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**A Longitudinal Examination of the Relation between
Co-offending with Violent Accomplices and Violent Crime**

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MANUSCRIPT UNDER REVIEW

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A Longitudinal Examination of the Relation between
Co-offending with Violent Accomplices and Violent Crime

ABSTRACT

Although the idea that youthful offenders are affected by the company they keep is widely accepted, evidence in support of this idea is based primarily upon reports provided by offenders and their peers. There is good reason, however, to suspect that this method overestimates the role that peers play in criminal behavior. As an alternative to relying on reports of criminal behavior, the current research on co-offending uses court records to identify and track over time individuals who are known to commit crimes together. The present investigation is the first co-offending study to track patterns of violent criminal behavior (over an 18-year period) among a sample of urban offenders and their accomplices. The study tests whether violence "spreads" from violent offenders to those inexperienced in violence. Results indicate that non-violent offenders who commit their first co-offense with violent accomplices are at increased risk for subsequent serious violent crime. Findings suggest that lessons of violence can be learned "on the street," where knowledge is passed along through impromptu social contexts,

FINAL REPORT

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1

including those in which offenders commit crimes together.

Introduction

The idea that youthful offenders are affected by the company they keep is central to numerous explanations of criminal and delinquent behavior including differential association theory [Sutherland, 1947; Sutherland & Cressey, 1974], social learning theory [Akers, 1973, 1977, 1985; Bandura, 1973, 1977; Burgess and Akers, 1966; Glaser, 1978; Jeffery, 1965], strain theory [Cloward & Ohlin, 1960; Cohen, 1955], subcultural theory [Wolfgang & Ferracuti, 1967/1982], and the integrated theories of Elliott [Elliott, Ageton, & Cantor, 1979; Elliott, Huizinga, & Ageton, 1985] and Thornberry [1987; Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994]. Empirical support for the notion has come from a myriad of studies showing that young criminals tend to report having friends who also engage in crime and delinquency [Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Elliott, Huizinga, & Ageton, 1985; Erickson & Empey, 1965; Jensen, 1972; Matsueda & Heimer, 1987; Tittle, Burke, & Jackson, 1986; Voss, 1964; Warr & Stafford, 1991] and that offenders and their friends are similar in terms of their criminal experience and the types of crimes that they commit [Agnew, 1991; Elliott & Ageton, 1980; Elliott et al., 1985; Fagan, Piper, & Moore, 1986]. In general, peers are believed to contribute to criminal behavior both directly and indirectly through such complex mechanisms as modeling and by providing opportunities for crime.

Although few studies of peer influence have focused on violence, the available research suggests that violent offenders are inclined to have violent friends. Analyzing data from the Seattle (Washington) survey of 374 teenage males, Conger [1976] found that respondents who admitted having assaulted someone were more likely to report that their friends have also assaulted someone ($\tau = .40$) than to report that their friends have committed nonviolent crimes – extortion ($\tau = .22$), vandalism ($\tau = .31$), or petty theft ($\tau = .21$). Morash [1983] asked 535 youths from two sections of Boston to report on the number of crimes that they and their friends had committed during the previous year. Respondents' involvement in crime correlated strongly ($r = .58$) with their accomplices' criminality and seriousness scores for specific violent crimes (e.g., assault, threat to persons, group fighting).

Although findings such as these have typically been interpreted to support the hypothesis that friends teach one another to become criminals, the evidence is based primarily upon offenders' reports of their own conduct and that of their

friends. Yet, there is good reason to believe that this sort of data overestimates the role that peers play in criminal behavior. The social psychological principle of projection, for example, refers to the fact that people project their own attributes and behaviors onto others [Holmes, 1968; Marks & Miller, 1987; Mullen et al., 1985]. In addition, studies from the substance use literature that have compared perceived reports of a friend's behavior to the actual behavior as reported by the friend have found that perceived reports were significantly more strongly correlated with alcohol and smoking behaviors than were actual reports [Bauman & Fisher, 1986; Iannotti & Bush, 1992; Urberg, Shyu, & Liang, 1990]. To the extent that such a bias occurs when adolescents describe the criminal behavior of their friends, the degree of interpersonal influences on crime and violence will be overestimated. One notable exception to relying on peer reports is a study by Reiss and Rhodes [1964], who obtained self-reports of criminal behavior since age 10 from 378 Caucasian adolescent males and their two closest friends from 45 public and private schools in Tennessee. Of the 52 respondents who reporting having committed an assault, 65% of their friends also admitted having assaulted someone; of the 247 who denied having engaged in assault, only 19% of their friends reported having assaulted someone.

