect would be about 3 or 5%. Using FBI data on criminal careers Greenberg (1975) estimated an effect of between 0.6 and 8%, depending on the type of sentence. Clarke (1974), in an analysis of 1945 Philadelphia cohort data, concludes that only 1 to 4% of index crimes would be prevented. Clarke also found an interesting difference when analyzing the data separately by race, as incapacitation of white juveniles would prevent 5% of index arrests and incapacitation of nonwhite juveniles would prevent 15% of index arrests. In their study of 126 violent juveniles in Ohio, van Dine *et al.* (1979) found that up to 26% of the juveniles would have been prevented from committing further crimes by using different sentencing policies, yet this would represent between 0.1 and 1.3 arrests. Not only do these findings from prior research studies vary in the estimates of incapacitative effect, but the studies have substantial methodological problems, as has been noted by Cohen (1978).

There are several problems with prior research which limit its use in supporting a policy of selective incapacitation. First, the findings from

different studies are inconsistent because some focus on juveniles and others on adults. In addition, there are various definitions of violent, chronic, or serious offenders and different indicators of recidivism. Third, the research design often limits the implications which can be drawn from the results. For example, cross-sectional data measure only a finite time period and do not allow inspection of criminal careers. Fourth, the statistical basis for a selective incapacitation policy has been challenged by Blumstein and Moitra (1980). They contend that an incapacitation policy is not legitimized by the fact that a small number of offenders are responsible for a vast majority of crime. One problem is that the distribution of offenses is naturally skewed. Blumstein (1983) also argues that retrospective identification of chronic (or high-rate) offenders is erroneous and that high-rate offenders must be identified prospectively. Perhaps the most important problem with prior research is the lack of comparison between violent and nonviolent chronic offenders. A study of juveniles, similar to that by Guttridge *et al.* (1983), might provide evidence to support a policy of selective incapacitation of violent juveniles.

The purpose of the present investigation is to focus on recidivism (here defined as repeat offending) and violence by juveniles. Several research questions are examined.

(1) Do violent juvenile offenders have higher individual rates of offending than nonviolent juvenile offenders?

(2) Among chronic offenders, do violent juveniles account for a greater proportion of all cohort offenses than nonviolent juveniles?

(3) Is the repetition of violent offenses more likely among offenders with high individual rates (chronics) than among those with low rates (nonchronics)?

(4) Do violent recidivists account for the majority of index offenses in a population of known juvenile delinquents?

(5) Can violent recidivism be predicted?

2. DATA AND METHODS

The data for the present study are from the 1958 Philadelphia cohort study by Tracy *et al.* (1985). Subjects were selected on the basis of two criteria: the individual must have been born in 1958 and must have resided in the city of Philadelphia while between 10 and 17 years of age. There are several limitations of this longitudinal data base which should be considered. First, when making generalizations to a larger group of juveniles, because the population being studied is a birth cohort, which means that there are specific age and period effects, one must be cautious. Second, specific period effects, such as the social climate and the race and sex distribution of the

city, may be related to the measurement of delinquency. Also, the residence requirement eliminates transients, whose crimes may not be accounted for in this analysis. Nonetheless, the limitations of the research design are counterbalanced by the advantages of a longitudinal data base. This design allows for interindividual and intraindividual comparisons. In particular, it is possible to examine the onset of a criminal career and patterns associated with that career.

Delinquency is measured in terms of police contacts as was done in the 1945 Philadelphia cohort study. Even though there is considerable controversy over the use of official records rather than self-report measures, it has been shown that there is concordance between official records and self-reports (Hindelang *et al.*, 1981; Farrington, 1973). Thus, in the present study delinquency status was determined by matching subjects on the basis of name, date of birth, race, and sex to the official records in the Juvenile Aid Division of the Philadelphia Police Department.

Complete offense histories were compiled for all delinquents and information about each offense was then coded based on the Police Investigative Reports and Arrest Reports. The five most serious charges filed by the police in accordance with legal status were coded for each offense. In addition, the components of offense seriousness such as intimidation, the number of victims of bodily injury, the number of premises broken into, the amount of property theft or damage, and the number of autos stolen were coded. Offenses were then classified as index or nonindex events using both Uniform Crime Reports (UCR) and Sellin-Wolfgang (SW) systems. In the UCR system only the most serious charge is used to classify the type of offense. UCR index offenses include homicide, rape, robbery, aggravated assault, burglary, theft, and auto theft. SW index offenses are those which involve actual injury, theft, or damage. Offenses were also assigned seriousness scores according to weights derived from the National Survey of Crime Severity (Wolfgang *et al.*, 1985).

For the present study, violence has been defined using both the SW and the UCR systems. A violent offense can be either an offense in which a victim sustains bodily injury (i.e., minor harm, treat and discharge, hospitalize, death) or a crime of homicide, rape, robbery, or aggravated assault according to the UCR legal labels. A violent offender is any delinquent who has committed a violent offense.

Recidivism and chronicity were defined in accordance with techniques used by Wolfgang *et al.* (1972) in the 1945 cohort study. Chronic recidivists are those offenders with five or more offenses, whereas nonchronic recidivists have committed two to four offenses.

