

# DETERRENT EFFECTS OF THE POLICE ON CRIME: A REPLICATION AND THEORETICAL EXTENSION

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This study replicates and then extends Wilson and Boland's (1978) theory of the deterrent effect of policing on crime rates in American cities by linking it to recent thinking on control of urban disorder and incivilities (Sherman, 1986; Skogan and Maxfield, 1981). The theory posits that police departments with a legalistic style tend to generate policies of proactive patrol (e.g., high traffic citation rate and frequent stops of suspicious or disorderly persons), which in turn may decrease crime rates either (1) indirectly, by increasing the probability of arrest, or (2) directly, by decreasing the crime rate through a deterrent effect regarding perceived threat of social control. We test both these propositions in an examination of robbery rates in 171 American cities in 1980. Overall, the major results suggest that proactive policing has direct inverse effects on aggregate robbery rates, independent of known determinants of crime (e.g., poverty, inequality, region, and family disruption). Moreover, when we demographically disaggregate the robbery rate the direct inverse effect of aggressive policing on robbery is largest for adult offenders and black offenders. We examine the reasons for these findings and discuss their theoretical and policy implications.

## I. INTRODUCTION

A major controversy has arisen in recent years over the effect, if any, that the police have on crime. On the one hand, Wilson and Boland (1978; 1981) have argued in this journal that aggressive police arrest practices contribute to lower crime rates (see also Wilson, 1968; Sherman, 1986). On the other hand, critics charge that this claim is false, asserting instead that tests of deterrence are hopelessly plagued with methodological problems such as the biases resulting from simultaneity and error in the measurement of crime (e.g., Jacob and Rich, 1981; Chilton, 1982; Decker and Kohfeld, 1985).

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Resolution of this controversy is crucial on two grounds. First, if variations in proactive policing are not related to variations in crime rates, then the major premise of Wilson and Boland's theory is undermined. Falsification would have an important bearing on theoretical development, especially since Wilson's (1968) seminal work on the varieties of police behavior has had a significant impact on the law and society literature in general and on recent thinking on police behavior in particular (see, e.g., Smith, 1984; Sherman, 1983, 1986; Langworthy, 1985). Second, the determination of the effect of the police on crime is crucial to crime control policy (Blumstein *et al.*, 1978; Sherman and Berk, 1984), and has important ramifications for the allocation of police resources (see, e.g., Chaiken, 1975; Sherman, 1986).

The present paper therefore addresses key elements of the controversy over the relationship between the police and crime rates. Specifically, we test the hypothesis advanced by Wilson and Boland (1978) that proactive and aggressive police activity reduces the overall crime rate. In doing so we attempt to overcome serious empirical flaws found in prior research. Furthermore, we link Wilson and Boland's theory to recent theoretical developments on police strategies regarding urban public disorder, and we introduce a crucial but previously ignored dimension to the argument—the relationship between race and aggressive policing.

## II. THEORETICAL BACKGROUND

Wilson and Boland (1978) hypothesize that in police departments with a legalistic style the police adopt an aggressive law enforcement stance, by which they mean a strategy that maximizes the number of observations and interventions in the community. Aggressive police patrols tend to stop motor vehicles to issue citations and to question or arrest suspicious and disorderly persons at high rates (*ibid.*, p. 370). Wilson and Boland pose two alternative scenarios by which an aggressive patrol strategy might affect the crime control process.

The first pertains to the *indirect* effect of aggressive policing on crime through arrest risk. As Wilson and Boland (*ibid.*, p. 373) argue, "By stopping, questioning, and otherwise closely observing citizens, especially suspicious ones, the police are more likely to find fugitives, detect contraband (such as stolen property or concealed weapons), and apprehend persons fleeing from the scene of a crime." They thus maintain that police aggressiveness affects the crime rate by changing the actual probability that an arrest is made (e.g., by increasing the arrest/offense ratio). In this formulation Wilson and Boland used a measure of police aggressiveness to identify a simultaneous model of the relationship between arrest probability and crime rates. In other words, since proactive aggressiveness is assumed to influence the crime rate *indirectly*, it is

thus appropriately excluded from the crime equation, and one can then isolate the effect of arrest certainty on crime from the simultaneous relationship between these two variables.<sup>1</sup>

In the second scenario Wilson and Boland (*ibid.*, p. 374) acknowledge that proactive or aggressive policing may *directly* affect the crime rate by influencing community perceptions regarding the probabilities of apprehension for illegal behavior. The second hypothesis relies on the assumption that an aggressive and proactive police style is a visible indicator of police activity. The general public has only a vague notion about the actual probabilities of arrest, and in fact arrests for serious index crimes (e.g., robbery) are relatively rare. Consequently most potential offenders rarely witness an index crime arrest. In contrast, the vigorous intervention by police on driving violations, drunkenness, and public disorder is a very visible indicator of police activity in an area. Aggressiveness in police patrol practices thus in all likelihood sends a signal to potential offenders that one's chances of getting caught are higher than they actually are.