Several studies of co-offending have used court records to identify and track over time individuals who are known to commit crimes together.

Unfortunately, three of the four major studies of co-offending have not examined whether co-offending affects patterns of violent crime. Reiss' [1988] study of co-offending in Peoria (Illinois) focused entirely on juvenile residential burglary, and only 15% of the 683 crimes committed by the co-offending subjects in the Cambridge Study in Delinquent Development [Reiss & Farrington, 1991] were violent (i.e., robbery, assault, threatening behavior, and possession of an offense weapon). Likewise, Sarnecki's [1986] study of co-offending in Sweden comprised offenders who, by and large, committed non-violent crimes; 80% of all crimes were against property (e.g., vehicle theft, burglary) and 4.8% were violent (e.g., murder, rape, robbery, assault).

Evidence linking co-offending to violence has begun to emerge from a longitudinal study of 400 juveniles and their accomplices who were apprehended in Philadelphia between 1976 and 1994. Results indicate that the same juvenile offender was more likely to behave in a violent manner (e.g., shooting, stabbing, punching, kicking) towards the victim(s) when committing crimes with others than when committing crimes alone [Conway & McCord, 1995], that juveniles who committed at least some of their crimes in groups (i.e., 3 or more offenders) perpetrated more violent crimes than those who committed none of their crimes in groups [McCord & Conway, 1996a, 1996b], and that offenders who initially offended before age 13 committed more violent crimes (aggravated assault, attempted murder, rape, robbery) if they committed at least 25% of their crimes with accomplices ($M = 2.2$) than if they committed fewer than one-quarter of their crimes with others ($M = 1.0$) [McCord & Conway, in press].

In an attempt to further inform and advance the literature on co-offending and violence, the present study tracks through time the patterns of criminal behavior among a sample of offenders and their accomplices in order to test

whether violence can be passed down from violent criminals to offenders who are inexperienced in violence – presumably through a variety of socialization mechanisms. In particular, we predict that non-violent offenders who either commit their first co-offense with at least one violent accomplice or commit a violent crime as their first co-offense (compared to individuals who are not similarly exposed to violence) will: (1) commit a greater proportion of violent crimes after their first co-offense, and (2) be more likely to commit a violent crime after their first co-offense. We test our hypothesis among a sample of youthful offenders because it is during adolescence when co-offending is most pervasive [Breckinridge & Abbott, 1917; Empey, 1967; Erickson, 1971; Hindelang, 1976; Reiss, 1988; Reiss & Farrington, 1991; Shaw, 1931] and when peer influence on antisocial behavior may be most potent [Berndt, 1979; Brown, 1982; Brown, Clasen, & Eicher, 1986; Farrington, 1992; Patterson et al., 1989; Snyder, Dishion, & Patterson, 1986].

METHOD

SAMPLE

The data for the present study were originally collected for "Delinquent Networks in Philadelphia: Co-Offending and Gangs."¹ Participants for the original study included a random sample of offenders and the universe of their known accomplices.

Random Sample

The random sample of offenders was identified through random selection from all official records of arrest ($N = 60,821$) for offenders under age 18 in Philadelphia during 1987. A random number generator was used to pull names of arrested people until 200 offenders who committed a crime alone and 200 offenders who committed a crime with an accomplice had been identified. The first drawing of a person made that person ineligible for another selection. Thus no person entered the pool through selection for both a crime committed alone and one committed with an accomplice. Relying on the 1987 crime as a point of reference, to assure complete coverage of juvenile records, all crimes committed by offenders between January 1976 to December 1994 were reviewed.

Target Sample

¹ The study was funded by a grant (92-IJ-CX-K008) from the National Institute of Justice, awarded to Professor Joan McCord, Department of Criminal Justice, Temple University.

The sample for the present study includes 235 subjects from the original sample of 400, hereafter referred to as the target sample. Sixty-five subjects were excluded because they committed no co-offenses, having committed all of their crimes alone. Seventy additional cases were dropped because insufficient information was available about any of their accomplices (i.e., the name of the accomplice was missing, incomplete, or represented an unidentifiable alias). Finally, 30 subjects were eliminated because they committed a violent solo crime prior to their first co-offense. These latter subjects, having already engaged in violence, were dropped in order to study whether having violent accomplices influenced the onset of violence, i.e. violent behavior among subjects with no known prior violent crime.

The majority of the 235 target offenders were black and male (see Table 1). At the point of their first crime known to police, the subjects ranged in age from 6 to 17. The mean and median age of offenders was 14, and the modal age was 15.