Socioeconomic status (SES) is a composite measure constructed by using information from the 1970 Philadelphia census. The principal-

components technique was used to extract a single factor from the following indicator variables: the median family income, the percentile below the median income for Philadelphia, the log of the odds of being below the poverty level, the log of the odds of being on welfare, the number of female-headed households, the percentage of the population unemployed, the percentage of the population working in blue-collar occupations, and the number of persons age 18 years or over with less than 4 years of high-school education. A score was computed from the first factor extracted and assigned to each census tract. The SES measure was dichotomized by collapsing scores above and below the mean.

The present analyses have been restricted to male delinquents in the 1958 cohort to ensure a sufficient amount of data. A small percentage of females was chronic offenders (7%), and of the 41% who were violent offenders, very few ($N = 31$) repeated a violent offense.

3. RESULTS

3.1. Offense Recidivism

Several measures of recidivism can be used to examine the careers of delinquents. One measure of recidivism is the probability of committing another offense. This can be calculated as the ratio of the number of current offenses to the number of prior offenses at each offense rank. It indicates the likelihood of a subsequent offense, given the number already committed. As can be seen in Table I, the probability of recidivism among violent offenders is quite high: given that they have committed one offense, 86% will commit another. The probabilities of recidivism for nonviolent offenders are significantly lower: not quite half of those nonviolent offenders who committed one offense went on to a second offense. The likelihood of recidivism increases for nonviolent offenders after the fifth offense (up to 70%). When analyzed separately by race, there is little difference. Yet nonwhites are more recidivistic than whites and the difference between nonviolent and violent offenders remains. These differences between violent and nonviolent offenders and between white and nonwhite may reflect a greater propensity toward chronicity and violent crime among nonwhite males.

Another comparison measure of recidivism is the mean number of offenses per person. It can be seen in Table II that the mean number of all offenses differs substantially for violent and nonviolent offenders. Violent male juveniles committed 6.3 offenses on the average, whereas nonviolent males had a mean of 2.2 offenses. From other measures of the severity of criminal careers, including the seriousness of all offenses and number of

Table I. Conditional Probability of Committing the *k*th Offense
By Type of Offender by Race

<i>k</i> (number of offenses)	Total	Nonwhite	White
Violent offenders			
1	0.1039	0.1604	0.0409
2	0.8589	0.8654	0.8307
3	0.8536	0.8662	0.7962
4	0.8235	0.8240	0.8214
5	0.8305	0.8416	0.7754
6	0.8396	0.8359	0.8598
7	0.7986	0.7934	0.8261
8	0.8369	0.8516	0.7632
9	0.8649	0.8624	0.8793
10+	0.8228	0.8298	0.7843
Nonviolent offenders			
1	0.2239	0.2576	0.1863
2	0.4533	0.4852	0.4041
3	0.6010	0.6164	0.5276
4	0.5953	0.5869	0.6119
5	0.6192	0.6178	0.6220
6	0.6554	0.6392	0.6863
7	0.7010	0.7097	0.6857
8	0.6765	0.6364	0.7500
9	0.7609	0.7857	0.7222
10+	0.7714	0.7727	0.7692

arrests, it can be seen that violent offenders fare worse than nonviolents. The total career seriousness is greater for violent offenders, yet because seriousness scores are based on injury, theft, or damage, the seriousness of violent offenses alone may account for a large proportion of the career seriousness of violent offenders. The higher mean number of arrests for violent offenders is probably associated with the high chronicity of violent offenders and with the fact that there is a greater likelihood of their offenses resulting in arrest because they tend to be the more serious offenses. Violent offenders also commit more index and nonindex offenses than nonviolent offenders.

By categorizing offenders into one-timers and recidivists, it becomes evident that violent offending is related to chronic recidivism. As shown in Table III, 86% of violent, in comparison to 45% of nonviolents, were recidivists. Moreover, there is a three-to-one ratio of violent-to-nonviolent chronic offenders. Looking at the number of offenses committed by each subgroup, it is obvious that violent delinquents who are chronics are respon-

Table II. Comparison of Criminal Careers of Violent and Nonviolent Offenders by Sex:
t Tests of Means

	Males			Females		
	Violent	Nonviolent	<i>t</i>	Violent	Nonviolent	<i>t</i>
Age at onset	13.6	14.7	14.6	13.9	14.7	5.9
Mean number of offenses	6.3	2.2	-24.4	3.2	1.8	-7.5
Severity of all offenses	43.4	8.3	-28.6	15.9	3.6	-14.1
Sellin-Wolfgang index offenses	3.5	1.7	-17.3	1.6	1.2	-5.9
Sellin-Wolfgang nonindex offenses	2.6	1.5	-14.1	1.6	1.1	-5.1
UCR index offenses	3.3	1.7	-14.7	1.5	1.2	-2.2
UCR nonindex offenses	2.8	1.6	-16.0	1.5	1.2	-3.3
Total arrests	4.2	1.2	-23.7	1.6	0.8	-6.7

sible for a great proportion of all cohort offenses. Their 6998 offenses represent 46% of all offenses by cohort delinquents, whereas nonviolent chronic offenders account for 15% of all offenses. In addition, chronics among violent offenders accounted for a greater proportion of offenses by violent offenders than did chronics among nonviolent offenders (81 to 34%). Most importantly, violent delinquents as a group were responsible for the majority of all offenses (57%).