Therefore, even if an aggressive patrol style does not actually solve more crimes, its existence may be one of the important channels by which information on the certainty of punishment is communicated to potential criminals. As Cook (1980: 223) has argued, "If the police are seen frequently in an area, potential criminals may be persuaded that there is a high likelihood of arrest in that area due to presumed low police response time and the chance that they will happen on the scene while the crime is in progress." This perspective focuses not on whether proactive police activities actually increase clearance rates but on their direct effect on crime.

We extend Wilson and Boland's second hypothesis by linking it to recent work on urban disorder, fear of crime, and social control. The important study of Skogan and Maxfield (1981) has shown that "incivilities" such as disorderly youth, broken windows, public drinking, and prostitution increase community fear of crime. Moreover, Greenberg *et al.* (1985: 82) maintain that incivilities and other signs of disorder are expected to increase not just fear of crime but also crime itself, because potential offenders recognize such deterioration and "assume that residents are so indifferent to what goes on in their neighborhood that they will not be motivated to confront strangers, intervene in a crime, or call the police." This suggests that control of disorder may have an influ-

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<sup>1</sup> For a detailed yet accessible review of simultaneous equation models in deterrence research, see Nagin (1978) and Fisher and Nagin (1978). In general, the crime function in such a model is "identified" when an instrumental variable is selected (e.g., police aggressiveness) that is both highly correlated with the sanction variable (e.g., arrest certainty) and at the same time does not have a direct effect on crime.

ence on the rates of more serious crime (e.g., robbery) that is not strictly tied to changes in objective arrest risk for the latter.

Although sparse, there is evidence from police field experiments to support the belief that proactive policing may directly reduce crime. For instance, the San Diego experiments (Boydston, 1975) indicated that a reduction in aggressive field interrogations (e.g., stopping suspicious persons) resulted in a rise in crime rates. Perhaps the most interesting study was recently conducted by the Police Foundation in Newark and Houston (see Pate *et al.*, 1985; Sherman, 1986: 369). To test the thesis that crime can be reduced through controlling disorder (see also Wilson and Kelling, 1982), a specially trained group of officers performed a variety of tasks within an experimental area in Newark, including foot patrols, enforcement of disorderly conduct laws, radar and speed checks, and bus checks. The disorderly conduct enforcement was especially aggressive (Sherman, 1986: 369), consisting of an order to clear the sidewalk if four or more people were congregating and to arrest those who failed to comply. The results were mixed, but as Sherman (*ibid.*) argues, "the findings are at least as strong as the San Diego experiment in showing that recorded crime is lower under conditions of aggressive field interrogation and proactive citizen street contacts."

In short, visible signs of urban disorder indicate that the community has lost its ability to exercise social control, further encouraging and perpetuating crime and fear. Combined with Wilson and Boland's (1978) original insight that proactive and aggressive police strategies may achieve crime reduction through perceived deterrence, the literature on urban disorder and incivilities (especially Sherman, 1986; Greenberg *et al.*, 1985; Skogan, 1986; Wilson and Kelling, 1982; Skogan and Maxfield, 1981) offers a compelling and testable hypothesis. Indeed, the hypothesis that proactive police styles and intensified proactive intervention in "incivilities" and disorder may directly reduce the crime rate is grounded in a sound theoretical framework, and it circumvents many of the conceptual and methodological problems faced when traditional measures of sanctions are used.

### III. LIMITATIONS OF PREVIOUS EMPIRICAL RESEARCH

Prior research has failed to provide an adequate test of the effect of police behavior on crime.<sup>2</sup> While numerous ecological studies have examined the effect of number of police per capita on crime rates (see, e.g., Swimmer, 1974; Harries, 1980: 63; Loftin and McDowall, 1982), police size is not a relevant indicator of police be-

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<sup>2</sup> The deterrence literature has been reviewed at length elsewhere (Blumstein *et al.*, 1978), and hence the review here is limited to those issues bearing directly on the present theoretical concern with the relationship between police behavior and urban crime rates.

havior. Simply put, there is little connection between the number of police and their activities on the street (Wilson and Boland, 1978: 370). If anything, police size is influenced by the crime rate: Cities with a large volume of crime generally also have more police officers per capita. Similarly, there is little theoretical justification for assuming police expenditures per capita is a meaningful indicator of police sanctions. As Wilson and Boland (1981: 166) argue, it is difficult to demonstrate that additional dollars spent on the police buy an increased probability of apprehension, or even the perception of increased apprehension risks.

There has also been a rather large body of research using aggregate data to test the effects of arrest certainty (e.g., arrest/offense ratio) on crime rates (see reviews in Blumstein *et al.*, 1978; and Chilton, 1982). However, the most important criticism of this research has been that arrest certainty and crime rates are simultaneously related (Nagin, 1978; Decker and Kohfeld, 1985), whereby increases in arrest risk reduce crime through deterrence while increases in crime rates reduce the capacity of the system to maintain levels of arrest certainty.