----- Insert Table 1 About Here -----

Accomplice Sample

For the present study, members of the accomplice sample included only those 510 co-offenders involved in the target offenders' first co-offense. The number of accomplices in each first co-offense ranged from 1 to 14, with an average of 2.17 (SD=1.59). A single accomplice was involved in 41.7% of the first co-offenses, a pair of accomplices in 29.8%, three accomplices in 13.6%, and at least four accomplices in 14.9% of the cases. Of the 510 accomplices involved in a first co-offense, 17 (3.3%) were involved in at least two offenses.

Crime data were obtained for 381 (77%) of the 493 different accomplices. Crime data were unavailable for approximately one-quarter of the accomplices because the name of the accomplice was missing, incomplete, or could not be matched to a known offender with a criminal record. The 381 identified accomplices were nearly all male (91%) and most were black (69%) (see Table 2).

----- Insert Table 2 About Here -----

PROCEDURE

Crime data for the target offenders and the identifiable accomplices were collected from Philadelphia court records and "rap sheets." All recorded crimes committed by offenders between January 1976 and December 1994 were reviewed.

The court records included information about individuals who had been processed by the criminal justice system, providing descriptions of crimes that resulted in arrest as well as those reported to police that did not result in arrest (i.e., criminal complaints). Provided by complainant(s), victim(s), witness(es) and police, the information from the court records describe criminal incidents (e.g., type, location, occurrence of violence) and accomplices (e.g., name, age, race, sex, address). Crime data from the court records were gathered for all members of both the target sample and the accomplice sample.

Our second source of crime data was rap sheets, which provide information about crimes processed by the adult court system. Rap sheets are computerized lists that detail offenders (e.g., name, court identification number, date of birth, race, sex, address) and crimes committed by offenders (e.g., date of arrest, list of criminal charges per crime, court disposition per crime, and district control number). Because rap sheets lack information about co-offending (e.g., whether crimes are co-offenses, data about accomplices), court records were relied upon when possible. Rap sheets were obtained for all adult members of the accomplice sample, and for 161 (69%) members of the target sample. The 74 members of the target sample for whom rap sheets were not found were considered to have committed no crimes as adults in Philadelphia.

The measures of criminality (described in detail below) were based on incidents for which the Philadelphia police assigned a complaint number. Individuals were considered to have committed a crime if they were issued a complaint number on court records or rap sheets.² In cases where more than one charge was made for a particular criminal incident, we coded the most serious one (see Appendix A). For example, if an offender was charged with robbery,

² Strengths and limitations of relying on court records and rap sheets are reviewed in the Discussion section.

aggravated assault, and theft, then we coded robbery because it is the most serious charge.

The primary independent variable, Co-Offending with Violent Accomplices, was coded for each member of the target sample. Target offenders were considered to be co-offenders with violent accomplices if one or more of their accomplices had previously committed murder, attempted murder, rape, robbery, or aggravated assault or if the most serious charge for the first co-offense was murder, attempted murder, rape, robbery, or aggravated assault. Relying on this criterion, 139 subjects (59%) either committed the first co-offense with a violent accomplice or committed a violent crime as a first co-offense; 96 subjects (41%) neither committed the first co-offense with a violent accomplice nor committed a violent crime as a first co-offense.

For all members of the target sample, crimes committed after the first co-offense were merged to create the two primary dependent variables. The Proportion of Violent Crimes represents the percentage of all crimes that were violent (i.e., number of violent crimes / total number of crimes) after the first co-offense, and Ever Violent indicates whether or not members of the target sample committed at least one violent crime after the first co-offense.

Because age at first crime has been shown to predict violence for subjects in this study [Conway & McCord, 1995; 1997; McCord & Conway, in press] and

in others [Farrington, 1983; Glueck & Glueck, 1950; Goring, 1913; McCord, 1980; Wolfgang, Figlio, & Selin, 1972], our analyses included the age at which the offenders committed their first crime. The age at first crime ranged from 7 to 17, with a mean of 13.8 (SD=2.0), a mode of 15, and a median of 14. The gender of the target offenders was also included as a covariate.

Reliability Estimates

Estimates for inter-rater reliability (determined from analyses previously performed on the original sample of 400 offenders) were very high for all variables used in this study. To determine reliability, 40 cases (10%) were randomly selected and coded by two independent judges. The 40 subjects selected for reliability committed 167 crimes. Reliability estimates across cases and across crimes appear in Table 3. The degree of agreement across judges is reflected by the number and percent of cases of perfect agreement, the point-biserial correlation (r_{pb}) for continuous variables, and the phi statistic (ϕ) for categorical variables.