Another measure of the extent of chronicity by each offender group is the crude offense rate per 1000 cohort subjects. Among violent offenders, the offense rate for chronics (532) far exceeds that for nonchronic offenders (109). On the other hand, among nonviolent offenders, nonchronics have a slightly higher rate than chronics (210 to 170). The offense rate for violent chronic offenders is over four times as high (532 to 170) as the offense rate for nonviolent chronic offenders. The majority of violent offenders is high-rate offenders or recidivists and is responsible for a large number of offenses by delinquents in the 1958 cohort.

As indicated in Table IV, even when race is introduced as a control variable, violent delinquents are more likely than nonviolent delinquents to be chronic offenders. This tendency is more pronounced among nonwhite offenders, e.g., 20% of nonwhites are chronic violent offenders. Moreover, the chronic nonwhite violent offenders ($N = 579$) are responsible for 52% of all offenses by nonwhite delinquents. On the other hand, the relationship between type of offender and number of offenses is reversed according to race. Among nonwhites violent delinquents account for the majority of offenses, and in particular, these are attributed to the chronic offenders. In

Table III. Violent and Nonviolent Offenders and Offenses by Delinquent Subgroup

Type of offender	Number and percentage of offenders by subgroup		Percentage of all offenders		Number and percentage of all offenses by subgroup		Percentage of all offenses	Crude offense rate ^a
	N	%	N	%	N	%		
Violent								
One-time	193	14.11	193	2.23	193	2.23	1.26	14.66
Nonchronic	489	35.75	1,435	16.63	1,435	16.63	9.41	109.04
Chronic	686	50.15	6,998	81.12	6,998	81.12	45.89	531.76
Subtotal	1,368	100.00	8,626	100.00	8,626	100.00	56.57	655.47
Nonviolent								
One-time	1,611	54.67	1,611	24.33	1,611	24.33	10.56	122.42
Nonchronic	1,040	35.29	2,769	41.81	2,769	41.81	18.16	210.41
Chronic	296	10.04	2,242	33.86	2,242	33.86	14.70	170.36
Subtotal	2,947	100.00	6,622	68.29	6,622	100.00	43.43	503.19
Total	4,315		15,248	100.00	15,248	100.00	100.00	

^aPer 1000 subjects.

Table IV. Violent and Nonviolent Offenders and Offenses by Race

	Number and percentage of offenders by subgroup		Percentage of all offenders		Number and percentage of all offenses by subgroup		Percentage of all offenses	Crude offense rate ^a
	N	%	all offenders		N	%		
Nonwhite								
Violent								
One-time	150	13.46	5.17		150	2.09	1.32	21.60
Nonchronic	385	34.56	13.26		1135	15.79	10.01	163.45
Chronic	579	51.98	19.94		5901	82.12	52.04	849.80
Total	1114	100.00	38.37		7186	100.00	62.37	1034.85
Nonviolent								
One-time	921	51.48	31.73		921	22.20	8.12	132.63
Nonchronic	674	37.67	23.22		1809	43.50	15.95	260.51
Chronic	194	10.84	6.68		1424	34.30	12.56	205.07
Total	1789	100.00	61.63		4154	100.00	36.93	598.21
White								
Violent								
One-time	43	16.93	3.04		43	2.99	1.10	6.92
Nonchronic	104	40.94	7.37		300	20.83	7.68	48.26
Chronic	107	42.13	7.58		1097	76.18	28.07	176.48
Total	254	100.00	17.99		1440	100.00	36.85	231.66
Nonviolent								
One-time	690	59.59	48.87		690	28.00	17.66	111.00
Nonchronic	366	31.61	25.92		960	38.90	24.56	154.44
Chronic	102	8.81	7.22		818	33.10	20.93	131.60
Total	1158	100.00	82.01		2468	100.00	63.15	397.04

^a Per 1000 subjects.

comparison, among whites a greater proportion of offenses is committed by nonviolent offenders and there is little difference between violent and nonviolent offenders as to the percentage of offenses by one-time, non-chronic, and chronic offenders. The offense rates further support this finding. With the highest offense rate of 850 offenses per 1000 subjects, it is obvious that chronic nonwhite violent delinquents account for a significant proportion of all offenses by cohort delinquents. Although the prevalence rates did not indicate a relationship among race, chronicity, and violence, the incidence and offense rates suggest that nonwhites are more likely than whites to be chronic offenders and to commit a violent offense.