Moreover, most studies employing simultaneous equation methods to disentangle the deterrent effect from the simultaneous "work load" effect have been severely criticized for imposing unrealistic and atheoretical assumptions (Nagin, 1978; Fisher and Nagin, 1978), especially regarding identification restrictions. Several studies, for example, have excluded socioeconomic factors from the crime function (e.g., Ehrlich, 1975). As noted by Fisher and Nagin (1978), these sorts of ad hoc identification restrictions seriously undermine confidence in the results of many econometric studies of deterrence. Another complaint is that there are usually common terms (reported offenses) in both sides of the equation, which in the presence of measurement error in such terms may induce a spurious negative correlation (see Decker and Kohfeld, 1985; Nagin, 1978; Jacob and Rich, 1981).

Unlike research using arrest/offense ratios, studies of the direct effect of proactive policing and control of disorder on crime reduction are sparse. As noted above, Wilson and Boland (1978) used their proactive policing measure (citations per officer) mainly to identify a simultaneous relationship between the arrest/offense ratio and crime rates. In a longitudinal test of Wilson and Boland's model, Jacob and Rich (1981) found no overall relationship between traffic citations and the robbery rate. However, as Wilson and Boland (1981) emphasized in their reply, Jacob and Rich did not use a citation rate (i.e., citations per officer) but instead used the raw number of tickets issued. And, from the present theoretical standpoint, an important limitation of *both* Wilson and Boland (1978) and Jacob and Rich (1981) is that neither considered proactive policing of incivilities and disorder (e.g., prostitution and disorderly conduct).

*A. Deterrence Refined: Disaggregating Measures of Crime*

A final limitation of the prior research concerns the criterion variable used to assess deterrent effects. The dependent variable is usually a reported crime rate (the number of reported offenses per aggregate population), which includes effects of population composition in addition to variations in offending. It is possible that police activity differentially influences offenders of different ages and races. For example, aggressive policing toward adults may deter adult crime but have little effect on juveniles. Such an effect on adults, however, would be masked in an analysis using all reported offenses. Age-specific offending rates would be more appropriate to the task of isolating deterrent effects (Cook, 1980: 252), especially considering that as measured by moving violation citations and arrests for drunkenness or public order offenses, proactive policing is directed primarily at adults.

Perhaps more importantly, aggregate crime rates and sanction measures also confound racial differences. For example, an overall measure of police aggressiveness or arrest certainty does not indicate the racial subgroup that bears the brunt of police scrutiny. Some researchers (e.g., Chambliss and Seidman, 1971) have argued that the police aggressively patrol lower income black communities; others (Liska and Chamlin, 1984) charge that the police ignore or "benignly neglect" crime in black ghettos. We might expect then that police aggressiveness would have differential effects on black and white offending. In fact, Sampson (1986a) initially explored this notion and found larger direct effects of proactive policing on black robbery rates than on white robbery rates. However, his analysis failed to disaggregate police behavior by race (e.g., race-specific measures of proactive policing), and Wilson and Boland's (1978) first hypothesis regarding the simultaneous effect of arrest certainty on crime was not examined. Hence, crucial questions remain. For example, what is the effect of proactive policing toward whites on white crime rates? Similarly, what is the effect of aggressive policing in black communities on black crime? Does proactive aggressiveness interact with race and age of offender? To address these issues it is necessary to disaggregate both sanction measures and the crime rate, wherever possible, by race and age.

#### IV. RESEARCH STRATEGY AND HYPOTHESES

To attempt a more precise answer to the crucial question of whether police activities inhibit crime, we present a replication, theoretical extension, and race-specific test of Wilson's general framework. Following Wilson and Boland (1978), our unit of analysis is the city, which, as they have argued, is probably the most appropriate unit to assess the effect of the police on crime because political regimes and police organizational structure are tied to in-

tercity variations (see also Sherman, 1986: 346). In fact, Wilson and Boland (1981: 165) argue that longitudinal analysis is generally inappropriate for isolating the effect of large structural differences across political regimes. While there are important structural differences among cities, police organizational style is remarkably stable within cities for long periods of time.<sup>3</sup>

Our data include all 171 American cities with a population greater than 100,000 in 1980.<sup>4</sup> We thus provide a much larger and more recent body of data to assess the original Wilson and Boland (1978) thesis, which was limited to only 35 very large cities (population greater than 250,000). In contrast, our data include many smaller cities (e.g., Huntsville, Alabama; Modesto, California; and Youngstown, Ohio) and even suburban-type communities near or adjacent to large central cities (e.g., Garden Grove, California; Sterling Heights, Michigan; and Irving, Texas).