----- Insert Table 4 About Here -----

RESULTS

Preliminary Analyses

The target offenders committed a wide range of crimes as a first co-offense. Of the 235 first co-offenses, 37.5% were violent crimes: rape ($n=2$), robbery ($n=65$), and assault ($n=21$). Just over half (53.6%) of the first offenses were serious property crimes: burglary ($n=63$), vehicle theft ($n=23$), non-vehicle theft ($n=38$), and arson ($n=2$). The remaining offenses were drug crimes ($n=13$), weapons violations, ($n=5$) and criminal trespassing or vandalism ($n=3$).

After their first co-offense, the target offenders committed a total of 1,752 crimes, of which 522 (30%) were violent. They averaged 7.46 ($SD = 6.61$) crimes and 2.22 ($SD = 2.70$) violent crimes after the first co-offense.

The subjects who were excluded from the study were compared to those who were included, in terms of age at first crime, number of crimes, and number of violent crimes (see Table 4). As reported elsewhere [McCord & Conway, in press], the subjects who never co-offended were older at the time of their first crime, committed fewer crimes overall, and perpetrated fewer violent crimes. The offenders who were dropped because no information was available about their accomplices did not differ substantially from the remaining 235 subjects. The subjects who committed prior solo violent crimes started at younger ages and tended to commit more violent crimes, though fewer crimes overall.

----- Insert Table 4 About Here -----

The number of accomplices involved in each first co-offense varied somewhat by type of crime. On average, there were 2.42 (SD=2.03) accomplices per violent crime, 2.09 (SD=1.25) per serious property crime, 1.46 (SD=0.88) per drug crime, and 2.00 (SD=1.60) accomplices per the remaining crimes. A comparison of the mean number of accomplices involved with violent crimes to that of the non-violent crimes combined was not significant, $t(127) = 1.64$, $p = .1029$.

The accomplices were remarkably similar to the target offenders with respect to ethnicity, gender, and age. Among the target offenders who were black, 96.1% of their accomplices were also black, 1.6% were white, and 2.4% were Hispanic or "other." Among the white target offenders, 83.3% of their accomplices were white, 15.3% were black, and 1.4% were Hispanic or "other." And among the target offenders identified as Hispanic or "other" ethnicity, 83.4% of their accomplices were either Hispanic or "other," 16.7% were black, and none were white. Target offenders and their accomplices were homogeneous with respect to gender as well. Nearly all (95.5%) of the accomplices of male target offenders were male; 80.6% of the accomplices of the female target offenders were female. Overall, only 9 of the first co-offenses included both males and females. Regarding the age of the target offenders relative to that of their accomplices, the

target offender was usually the youngest member of the co-offending group. Of the 235 first co-offenses, the target offender was the youngest in 62.6% of the cases, the oldest in 19.2%, the same age as their accomplices in 11.1%, and in between the ages of their accomplices in the remaining 7.2%. The difference in age between the target offenders and their accomplices ranged from 0 to 18 years, with the vast majority of target offenders being no more than 4 years younger or older than their accomplices. The difference in age among target offenders and their accomplices was less than one year for 11.1% of the cases, between one and two years for 47.2%, three and four years for 25.1%, and at least five years for 16.6%.

Results

The number of offenders, means, and standard deviations for the proportion of violent crimes after the first co-offense, by age at first crime and exposure to violent accomplices, appear in Table 5. Using the General Linear Models procedure of the Statistical Analytic Software package [SAS, 1996], analysis of variance (ANOVA) was performed with the proportion of violent crimes after the first co-offense serving as the dependent variable, co-offending with violent accomplices as the independent variable, and the target offender's gender and age at first crime as covariates. Results indicate that target offenders whose first co-offense involved violent accomplices subsequently committed a

higher proportion of violent crimes than did those not so exposed ($F_{(1,234)} = 4.87, p = .028$), after accounting for gender ($F_{(1,234)} = 4.34, p = .038$) and the age at first crime ($F_{(8,234)} = 0.91, p = .506$). In addition, although the means in Table 5 differ somewhat by age at first crime, the interaction between age at first crime and co-offending with violent accomplices was not significant ($F_{(7,234)} = 0.80, p = .586$)

----- Insert Table 5 About Here -----

Table 6 presents the number and percent of offenders who ever committed a violent crime after the first co-offense, by age at first crime and exposure to violent accomplices. Because the dependent variable was categorical, a logistic regression [CATMOD, SAS, 1996] was performed. In support of our hypothesis, those exposed to violent accomplices during a first co-offense had a greater likelihood of ever committing a subsequent violent crime, $\tilde{\chi}^2_{(1, N=235)} = 6.59, p = .0103$, after controlling for gender ($\tilde{\chi}^2_{(1, N=235)} = 9.69, p = .0018$) and age at first crime ($\tilde{\chi}^2_{(1, N=235)} = 14.63, p < .0001$). In terms of an odds-ratio, offenders who were exposed to violent accomplices during the first co-offense were 2.18 (95% Confidence Interval = 1.20-3.95) times more likely later to commit a violent crime than were those who were not similarly exposed to violence. The interaction between age at first crime and co-offending with violent accomplices was not significant, $\tilde{\chi}^2_{(1, N=235)} = 0.85, p = .3579$.