Introducing SES as a control factor makes very little difference (see Table V). Within each subgroup, with the exception of high-SES white offenders, if one compares violent to nonviolent offenders, about 50% of violent offenders are chronics, whereas about 10% of nonviolent offenders are chronics. Among high-SES white violent offenders there is a more even distribution of one-time, nonchronic, and chronic offenders (20, 44, and 37%). Nonetheless, a greater proportion of violent than of nonviolent offenders is chronics. There is a greater proportion of chronic recidivists among nonwhite violent than nonviolent offenders regardless of SES (21 to 7% low and 16 to 6% high). And there is a greater proportion of low-SES than of high-SES nonwhite violent chronic offenders. In addition, a greater proportion of nonwhite than of white low-SES violent offenders is chronics. There is little difference among white offenders within SES in the proportion of violent and nonviolent offenders who are chronics (11 to 9% low SES and 6% high SES). Similar observations can be made with respect to the number of offenses by each subgroup. Among nonwhite males, regardless of SES, a greater proportion of offenses is committed by violent than by nonviolent chronic offenders. Whereas chronic violent offenders account for 54% of offenses, chronic nonviolent offenders account for 12% of offenses by low-SES nonwhite males. Comparing low-SES to high-SES white males it can be seen that there is a larger difference in the number of offenses by chronics between violent and nonviolent high-SES than low-SES offenders (75 to 29% and 78 to 41%). Whereas 31% of offenses by low-SES white males were committed by violent chronic offenders, 25% were committed by nonviolent chronic offenders. Among high-SES white offenders, as among low-SES white offenders, nonviolent offenders account for a greater proportion of offenses than do violent. Moreover, there is little distinction between the proportion of offenses by one-time, nonchronic, and chronic nonviolent offenders and that by chronic violent offenders (19 to 26% each). In sum, despite some variation with respect to race and SES, violent offenders are more likely than nonviolent offenders to be chronics and, therefore, account for a large proportion of all offenses.

Table V. Violent and Nonviolent Offenders and Offenses by Race and SES

	Number of percentage of offenders by subgroup		Percentage of all offenders	Number and percentage of all offenses by subgroup		Percentage of all offenses
	N	%		N	%	
Nonwhite low SES						
Violent						
One-time	117	12.91	5.16	117	1.95	1.27
Nonchronic	312	34.44	13.77	922	15.34	9.99
Chronic	477	52.65	21.05	4970	82.71	53.89
Total	906	100.00	39.98	6009	100.00	65.04
Nonviolent						
One-time	688	50.59	30.36	688	21.39	7.46
Nonchronic	518	38.09	22.86	1398	43.37	15.15
Chronic	154	11.32	6.80	1130	35.14	12.25
Total	1360	100.00	60.02	3216	100.00	34.86
Nonwhite high SES						
Violent						
One-time	33	15.87	5.18	33	2.80	1.56
Nonchronic	73	35.10	11.46	213	18.10	10.07
Chronic	102	49.04	16.01	931	79.10	44.02
Total	208	100.00	32.65	1177	100.00	55.65
Nonviolent						
One-time	233	54.31	36.58	233	24.84	11.02
Nonchronic	156	36.36	24.49	411	43.82	19.43
Chronic	40	9.32	6.28	294	31.34	13.90
Total	429	100.00	67.35	938	100.00	44.35
White low SES						
Violent						
One-time	12	12.00	2.75	12	2.10	0.84
Nonchronic	38	38.00	8.70	112	19.61	7.83
Chronic	50	50.00	11.44	447	78.28	31.24
Total	100	100.00	22.89	571	100.00	39.91
Nonviolent						
One-time	178	52.82	40.73	178	20.70	12.44
Nonchronic	119	35.31	27.23	328	38.14	22.92
Chronic	40	11.87	9.15	354	41.16	24.74
Total	337	100.00	15.97	860	100.00	60.10
White high SES						
Violent						
One-time	31	20.13	3.17	31	3.57	1.25
Nonchronic	68	44.16	6.97	188	21.63	7.59
Chronic	57	37.01	5.83	650	74.80	26.24
Total	154	100.00	15.97	869	100.00	35.08
Nonviolent						
One-time	512	62.36	52.41	512	31.84	20.67
Nonchronic	247	30.09	25.28	632	39.30	25.51
Chronic	62	7.55	6.34	464	28.86	18.73
Total	821	100.00	84.03	1608	100.00	64.91

3.2. Type of Offense

The earlier analyses have shown that chronic violent offenders were responsible for a greater proportion of offenses than chronic nonviolent offenders, but the type of offense was not considered. Looking at Table VI it is evident that not only do violent offenders commit the more serious

Table VI. Type of Offense by Violent and Nonviolent Offenders by Delinquent Subgroup by Race