We first constructed a measure of proactive, aggressive policing for each city in the data set. By “aggressive” we, like Wilson and Boland, do not mean that officers are harsh or hostile; rather, “aggressive” refers to the extent to which officers invoke a formal law enforcement response even for minor infractions. An aggressive strategy tends to stop motor vehicles to issue traffic citations at a high rate, question suspicious persons, employ decoys and stake-out procedures, and make frequent arrests for public disorder offenses (Wilson and Boland, 1978: 370).

Because Wilson and Boland (1978) were unable to locate a direct measure of police aggressiveness across a number of cities, they selected a proxy: the number of citations for moving traffic violations issued per sworn officer. Based on the linkage of their study with the literature on control of disorder (Sherman, 1986; Greenberg *et al.*, 1985; Skogan, 1986), we derive a related but new measure: the number of arrests *per police officer* for disorderly conduct and driving under the influence (DUI). We believe this measure is more comprehensive than Wilson and Boland’s because it captures police intervention in the offense of disorderly conduct (cf. Wilson and Boland, 1978: 370). For example, although prostitution and drunkenness measures were unavailable because of missing data, arrests for disorderly conduct bring us close to the notion of police control of disorder, signs of crime, and incivilities. Also, since DUI is more serious than speeding, arrest practices for the former are more likely to reflect a general dimension of proac-

<sup>3</sup> Like Wilson and Boland (1978), we thus take a structural perspective in investigating the general deterrent effect of police activities on crime rates in cities. See Williams and Hawkins (1986) for an excellent discussion of research exploring the perceptual effects of deterrence on individual criminal behavior. We do not claim the structural perspective is superior, only that it asks a very different question than does survey research of individual offending (see also Reiss, 1986).

<sup>4</sup> A total population minimum of 100,000 was chosen to ensure the reliable estimation of serious offending rates when disaggregated by race and age.

tive policing toward crime than the latter. Hence, we argue that police aggressiveness in arresting for the offenses of driving under the influence and disorderly conduct is a general indicator of an aggressive, proactive police style. While averaging 5.44 arrests per officer in 1980, there is considerable variation in aggressiveness across the 171 cities, ranging from a low of .47 to a high of 20.38 arrests per officer.

To support the claim of construct validity, we tested the measure by deriving theoretical predictions. Specifically, Wilson and Boland (*ibid.*) argue that police aggressiveness arises most often in legalistic-style police departments, which in turn stem from a political culture of professional city management (see also Langworthy, 1985). Such a management philosophy is often indicated by the presence of a council-manager form of city government (*ibid.*, p. 379). Legalistic- and professional-style departments are also usually found in the West, while the older watchman-style departments that do not stress aggressive policing are usually found in the older cities of the East and Midwest (*ibid.*, p. 377).

To test these notions, we collected data from the International City Managers Association for each of the cities in our sample. We assigned dummy variables of 1 to cities with a council-manager form of city government and to cities in a Western location, and 0 to all others. Furthermore, we used the subset of 23 cities studied by Wilson and Boland (*ibid.*, p. 381), in which three expert judges rated police departments as "professional" or "non-professional" in terms of their adherence to norms of efficiency and legalism. Consistent with theoretical expectations, police aggressiveness was significantly positively ( $p < .01$ ) related to both Western location (.36) and the presence of a council-manager government (.23) across the 171 cities in 1980. For the subsample of 23 cities, proactive policing correlated positively (.27) with the dummy indicator for professionalism. By available accounts, then, the police aggressiveness measure satisfies tests of construct validity.

#### A. *Stages of Analysis*

We conducted the empirical test of the theory in two stages. First, if proactive policing performs in accordance with Wilson's theory, it should correlate positively with the arrest/offense ratio. Whether the latter is conceptualized as a deterrence variable or simply as a measure of police effectiveness (Decker and Kohfeld, 1985), aggressive police departments should have high arrest/offense ratios. Therefore, in the first stage of analysis we test the theoretical prediction that independent of other factors which may influence police behavior (e.g., racial composition, socioeconomic status [SES], density, and region), proactive policing will have a direct effect on the arrest/offense ratio.

To complete the replication of Wilson and Boland (1978), we



also test the simultaneous effect of arrest certainty on the crime rate.<sup>5</sup> For the purposes of this particular test we must assume the validity of Wilson and Boland's original argument that police aggressiveness does not have a direct effect on crime. Accordingly, we use police aggressiveness as an instrumental variable to identify the crime function (see Nagin, 1978). Similar to Wilson and Boland, we test the hypothesis on aggregate robbery rates. In our preliminary analysis we also examine burglary for comparative purposes.

The second and major portion of the study extends and revises the theoretical model to consider the *direct* effects of proactive policing on crime. Relying on the linkage of Wilson and Boland's 1978 work with the urban disorder literature developed above, the general hypothesis is that independent of urban structural characteristics, proactive policing has an inverse effect that operates directly on the crime rate. In this stage of analysis we also build on the research of Sampson (1986a) and calculate crime rates for homogeneous demographic subgroups. In the present case, the analysis examines the effect of police aggressiveness on robbery rates for white juveniles, black juveniles, white adults, and black adults.