----- Insert Table 6 About Here -----

Additional analyses were conducted to investigate whether the mechanisms of co-offender influence on violence differed with respect to the age of the target offenders relative to that of their accomplices. The target offenders were classified into one of four relative age groups (age was computed to closest year): younger than accomplices ($n=147$), older than accomplices ($n=45$), same age as all accomplices ($n=26$), and in between the oldest and youngest accomplice ($n=17$). Overall, co-offending with violent accomplices was more likely to occur if the target offender was the youngest (67.6%) than the oldest (12.2%), the same age as the accomplices (8.6%), or in between the oldest and youngest accomplice (11.5%), $\chi^2_{(3, N=235)} = 20.33, p = .001$.

The notion that the effect of co-offending with violent accomplices on subsequent violence differs across the relative age groups was tested by examining the interaction term from the ANOVA (for the proportion of violent crimes) and the logistic regression (for the likelihood of ever committing a violent crime). The interaction between co-offending with violent accomplices and relative age was significant when predicting the likelihood of ever committing a subsequent violent crime, $\chi^2_{(1, N=235)} = 5.53, p = .018$, but not when predicting the proportion of violent crimes, $F_{(3,234)} = 1.00, p = .3927$.

To help understand the significant interaction pattern, the relation between co-offending with violent accomplices and subsequent violence was examined

within each relative age group. Among the target offenders who were the youngest, 64.4% of those who co-offended with violent accomplices, compared to 63.0% of those who did not, subsequently committed a violent crime ($\tilde{\Upsilon}^2_{(1, N=147)} = .024, p = .878$). Among those who were older than their accomplices, 46.2% of those who did compared to 26.3% of those who did not co-offended with violent accomplices later committed a violent crime ($\tilde{\Upsilon}^2_{(1, N=45)} = 1.84, p = .175$). Among the target offenders whose age was the same as their accomplices, 53.9% of those who did and 38.5% of those who did not co-offend with violent accomplices committed subsequent violence ($\tilde{\Upsilon}^2_{(1, N=26)} = .619, p = .431$). A significant difference was found, however, for the target offenders whose ages were between those of their accomplices: 100% of those who co-offended with a violent accomplice, compared to 66.7% of those who did not, later engaged in violence ($\tilde{\Upsilon}^2_{(1, N=17)} = 4.96, p = .026$).

As a final step, and in order to test whether exposure to violent accomplices affected criminality in general rather than violence specifically, we examined the predictability of serious crimes overall (both violent and nonviolent) from Co-Offending with Violent Accomplices. This examination included both a continuous and a categorical dependent measure. The continuous variable was the number of index crimes (i.e., murder, attempted murder, rape, robbery, aggravated assault, burglary, vehicle theft, theft other than vehicle, arson) after the first co-

offense divided by the number of total crimes after the first co-offense. The categorical measure indicated whether or not the offender ever committed an index crime after the first co-offense. Consistent with an expectation of specificity, Co-offending with Violent Accomplices was virtually unrelated to criminality in general. After accounting for age at first crime [$F_{(8, 234)} = 5.81, p < 0.0001$] and gender [$F_{(1, 234)} = 26.71, p < 0.0001$], co-offending with violent accomplices at the first co-offense failed to predict the proportion of index crimes, $F_{(1, 232)} = 0.04, p = 0.8347$.

DISCUSSION

Results from the present study suggest that non-violent offenders who co-offend with violent accomplices are at increased risk for committing serious violent criminal behavior. Non-violent criminals who first co-offend with at least one violent accomplice go on to perpetrate a greater proportion of violent crimes and are more likely subsequently to commit a violent crime than are non-violent criminals who were not similarly exposed to violence during the first co-offense. The relation between co-offending with violent accomplices and subsequent violence was evident after adjusting for gender and the age at which offenders committed their first crime.

Findings also suggest that co-offending with violent accomplices is unrelated to serious crime in general. Offenders exposed to violent accomplices

during the first co-offense were not at increased risk of later committing an index crime, thereby suggesting that the risk is specific to serious violent crime. Finally, we found that although relatively young members of co-offending groups appear to be at increased risk of co-offending with violent offenders, the impact of such exposure on subsequent violence may be greatest when both younger and older accomplices are present.