Type of offender	SW index			UCR index		
	Number of offenses	Percentage by subgroup	Percentage by all delinquents	Number of offenses	Percentage by subgroup	Percentage by all delinquents
Violent						
One-time	186	4.0	2.35	141	3.4	2.35
Nonchronic	845	18.0	12.32	693	16.9	11.56
Chronic	3638	77.9	53.04	3272	79.7	54.56
Total	4669	100.0	68.07	4106	100.0	68.47
Nonviolent						
One-time	477	21.8	6.95	379	20.1	6.32
Nonchronic	840	38.4	12.25	680	36.1	11.34
Chronic	873	39.9	12.73	826	43.8	13.77
Total	2190	100.0	31.93	1885	100.0	31.43
Nonwhite						
Violent						
One-time	143	3.6	2.66	120	3.4	2.48
Nonchronic	674	17.2	12.56	587	16.5	12.14
Chronic	3111	79.2	57.95	2854	80.1	59.04
Total	3928	100.0	73.19	3561	100.0	73.66
Nonviolent						
One-time	304	21.1	5.66	247	19.4	5.11
Nonchronic	569	39.5	10.60	486	38.2	10.05
Chronic	567	39.4	10.56	540	42.4	11.17
Total	1440	100.0	26.82	1273	100.0	26.33
White						
Violent						
One-time	43	5.8	2.88	21	3.9	1.82
Nonchronic	171	23.1	11.47	106	19.4	9.16
Chronic	527	71.1	35.35	418	76.7	36.13
Total	711	100.0	49.70	545	100.0	47.10
Nonviolent						
One-time	173	23.1	11.60	132	21.6	11.41
Nonchronic	271	36.1	18.18	194	31.7	16.77
Chronic	306	40.8	20.52	286	46.7	24.72
Total	750	100.0	50.30	612	100.0	52.90

offenses, but it is chronic violent offenders rather than chronic nonviolent offenders who commit the majority of index offenses. For example, of 68% of Sellin-Wolfgang (SW) index offenses by violent offenders, 53% were committed by chronics, in comparison to 13% by chronic nonviolent offenders (see Table VI). Moreover, within each subgroup there is further evidence of differences between violent and nonviolent offenders. Chronics among violent offenders committed 78% of SW index offenses, but chronics among nonviolent offenders committed 40% of SW index offenses. As noted in prior analyses there is a significant racial difference. Clearly, nonwhite chronic violent males commit the majority of serious crimes (58%). However, there is less difference between violent and nonviolent offenders among white males (50% each of SW index offenses). Similarly, for UCR index offenses, of 60% committed by violent offenders, the majority was committed by chronics (55%). Regardless of whether one is measuring UCR index or SW index offenses, it is important to note that both include violent offenses. Thus, it is not surprising that violent offenders were responsible for the majority of both SW index and UCR index offenses.

3.3. Violent Recidivism

Of greater interest is the case of the violent recidivist who commits two or more violent offenses. As shown in Table VII there is a smaller probability of repetition of a violent offense than of a nonviolent offense during a criminal career. Only 38% of male delinquents who have committed one violent offense go on to commit another. Yet after two violent offenses 50% commit three or more violent offenses, and after a third violent offense the probabilities remain high for continued repetition for a violent offense. As might be expected from earlier results which show a racial difference, violent

Table VII. Conditional Probability of Committing a Violent Offense by Race

<i>k</i> (number of offenses)	Total	Nonwhite	White
1	0.3170	0.3837	0.1800
2	0.3779	0.4138	0.2205
3	0.4913	0.5119	0.3214
4	0.5157	0.5254	0.3889
5	0.5496	0.5726	0.1429
6	0.6250	0.6250	
7	0.5333	0.5227	
8	0.7083	0.6957	
9	0.4706	0.4375	
10+	0.8750	0.8571	

recidivism is more likely among nonwhite than white males. Nonetheless, when violent delinquents are categorized as one-timers and recidivists, it can be seen that the majority of males (62%) commits one violent offense (Table VIII). Few delinquents committed more than five violent offenses,

Table VIII. Violent Offenders and Violent Offenses

Number of violent offenses	Offenders		Violent offenses		Crude violent offense rate ^a
	N	%	N	%	
All Violent offenses					
One	851	62.21	851	33.89	64.67
Two or more	517	37.89	1660	66.11	126.14
Total	1368	100.00	2511	100.00	
Violent recidivists only					
	% of recidivists		% by violent recidivists		
Two	263	50.87	526	31.69	39.97
Three or more	254	49.13	1134	68.31	86.17
Total	517	100.00	1660	100.00	
By race					
All violent offenders					
Nonwhites					
One-time violent	653	58.62	653	30.09	94.03
Recidivists	461	41.38	1517	69.91	218.46
Total	1114	100.00	2170	100.00	
Whites					
One-time violent	198	77.95	198	58.06	31.85
Recidivists	56	22.05	143	41.94	32.01
Total	254	100.00	341	100.00	
Violent recidivists only					
	% of recidivists		% by violent recidivists		
Nonwhites					
Two violent offenses	225	48.81	450	29.66	64.80
Three or more	236	51.19	1067	70.34	153.66
Total	461	100.00	1517	100.00	
Whites					
Two violent offenses	38	67.86	76	53.15	12.23
Three or more	18	32.14	67	46.85	10.78
Total	56	100.00	143	100.00	

^aRate per 1000 subjects.

but among recidivists, 49% committed three or more. Looking at the number of violent offenses committed by violent offenders supports the hypothesis that violent recidivists are responsible for a great amount of social harm. As can be seen in Table VIII male recidivists represent only 38% of the violent offenders but they were responsible for 66% of the violent offenses. Although almost an equal proportion of recidivists commits only two violent offenses, they are responsible for the majority of violent offenses.