Finally, to fully disentangle race, crime, and police behavior, we use the raw numbers of arrests of each racial group for DUI and disorderly conduct to construct race-specific measures of aggressive policing (e.g., black arrests per officer). The analysis then tests the hypotheses that proactive policing of blacks reduces black robbery rates, and that proactive policing of whites reduces white robbery rates. We also examine how the racial composition of cities conditions this relationship and the extent to which the effect of proactive policing on robbery offending is invariant across race.

Note that in studying the direct effect of proactive policing the assumption is that police intervention in moving violations and disorderly conduct is not causally determined by the crime rate but rather by the dominant political culture and the professionalism of the police department. Also, since the police spend very little of their time in actual law enforcement activities (Wilson, 1968), it is unlikely that the frequency of robberies (which are often handled by special units) will influence the average rate at which officers make stops and intervene in incivilities such as disorderly conduct. Like Wilson and Boland (1978), we thus argue that there is no simultaneity problem between the robbery rate and police aggressiveness. Note further that since there are no common terms in the proactive policing measure and crime rates, we avoid spurious correlations (see Fisher and Nagin, 1978; Nagin, 1978). Overall,

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<sup>5</sup> Space and data limitations preclude an empirical analysis of the full Wilson and Boland (1978) model. For example, they examined the determinants of both police aggressiveness and police officers per capita (*ibid.*, p. 375). The present study treats police style as exogenous and focuses on its causal effects on crime.

then, the major objections to deterrence research in general and to Wilson's research in particular (e.g., Decker and Kohfeld, 1985; Jacob and Rich, 1981) are addressed.

## V. METHODS

To ascertain deterrent effects we must first be assured that common third sources of crime have been controlled (Nagin, 1978). Hence, the analysis controls for factors that are either known or suspected determinants of urban crime (for comprehensive reviews see Harries, 1980; and Byrne and Sampson, 1986). The controls include population size, region (Western location),<sup>6</sup> racial composition, racial income inequality, income, and family disruption. The inequality measure parallels Blau and Blau (1982) and is defined as the ratio of white to black median family income. In the analysis of aggregate offense rates the income measure is simply median income, and the family disruption measure is the divorce rate.

In the racially disaggregated crime analysis the relevant exogenous predictors are also disaggregated to avoid misspecification error. Specifically, we used the percentage of black families with a female head and the percentage of white families with a female head as indicators of black and white family disruption, respectively. We used black and white per capita income as race-specific measures of poverty. Means and standard deviations for all variables are shown in the Appendix.

Our dependent variables are of two types—conventional aggregate crime rates (e.g., reported robbery offenses per population) and robbery offending rates disaggregated by age and race. A large body of literature suggests that reported robbery offenses are highly reliable and comparable across jurisdictions (Gove *et al.*, 1985). We use arrest data to estimate rates of serious criminal offending by race and age. The arrest data were made available by the FBI in the form of unpublished arrest counts by crime type and demographic subgroup for each police department of the 171 cities for the years 1980 through 1982.

The present framework assumes that arrest rates are reasonable proxies for race- and age-specific involvement in criminal offending for the crime of robbery. The empirical facts justifying this assumption have been reviewed in detail elsewhere (Hindelang, 1978, 1981; Sampson, 1986a). Briefly stated, Hindelang (1978) has systematically compared arrest rates for robbery estimated from the Uniform Crime Reports (UCR) with robbery offending rates estimated from National Crime Survey (NCS) victim surveys

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<sup>6</sup> This study employs a regional dummy for Western location because (1) recent studies (e.g., Sampson, 1986a) show that crime rates are higher in Western cities, and (2) our measure of police aggressiveness is positively correlated with Western location.

and found exact agreement in national data. For example, Hinde-lang (ibid., p. 100) found that 62 percent of the robbery offenders reported by victims were black, compared to an identical 62 percent who were black in UCR arrest data for the same year.

Similarly, Messner and South (1986) analyzed race-specific city-level victimization data from the NCS and FBI arrest data for the same 26 cities from the early 1970s. Although the 26-city victimization data have validity problems of their own (see Gove *et al.*, 1985), Messner and South (1986) report a high correlation of .81 between black arrest rates for robbery and black offending rates estimated from reports of robbery victims. The strong overlap between arrest rates and offending rates measured from a data source independent of the criminal justice system increases our confidence in the validity of race-specific arrest reports as indicators of differential involvement in offending, at least for serious crimes like robbery.

Further, a large body of research on police-citizen encounters has found that seriousness of the crime is generally the strongest predictor of arrest (Reiss, 1971; Gottfredson and Gottfredson, 1980; Gove *et al.*, 1985). Although racial and SES factors may influence police contacts for common juvenile delinquency offenses such as vandalism and theft (Sampson, 1986b), there is no evidence of racial or age bias in arrest risk for robbery (Blumstein *et al.*, 1986).