The findings from the present study corroborate and extend prior work relating co-offending to violence. Our results offer quantitative support for the 10-year observation of Sidney Blotzman's criminal career, which documented that patterns of violence can be passed down from violent criminals to offenders who are inexperienced in violence [Shaw, 1931; Shaw & McKay, 1931]. Although previous research has shown that co-offenders commit more violent crimes than do solo-offenders [McCord & Conway, 1996a, 1996b], and that co-offenses, compared to solo-offenses, more often involve violence [Conway & McCord, 1995], the current study's focus on the first co-offense provides the additional piece of information that exposure to violent accomplices during an offender's initial co-offending experience has a small but important effect on the likelihood of subsequent violence. The results obtained here are also consistent with self-report research showing that youths who have violent peers indicate more involvement in

violent offending compared to youths who associate with nonviolent peers [e.g., Conger, 1976; Morash, 1983; Reiss & Rhodes, 1964; Thornberry et al., 1994].

The relation between exposure to violent accomplices during the first co-offense and subsequent violence can be interpreted from perspectives of crime and deviance that underscore the importance of socialization processes. In line with theories that emphasize learning processes to explain crime and deviance [Akers, 1973, 1977, 1985; Bandura, 1973, 1977; Burgess & Akers, 1966; Elliott et al., 1985; Farrington, 1992; Glaser, 1978; Moffitt, 1993; Patterson et al., 1989; Sutherland, 1947; Sutherland & Cressey, 1974; Thornberry, 1987], it seems reasonable to assume that offenders acquire a "lesson of violence" when exposed to a violent role model or situations that exhibit or encourage violence. In terms of Construct theory [McCord, 1997, 1999], which postulates that behavior reflects potentiating reasons learned through social interaction, co-offending can be seen as revealing grounds for violent behavior. Offenders may learn through the influence of violent accomplices that violence can be an appropriate means for getting money, clothing, or jewelry. They may learn that insults or fear provide adequate grounds for violence.

Case studies and self-report data converge to suggest that, for whatever reason, delinquent groups and gangs socialize their members in ways that encourage and value violence [Chin, 1996; Horowitz & Schwartz, 1974; Shaw &

McKay, 1931; Strodbeck & Short, 1963; Thornberry et al., 1993; Thrasher, 1927; Yablonsky, 1970]. Although the dynamics within gangs may differ in some ways from other groups [e.g., Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Klein & Crawford, 1967; Spergel, 1990], we believe that a general lesson that violent behavior is appropriate in certain situations is taught and acquired by persons who commit crimes together – whether they affiliate with gangs, networks, cliques, or any other assemblage of offenders. Our findings imply that lessons of violence can be learned “on the street,” where knowledge is passed along through impromptu social contexts, including those in which offenders commit crimes together [see McCord, 1997, 1999]. Clearly, future research on this issue is warranted.

Several features of this study constitute improvements over prior research and make the findings and interpretations particularly meaningful. First, because the 235 subjects were randomly selected, there are grounds for believing the results are generalizable (at least to Philadelphia). Because members of the accomplice sample represent known co-offenders who have been linked to the subjects from the target sample, the findings are likely to resemble estimates of the overall population of co-offenders in Philadelphia, and may be extended to co-offending patterns within other large metropolitan areas. Second, because the information concerning offenders and accomplices come from reports from police,

complainant(s), and witness(es) instead of information reported by subjects and, in some cases, their friends, such shortcomings as retrospective biases and inaccurate self-reporting have been avoided. Third, data for this study include crimes adjudicated by both juvenile and adult court, thereby including violent crimes that are particularly serious (i.e., homicide, rape, robbery, aggravated assault). Fourth, because the sample was large enough to take account of gender and age at first crime, we were able to show that the relation between co-offending with violent accomplices and subsequent violence remains after adjusting for these covariates. Being male and young at first offense have been shown to be related to frequent criminality [Farrington, 1983; Glueck & Glueck, 1950; Goring, 1913; McCord, 1980; McCord & Conway, in press; Wolfgang, Figlio, & Sellin, 1972] serious criminality [McCord, 1980; Tracy, Wolfgang, & Figlio, 1990], and co-offending [McCord & Conway, in press; Reiss & Farrington, 1991].