Analyzing the data separately by race, it is evident that nonwhites are more likely than whites to be violent recidivists and, consequently, are responsible for a larger proportion of violent offenses. As shown in Table VIII, whereas 42% of nonwhites are violent recidivists and commit 70% of the violent offenses, 22% of whites are violent recidivists and commit 42% of the violent offenses. Looking at the violent offense rates, it can be seen that nonwhites commit a greater proportion of violent offenses.

These relationships change slightly when controlling for SES (see Table IX). Although a greater proportion of nonwhites than whites is violent recidivists, the proportion of recidivists decreases for high-SES nonwhite offenders, e.g., 43% of nonwhite low-SES offenders are violent recidivists, in comparison to 35% of high-SES nonwhite offenders. The same pattern is found with regard to the number of violent offenses accounted for by low- and high-SES nonwhite offenders. Differences can also be seen with respect to nonchronic and chronic recidivists. Again, among nonwhites there is a decrease in the proportion of chronics as compared to nonchronics from low SES to high SES. There is an even bigger difference among whites, and the shift is opposite that for nonwhites. High-SES whites are more likely than low-SES whites to be chronic recidivists (38 to 25%). Furthermore, this means a smaller gap between high-SES whites and nonwhites and a larger gap between low-SES whites and nonwhites. There is a corresponding difference in the proportion of violent offenses accounted for by each subgroup. Even though nonwhite chronic recidivists who commit three or more violent offenses account for a greater proportion of violent offenses than do white recidivists, there is a greater difference between white low-SES and high-SES chronics as opposed to nonchronics than nonwhite low- and high-SES chronics and nonchronics. For example, 71% of violent offenses are accounted for by nonwhite low-SES chronics, in comparison to 63% by nonwhite high-SES and 41 and 51%, respectively, by white low- and high-SES chronics. It is important to note here that the direction of this difference is reversed for whites and nonwhites. A greater proportion of high-SES than of low-SES whites is violent chronic recidivists, but a greater proportion of low-SES than of high-SES nonwhites is chronic recidivists. SES, then, appears to be a factor which influences violent recidivism for both races. Nonetheless, violent recidivism remains highest among low-SES nonwhite males, as did chronicity.

Table IX. Violent Offenders and Violent Offenses by Race and SES

Number of violent offenses	Offenders		Violent offenses	
	<i>N</i>	%	<i>N</i>	%
Nonwhite low SES				
One	517	57.06	517	28.30
Two or more	389	42.94	1310	71.70
Total	906	100.00	1827	100.00
White low SES				
One	76	76.00	76	55.47
Two or more	24	24.00	61	44.53
Total	100	100.00	137	100.00
Nonwhite high SES				
One	136	65.38	136	39.65
Two or more	72	34.62	207	60.35
Total	208	100.00	343	100.00
White high SES				
One	122	79.22	122	59.80
Two or more	32	20.78	82	40.20
Total	154	100.00	204	100.00
Violent recidivists only				
Nonwhite low SES				
Two violent offenses	187	48.07	374	28.55
Three or more	202	51.93	936	71.45
Total	389	100.00	1310	100.00
White low SES				
Two violent	18	75.00	36	59.02
Three or more	6	25.00	25	40.98
Total	24	100.00	61	100.00
Nonwhite high SES				
Two violent	38	52.78	76	36.71
Three or more	34	47.22	131	63.29
Total	72	100.00	207	100.00
White high SES				
Two violent	20	62.50	40	48.78
Three or more	12	37.50	42	51.22
Total	32	100.00	82	100.00

3.4. Violent Recidivism and Chronicity

The earlier analyses have shown that violent offenders are more likely than nonviolent offenders to be chronic offenders and that violent recidivism is concentrated among a small group of offenders. Prior researchers have argued that a selective incapacitation policy can be justified on the grounds that a small group of chronic offenders commits the majority of injury and index offenses. Is it also true that violent recidivists are likely to be chronic

offenders? One might view the finding of prior researchers that chronics commit the majority of injury offenses and index offenses from a different perspective and conjecture that violent recidivists would be chronic offenders. As shown in Table X, a small percentage of cohort delinquents is violent recidivists ($N = 517$, or 12%), but they are responsible for 34% of all offenses. Half of these violent recidivists are chronics and are responsible for 32% of all offenses. It is also evident that most of the chronic offenders are violent recidivists. Among one-time violent offenders ($N = 850$), 46% were nonchronics and 32% were chronics. Moreover, of those offenders who committed three or more violent offenses, 95% were chronic offenders and committed 3207 offenses. These 242 chronically violent recidivists represent 6% of the delinquents, yet were responsible for 21% of all offenses. This relationship between violent recidivism and chronicity is confirmed by different offense rates. Whereas chronic offenders with one violent offense have a crude offense rate of 164 offenses per 1000 cohort subjects, chronic violent recidivists have a crude rate of 368 offenses per 1000 cohort subjects. From the above data, chronicity and violence seem to be clearly interrelated.