The available evidence clearly suggests, then, that for serious crimes arrest data are reflective of the offending process. Nevertheless, to eliminate any remaining jurisdictional differences in enforcement practices, variations across cities in the offense/arrest ratio, which ranges from 1.33 up to 15.14 for robbery in the current data, are explicitly considered. Note that in the initial replication of Wilson and Boland (1978) arrest certainty is entered as a predictor of reported offense rates. But as stated earlier, our primary objective is to test the direct influence of proactive policing on demographically disaggregated *offending* rates. To achieve this we multiplied each raw arrest rate by the offense/arrest ratio in that jurisdiction to develop an estimate of the number of offenders per capita. With this adjustment, each demographic-specific arrest rate is scaled up to (i.e., transformed into) an offending rate. To the extent that the arrest risk per robbery does not vary significantly across different demographic subgroups in a jurisdiction, this procedure allows us to assess the direct effect of proactive policing on demographic-specific estimates of robbery offending rates.

Using the above procedures in conjunction with population estimates from the 1980 census, race-age-specific offending rates for robbery were constructed for each of the 171 largest cities in the United States for the years 1980–82. We are limited by FBI reporting rules in identifying the demographic subgroups for analysis; these do not permit the simultaneous calculation of age-race-sex-specific rates, and the race-age breakdown is limited to juvenile

(under 18) and adult (18 and over) arrests.<sup>7</sup> Because of potential year-to-year variations in reporting and recording practices, a three-year average rate was computed from 1980–82 arrest data to stabilize random fluctuations and reduce missing data, a practice followed in previous research (see, e.g., Sampson, 1986a).

In a handful of communities there were too few blacks to construct reliable offending rates or racially disaggregated family and economic characteristics (e.g., Livonia, Michigan, where there were only 17 black juveniles in 1980). Moreover, preliminary analysis repeatedly identified these cities as disproportionately influencing estimates of the parameter vector.<sup>8</sup> Therefore, we imposed a selection criteria that eliminated cities with less than 1,000 blacks from the analysis. After applying this criterion, the effective sample size for robbery is 156 cities.

To assess multicollinearity we examined variance inflation factors (see Fisher and Mason, 1981: 109), which measure the amount that the variance in Ordinary Least Squares (OLS) parameter estimates is inflated in the presence of multicollinearities. Commonly accepted practice regards variance inflation factors (VIF) above 4 as an indicator of possible inefficiency in estimates (*ibid.*).<sup>9</sup> In the present data multicollinearity is not a serious problem, as all VIFs for our proactive policing measures were less than 4. For example, the measure of total police aggressiveness shares less than 20 percent variance with other exogenous predictors. In addition, all bivariate correlations among exogenous predictors included in the same recursive equations predicting crime were under .65. This level of multicollinearity is generally acceptable, especially for city-level data (see Kennedy, 1979: 131).

The methods of analysis are OLS regression, simultaneous two-stage least squares (2SLS) regression, and a maximum-likelihood procedure for estimation of multiple-group models with cor-

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<sup>7</sup> If the proportion of the population known to be at low risk for serious offending (e.g., the elderly and young children) varies with other city characteristics (e.g., racial composition), then estimates of the effects of these factors on offending may be biased. Therefore, the adult offending rate by race was constructed after eliminating those 65 and older from the population base in the denominator. Similarly, black and white juveniles less than age 5 were removed from the denominator of the race-specific juvenile rates.

<sup>8</sup> All regressions were subjected to a case analysis to detect influential observations in estimating regression parameters. Specifically, “Cook’s D” and “Studentized residuals” (Cook and Weisberg, 1982) were inspected for each city in each model. A case is defined as influential if its deletion from the model results in a substantial change in the estimate of the parameter vector. After eliminating cities with less than 1,000 blacks where rates were unstable, no city exerted a disproportionate influence on the results. Natural logarithms of demographic-specific offending rates were also taken to reduce skewness and induce homogeneity of error variances.

<sup>9</sup> The VIF is the inverse of the quantity 1 minus the coefficient of determination resulting from the regression of each predictor variable on the remaining predictors.

**Table 1.** Simultaneous Equation Results of the Effect of Arrest Certainty on Robbery and Burglary Offense Rates, U.S. Cities, 1980