Despite these strengths, several limitations suggest that caution be taken when interpreting and generalizing the results. First, data were available for only 77% of the accomplices because the name of the accomplice was missing, incomplete, or could not be matched to a known offender with a criminal record. On the one hand, the unidentified accomplices may have been more experienced in crime and violence compared to those who were identified and included. If highly experienced or violent criminals are particularly skilled at evading capture or

identification, perhaps by using multiple aliases, altering their physical appearance, or threatening witnesses so that they do not provide accurate information about the offender [see Chin, 1996], then their exclusion may have underestimated the effect reported here. On the other hand, the unidentified accomplices may have been less experienced in crime and violence compared to those included in the study. Relatively inexperienced or primarily non-violent offenders may be especially elusive because, for example, they are unfamiliar or unrecognizable by victims or witnesses and/or are pursued less vigorously by police. If so, the present study has over-sampled experienced and/or violent offenders and, as a result, overestimated the role that the first co-offense has on subsequent violence. Yet, it may be that the unidentified accomplices are, by and large, similar to the identified accomplices in terms of involvement in crime and violence, and that the results reported here have not been biased by the unavailability of data for 23% of the accomplices.

Second, rap sheets were not obtained for 31% of the adult members of the target sample even after completing multiple searches of the Philadelphia criminal records database. One explanation for the failure to find adult records is that the offenders committed no crimes after the age of 17, rendering our data accurate indicators of the crimes committed by offenders and processed by the Philadelphia police. To some unknown degree, of course, having no adult record in

Philadelphia may indicate only that crimes were undetected. Whatever bias this may have introduced to the study, there is no reason to believe, however, that it would have differently affected offenders who were and who were not exposed to violent co-offenders during the first co-offense.

Third, data gleaned from court reports and rap sheets reflect only those crimes for which offenders are apprehended, and, as a consequence, undercount crime [Dunford & Elliott, 1984; Elliott, 1994; Geerken, 1994]. Other evidence suggests, however, that official records may be particularly good indicators of serious violent crimes [Henggeler et al., 1993]. Although neither self-report data nor official data accurately gauge crime and violence, the former may be more useful when studying frequency of offending whereas official data may be preferable when studying the prevalence of serious crime, particularly violent crime.

Finally, factors that were not measured by the present study but which predict both violence and an offender's selection of accomplices, such as prior antisocial behavior [e.g., Loeber & Hay, 1997; Patterson et al., 1989] and overt aggression [Cairns & Cairns, 1992, 1994; Loeber & Hay, 1997], may help explain the findings. Broader contextual factors such as socioeconomic status have also been linked to both violence and the selective association with violent peers [Heimer, 1997]. Indeed, the fact that offenders with a history of violence prior to

co-offending (dropped from the analyses) committed on average the greatest number of violent crimes suggests that the sources of violence are varied and not due solely to influences of violent co-offenders. Nonetheless, co-offending with violent accomplices during the first co-offense seems to have an effect on subsequent violence in addition to such preexisting factors. Empirical support for this notion comes from longitudinal data showing that both selective association and involvement with deviant peers affect antisocial behavior including aggression [Cairns & Cairns, 1992, 1994; Elliott et al., 1985; Kandel, 1978; Thornberry et al., 1993].

Findings from the present investigation have important implications for public policy and future research. Results underscore the significance of considering co-offending patterns, individuals' choices of accomplices, and factors that increase the risk of co-offending when developing and evaluating strategies designed to prevent or reduce violence. Gaps in the literature could be partially filled by studies that track the selection of accomplices across multiple crimes, examine the learning processes involved in the transfer of violence across offenders, and identify individual offenders who may be especially susceptible to (or unaffected by) the influence of violent accomplices.

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Table 1. Target Sample: Number of Males and Females by Race

	White	Black	Hispanic	Other	Total
Male	37	159	20	1	217
Female	1	16	1	0	18
Total	38	175	21	1	235

Table 2. Accomplice Sample: Number of Males and Females by Race

	White	Black	Hispanic	Other	Total
Male	73	238	33	4	348
Female	5	26	1	1	33
Total	78	264	34	5	381

Table 3. Reliability of Variables Across Cases and Crimes

	Number	Percent	Statistic of
	Agree	Agree	Reliability
Across Cases (n=40)			
Date of Birth of Offender	40	100	$I_{pb} = 1.00$
Race of Offender	39	97.5	$\omega = 0.95$
Sex of Offender	40	100	$\omega = 1.00$
Number of Violent Crimes	40	100	$I_{pb} = 1.00$
Ever Violent	40	100	$\omega = 1.00$
Number of Index Crimes	40	100	$I_{pb} = 1.00$
Age at First Crime	40	100	$I_{pb} = 1.00$
Total Number of Crimes	40	100	$I_{pb} = 1.00$
Across Crimes (n=167)			
Crime is a Co-Offense	154	92.2	$\omega = 0.84$
Age of Offender	165	98.8	$I_{pb} = 0.99$
Date of Arrest	166	99.4	$I_{pb} = 0.99$
Type of Crime	160	95.8	$\omega = 0.86$