3.5. Prediction of Violent Recidivism

A selective incapacitation policy would seem to be indicated if it were possible to identify violent recidivists who are likely to be chronic offenders. If certain factors could be used to predict potentially chronic violent recidivists, incapacitating the chronic offender may prevent a great proportion of crimes, both serious and nonserious.

Beyond the use of multivariate contingency table analysis to examine the relationship between chronicity and violent recidivism, earlier analyses used regression to determine if a linear relationship could be found between independent variables and recidivism. None of the variables entered into the equations explained enough of the variance in the total number of offenses by violent offenders (see Piper, 1983). In addition, it was found that the distribution of total number of violent offenses was so skewed that a multiple regression was meaningless. Nonetheless, a linear relationship was found between age at onset of delinquency and total number of offenses and total number of violent offenses (Piper, 1983).

Further analysis, shown in Table XI, consisted of a logistic regression analysis to predict recidivism as a dichotomous dependent variable. The independent variables entered into the equation included race, SES, age at onset, seriousness of the first violent offense (measured by the Sellin-Wolfgang seriousness score), and whether the first offense in a delinquent's career was violent or nonviolent, as well as interactions between these

Table X. Offenders and Offenses by Violent Offender Type and Delinquent Subgroup

Violent offender type	Offenders			Offenses			Crude offense rate
	N	%	Percentage of all offenses	N	%	Percentage of all offenses	
One-timer	193	22.68	4.47	193	5.59	1.36	14.66
One-time	388	45.59	8.99	1104	31.99	7.24	83.89
Nonchronic	270	31.73	6.26	2154	62.42	14.13	163.68
Chronic	851	62.21	19.72	3451	40.01	22.63	262.23
Total							
Violent recidivists	101	19.54	2.34	331	6.40	2.17	25.15
Nonchronic	416	80.46	9.64	4844	93.60	31.77	368.09
Chronic	517	37.79	11.98	5175	59.99	33.94	393.24
Total							
Violent recidivists only							
Two violent offenses	89	33.84	2.06	285	14.83	1.87	21.66
Nonchronic	174	66.16	4.03	1637	85.17	10.74	124.39
Chronic	263	19.22	6.09	1922	22.28	12.61	146.05
Total							
Three or more violent offenses	12	4.72	0.28	46	1.41	0.30	3.49
Nonchronic	242	95.28	5.61	3207	98.59	21.03	243.69
Chronic	254	18.57	5.89	3253	37.71	21.33	247.18
Total							

Table XI. Prediction of Violent Recidivism Among Males Using Logistic Regression^a

Variable	χ^2	<i>P</i>	<i>d</i>
Age at onset	97.24		0.066
Race	32.89		0.024
SES	17.20		0.012
Seriousness of first violent offense	0.02	0.90	
Violent offense first	28.06		0.020
Age and race	3.66	0.06	0.003
Age and SES	24.55		0.018
Race and SES	1.05	0.30	0.001
Age, race, and SES	2.45	0.12	0.002
Age and seriousness of first violent offense	4.25	0.04	0.003
Race and seriousness of first violent offense	4.74	0.03	0.003
SES and seriousness of first violent offense	5.82	0.02	0.004
Age, race, and seriousness of first violent offense	0.35	0.55	
Age, SES, and seriousness of first violent offense	9.76		0.007
SES, race, and seriousness of first violent offense	0.69	0.41	0.001
Age and violent offense first	35.42		0.025
Race and violent offense first	8.64		0.006
SES and violent offense first	17.90		0.013
Age, race, and violent offense first	13.20		0.010
Age, SES, and violent offense first	18.85		0.014
Race, SES, and violent offense first	3.86	0.05	0.003

Logistic regression model

Variable entered	β	SE	χ^2	<i>P</i>	<i>d</i>
Intercept	1.82	0.374	23.66	0.00	
Age at onset	-0.02	0.002	70.03	0.00	0.05
Race	0.91	0.170	28.82	0.00	0.02
Violent offense first	-0.35	0.130	7.19	0.01	0.01

Classification table

True	Predicted		
	One-time	Recidivist	Total
One-time	748	103	851
Recidivist	373	144	517
Total	1121	247	1368

^aSensitivity = 27.9%; specificity = 87.9%; false positive = 41.7%; false negative = 33.3%; correct = 65.2%; predictive accuracy = 0.1116.

variables. As can be seen in Table XI the only significant factors were the main effects of age, race, and first offense as violent. However, the results also show that the model is not a good fit to the data, as only 65% of the observations can be correctly predicted. In addition, the false-positive rate

and false-negative rate were very high (42 and 33%). Whereas 517 of the violent offenders were recidivists, the procedure using race, age at onset, and violent offense first identified 247 offenders as violent recidivists, almost half of which were one-time offenders. These results suggest that more information must be known to differentiate between one-time violent and recidivist violent offenders. Further analyses should also focus on differentiating between chronic and nonchronic violent recidivists.