City Characteristics	Robbery Arrest Certainty		Burglary Arrest Certainty	
	<i>b</i>	$\beta$	<i>b</i>	$\beta$
	<b>Reduced-Form Equation</b>			
Police aggressiveness	.007 <sup>b</sup>	.22	.004 <sup>b</sup>	.26
Population size	-.007	-.05	.002	.04
Inequality	-.023	-.05	-.016	-.09
Median income <sup>a</sup>	-.001	-.00	-.003	-.03
Divorce rate	-.666 <sup>b</sup>	-.22	-.023	-.02
Western location	-.023	-.09	.007	.07
Percent black	.016	.02	.024	.09
	$R^2 = .12, p < .01$		$R^2 = .09, p < .01$	
	Robbery Rate		Burglary Rate	
	<i>b</i>	$\beta$	<i>b</i>	$\beta$
<b>Structural Model (2SLS)</b>				
Robbery arrest certainty	-4.964 <sup>b</sup>	-.28	— <sup>c</sup>	— <sup>c</sup>
Burglary arrest certainty	— <sup>c</sup>	— <sup>c</sup>	-2.98 <sup>d</sup>	-.12
Population size	.147 <sup>b</sup>	.15	-.035	-.08
Inequality	-.023	-.01	.173 <sup>e</sup>	.13
Median income <sup>a</sup>	-.052 <sup>b</sup>	-.23	-.030 <sup>b</sup>	-.29
Divorce rate	6.706 <sup>b</sup>	.36	3.364 <sup>b</sup>	.39
Western location	.103	.06	.214 <sup>b</sup>	.28
Percent black	.195	.04	-.058	-.03
	$R^2 = .66, p < .01$		$R^2 = .35, p < .01$	

<sup>a</sup> Coefficient multiplied by 1,000 to reduce places to right of decimal

<sup>b</sup> Significant at .05 level

<sup>c</sup> Not included in structural model

<sup>d</sup> Significant at .15 level

<sup>e</sup> Significant at .10 level

related errors. These techniques are described in more detail as the analysis progresses.

**VI. RESULTS**

Table 1 presents the first stage results for the simultaneous model of arrest certainty and aggregate robbery and burglary rates. The results of the reduced-form equations, which predict variations in arrest certainty (as defined by the arrest/offense ratio), are clear: Cities with aggressive, proactive police practices

have higher than average levels of arrest certainty. In fact, independent of major structural characteristics (size, inequality, poverty, divorce, and region), aggressive policing has the largest direct effect on robbery and burglary arrest certainty rates.

The table also presents the final 2SLS structural model results, which show that robbery arrest certainty has a significant and rather large inverse effect on aggregate robbery rates. Indeed, the magnitude of the police sanction effect is second only to that of divorce.<sup>10</sup> For burglary the results are more attenuated: Burglary arrest certainty has a negative but very marginal significant effect. Wilson and Boland (1978) hypothesize that since burglary is a crime of stealth that rarely has eyewitnesses and is not visible to police patrols, we should not expect it to correlate as highly with police sanction measures as robbery.

In any case, the results generally replicate those of Wilson and Boland: Proactive and aggressive policing has strong effects on robbery arrest certainty, which in turn has an apparent deterrent effect on robbery rates in a simultaneous equation model. And even if the critics (e.g., Decker and Kohfeld, 1985) are right in dismissing arrest ratios as deterrence measures, the reduced-form equation results in Table 1 at least demonstrate that proactive policing independently predicts police effectiveness in clearing crimes. This is still consistent with Wilson and Boland's theory.

The analysis now shifts to the second and we believe more important stage of theoretical assessment. Here we test our hypothesis derived from the theoretical integration of Wilson and Boland (1978) with the literature on control of disorder and incivilities (Sherman, 1986; Skogan, 1986; Greenberg *et al.*, 1985) that posits a direct effect of police aggressiveness on crime rates. Recall that this theoretical specification precludes examination of a simultaneous relationship between the arrest/offense ratio and crime. In other words, because proactive policing is now specified to have a direct effect on crime, the simultaneous model examined in the first stage is statistically unidentified and cannot be estimated.

Table 2 presents the results for aggregate robbery and burglary rates. Independent of urban social structure, proactive policing of DUI and disorderly conduct has a direct inverse effect on robbery. The magnitude of the effect is clearly much less than that of divorce, but it is similar to that of region, income, and size. Because the effect of police aggressiveness on burglary is very weak (see also Table 1), for both empirical and theoretical reasons (Wilson and Boland, 1978) the remainder of our analysis focuses on robbery.

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<sup>10</sup> It is beyond the scope of this study to offer substantive interpretations of the effects of control variables on crime. However, it is worth noting that the effects of the controls are for the most part consistent with prior research and that they independently explain a relatively large portion of the variance in crime, thus suggesting that the models are in fact properly specified.

**Table 2.** OLS Regression Results of the Direct Effect of Police Aggressiveness on Robbery and Burglary Offense Rates, U.S. Cities, 1980

City Characteristics	Robbery Rate		Burglary Rate	
	<i>b</i>	$\beta$	<i>b</i>	$\beta$
Police aggressiveness	-.039 <sup>b</sup>	-.18	-.009 <sup>c</sup>	-.09
Population size	.184 <sup>b</sup>	.18	-.041	-.09
Inequality	.103	.04	.256 <sup>b</sup>	.19
Median income <sup>a</sup>	-.049 <sup>b</sup>	-.23	-.034 <sup>b</sup>	-.34
Divorce rate	9.945 <sup>b</sup>	.53	3.526 <sup>b</sup>	.40
Western location	.219 <sup>b</sup>	.13	.191 <sup>b</sup>	.24
Percent black	.150	.03	-.156	-.08
	$R^2 = .70, p < .01$		$R^2 = .44, p < .01$	