Table 4 Subjects Excluded and Included: Mean Age (SD) at First Crime, Mean Number (SD) of Crimes, and Mean Number (SD) of Violent Crimes

	<i>N</i>	<i>Age at First Crime</i>	<i>Number of Crimes</i>	<i>Number of Violent Crimes</i>
Excluded Because No Co-Offenses	65	15 (1.73)	4.32 (4.19)	1.15 (1.49)
Excluded Because of Missing Data about Accomplices	70	14 (2.10)	8.06 (5.33)	2.68 (2.61)
Excluded Because of Prior Violence	30	13 (1.95)	7.77 (4.61)	3.53 (3.06)
Remaining in the Target Sample	235	14 (1.99)	8.46 (6.61)	2.57 (2.77)

Table 5 Mean Proportion (SD) of Violent Crimes after the 1st Co-Offense by Age at 1st Crime and Exposure to Violent Accomplices during the 1st Co-Offense

<i>Age at 1st Crime</i>	<i>Exposure to Violent Accomplices during 1st Co-offense</i>	
	<i>No</i>	<i>Yes</i>
6 – 10	0.31 (0.24) <i>n</i> = 5	0.44 (0.33) <i>n</i> = 6
11	0.23 (0.27) <i>n</i> = 15	0.26 (0.21) <i>n</i> = 10
12	0.25 (0.25) <i>n</i> = 12	0.32 (0.29) <i>n</i> = 22
13	0.24 (0.26) <i>n</i> = 11	0.25 (0.27) <i>n</i> = 19
14	0.14 (0.15) <i>n</i> = 19	0.37 (0.26) <i>n</i> = 22
15	0.17 (0.26) <i>n</i> = 11	0.30 (0.29) <i>n</i> = 32
16	0.29 (0.38) <i>n</i> = 15	0.26 (0.31) <i>n</i> = 19
17	0.13 (0.25) <i>n</i> = 8	0.11 (0.22) <i>n</i> = 9

Table 6 Percent of Offenders Who Ever Commit a Violent Crime after the 1st Co-Offense by Age at 1st Crime and Exposure to Violent Accomplices during the 1st Co-Offense

<i>Age at 1st Crime</i>	<i>Exposure to Violent Accomplices during 1st Co-offense</i>	
	<i>No</i>	<i>Yes</i>
6 – 10	100.0 <i>n</i> = 5	100.0 <i>n</i> = 6
11	60.0 <i>n</i> = 9	90.0 <i>n</i> = 9
12	75.0 <i>n</i> = 9	81.8 <i>n</i> = 18
13	63.6 <i>n</i> = 7	63.2 <i>n</i> = 12
14	63.2 <i>n</i> = 12	86.4 <i>n</i> = 19
15	36.4 <i>n</i> = 4	62.5 <i>n</i> = 20
16	46.7 <i>n</i> = 7	63.2 <i>n</i> = 12
17	37.5 <i>n</i> = 3	22.2 <i>n</i> = 2

Appendix A: Coding Dictionary for Crime Data

Code crime that best captures the nature of the act (categorized by Roman numerals). Then, select crime marked with the lowest number applicable, because crimes within each category are ranked from most to least severe. If there are multiple charges for a single crime, then select lowest number.

I. Violent Crimes

1. Murder
2. Attempted Murder
3. Rape
4. Robbery
5. Aggravated Assault
6. Simple Assault
7. Terroristic Threatening
8. Intimidating a Witness
9. Prowling
10. Cruelty to Animals

XI. Property Crimes

1. Burglary
2. Vehicle Theft
3. Theft other than Vehicle
4. Arson
5. Vandalism
6. Criminal Trespass
7. Forgery or Counterfeiting
8. Embezzlement
9. Fraud (not otherwise specified)
10. Risking or Causing a Catastrophe

XI. Drug Crimes

1. Violation of Narcotic Laws
2. Driving while Intoxicated
3. Liquor Law Violations
4. Drunkenness

V. Dependent (on other) Crimes

1. Escape
2. Non-payment of Fines and Costs
3. Contempt of Court
4. Bench Warrant
5. Resisting Arrest

VI. Other Crimes

1. Weapons Violations
2. Sex Offense (excluding rape)
3. Prostitution
4. Offenses against Family and Children
5. Gambling
6. Disorderly Conduct
7. Miscellaneous (e.g., illegal dumping, issuing false reports to police)