4. CONCLUSION

These preliminary descriptive analyses examining the criminal careers of violent and nonviolent delinquents in the 1958 Philadelphia cohort have supported the results of prior research and provide insight into the relationship between chronicity and violence.

First, it was shown that violent offenders are more likely than nonviolent offenders to be high-rate or chronic offenders. This might be explained by the findings of Miller *et al.* (1982) that violent offenders tend to intersperse violent offenses among other offenses in a criminal career. However, it also raises a question as to the effectiveness of the criminal justice system. Does the fact that violent offenders continue to repeat crimes mean that the sentences for violent offenses are too lenient, or are they working to deter repetition of a violent crime?

Second, in accordance with prior research by Wolfgang *et al.* (1972) and by Hamparian *et al.* (1978), a small number of chronic offenders appear to be responsible for the majority of serious crime. The 686 chronic violent offenders, who are 16% of delinquents, accounted for 81% of all offenses by violent offenders and 46% of all offenses, 53% of SW index crimes, and 55% of UCR index crimes by cohort delinquents. The chronic nonviolent offenders were disproportionately smaller and committed fewer index offenses. As suggested by Guttridge *et al.* (1983), the greater the number of prior offenses, the more likely one is to commit a violent offense. One explanation may be earlier age at onset of a criminal career for violent offenders. However, the data do not explain whether high rates of offenses lead one to commit a violent offense or if further offenses follow from a violent offense.

Third, in connection with the above finding, the data indicate that violent recidivism is associated with high-rate offending or chronicity. This implies that a policy of selective incapacitation should focus on the small number of violent recidivists because they are most likely to be high-rate offenders and they are responsible for a majority of all offenses causing serious harm to the community. In the present study, however, there are not enough indicators with which to predict violent recidivism. The high

rates of false positives and false negatives as well as the poor fit of the model tested suggest that other variables must be included into the model.

Finally, a relationship was found between the independent background variables of race and socioeconomic status and the dependent variables of violent recidivism and chronicity. Nonwhites were more likely than whites to be violent and to recidivate. As noted by Schuster (1981, p. 111), "the relationship between race and crime, especially violent crime, continues to be a controversial one." Some researchers contend that official records distort the racial and SES differences. It is argued that overrepresentation of low-SES blacks (nonwhites) is a function of police practices. In his study Schuster found that blacks (nonwhites) were overrepresented in the violent cohort but there was little difference between black (nonwhite) and white violent offenders. He suggested that there may be a greater difference with respect to the SES of violent offenders. The results of the present study appear to contradict those of Schuster. This contradiction may be due to differences in the population base of the Philadelphia and Ohio cohorts. Nonetheless, there seems to be a disproportional involvement by nonwhites in violent crime and a greater likelihood of recidivism and chronicity. This finding does not imply, however, that the criminal justice system should necessarily focus its efforts on nonwhite or low-SES offenders.

The present study has examined only a small part of the relationship between violent recidivism and chronicity. One limitation of this study is the fact that few social structural factors, with the exception of race and SES, were introduced to explain the relationship between violent recidivism and chronicity. Although it would appear that a policy of selective incapacitation should be based upon research of our criminal justice system, the present study does not adequately support such a policy, and further study is needed. Further research using legal variables should address the issues of (1) prediction of violent behavior and (2) processing of juveniles by the criminal justice system.

This study has also not considered alternative hypotheses which may lead to policies which provide solutions to the problem of violent crime. As proposed by Wolfgang and Ferracutti (1967), there may be a subculture of violence, i.e., a normative system which promotes the overt expression of violence. Yet this proposition is difficult to test because it is necessary to measure the cultural values and psychological traits. Another subcultural approach focuses on gang membership as an explanatory factor in violent crime. Yablonsky (1970) contends that youths join "near-groups" because they feel alienated from society. The use of overt violence is related to the emotional disorders of the gang members and to the sociopathic character of the gang leader. In addition, Yablonsky suggests that the social disorganization of the neighborhood slum produces the violent gang. A similar

point of view has been expressed by Curtis (1974). The fact that violent crimes are committed mainly by the young, poor, black (nonwhite) male is associated with economic and sociocultural factors such as overcrowding, poverty, high unemployment, poor schools, neighborhood problems of fighting and drinking or drugs, loosely structured families, and in general, the social disorder of the ghetto slum. In order to explain violent crime these theoretical propositions point to problems in the larger society which are difficult to quantify and study, and given such information any change in the social structure would appear to be a monumental task.

Several questions remain unanswered. For example, how is the relationship affected by the age at onset and age at first violent offense? Do one-time violent offenders not become chronics because they begin their careers at a later age than violent recidivists? What patterns can be found in the careers of violent one-time offenders which differentiate them from recidivists? Are they arrested more often or do they commit a violent offense as their first offense? Are chronics more likely to commit several offenses before engaging in violent crime? What is the relationship between offense disposition and further criminal behavior? Finally, is it possible to predict violent recidivism or chronicity based on patterns in the juvenile's delinquency career?

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