<sup>a</sup> Coefficient multiplied by 1,000 to reduce places to right of decimal

<sup>b</sup> Significant at .05 level

<sup>c</sup> Significant at .16 level

The analysis in Table 3 disaggregates the robbery rate by age and race of offender. Once robbery is demographically disaggregated, we see a clear interaction in the data. Quite simply, overall police aggressiveness has a much larger (inverse) effect on black adult robbery offending than on white adult robbery offending. Note, for example, that both the unstandardized and standardized coefficients for police aggressiveness and black adult robbery rates are double the magnitude of the coefficients for white adult robbery rates. Similarly, the effect of police aggressiveness on white juvenile robbery is insignificant, while the corresponding effect for black juvenile robbery is significant and almost double in magnitude. Initial analysis (see also Sampson, 1986a) thus suggests that the moderate effect of police aggressiveness on the aggregate robbery rate may stem from a relatively strong effect on blacks (especially adults) offset by a weaker effect on whites.

The remainder of our analysis is devoted to explaining the conditional effects of race and age on the effect of police aggressiveness. To accomplish this we calculated race-specific proactive policing measures. The mean number of arrests per officer of whites for DUI and disorderly conduct is 4.23 compared to 1.21 for blacks (see the Appendix). This does not necessarily mean that the police are more aggressive toward whites than blacks. There are more whites than blacks in most cities, and hence group size may account for the difference in means. This underscores the importance of carefully accounting for the effect of racial composition even when assessing race-specific police sanctions. Thus we begin by specifying the size of the white population as a control variable in predicting the effect of proactive policing against whites

Table 3. OLS Regression Results of the Direct Effect of Police Aggressiveness on Race and Age-Specific Rates of Robbery Offending Rates, U.S. Cities, 1980

City Characteristics	Robbery Rate							
	White Juveniles		Black Juveniles		White Adults		Black Adults	
	<i>b</i>	$\beta$	<i>b</i>	$\beta$	<i>b</i>	$\beta$	<i>b</i>	$\beta$
Police aggressiveness	-.032	-.10	-.056 <sup>b</sup>	-.16	-.031 <sup>b</sup>	-.15	-.060 <sup>b</sup>	-.30
Population size	.433 <sup>b</sup>	.31	.307 <sup>b</sup>	.20	.298 <sup>b</sup>	.31	.197 <sup>b</sup>	.22
Inequality	.566	.14	-.385	-.08	.763 <sup>b</sup>	.26	.047	.02
Western location	.901 <sup>b</sup>	.38	1.363 <sup>b</sup>	.52	.928 <sup>b</sup>	.55	.780 <sup>b</sup>	.52
Percent black	-.816	-.13	-2.17 <sup>b</sup>	-.30	.516	.11	-1.32 <sup>b</sup>	-.32
Family disruption								
White	.129 <sup>b</sup>	.20	—	—	.146 <sup>b</sup>	.32	—	—
Black	—	—	.107 <sup>b</sup>	.57	—	—	.038 <sup>b</sup>	.36
Per capita income <sup>a</sup>								
White	-.282 <sup>b</sup>	-.27	—	—	-.116 <sup>b</sup>	-.16	—	—
Black	—	—	-.164	-.10	—	—	-.056	-.06
	$R^2 = .33, p < .01$		$R^2 = .38, p < .01$		$R^2 = .43, p < .01$		$R^2 = .37, p < .01$	

<sup>a</sup> Coefficient multiplied by 1,000 to reduce places to right of decimal

<sup>b</sup> Significant at .05 level



on white offending. Similarly, black population size is controlled in the equations for blacks. Before presenting the results, it is necessary to briefly address an important methodological issue in racially disaggregated analyses.

#### A. *Correlated Errors in Cross-Group Analysis*

In comparing black and white models, there are good reasons to expect that the disturbance terms from the two equations are correlated. In the present data, such correlations might arise from common determinants of black and white crime that are not included in the model. This is likely to be the case since both black and white robbery rates pertain to the same geographical unit (cities). When disturbances are correlated across equations in which the endogenous variables are not causally linked, the equations form a system of “seemingly unrelated regressions” (Kmenta and Gilbert, 1970; Hargens, 1987). When the exogenous variables in such equations are identical (e.g., total police aggressiveness), OLS provides the best linear unbiased estimates (Hargens, 1987), and no gain in efficiency is made by estimating residual covariations. In contrast, when exogenous variables differ across equations (e.g., separate black and white measures of police aggressiveness), OLS estimates are no longer efficient; furthermore, comparisons of causal coefficients derived using OLS estimation procedures are erroneous since such tests assume uncorrelated disturbances across equations (*ibid.*).

To assess the determinants of white and black robbery we estimated a “seemingly unrelated regression” (SUR) by employing a maximum-likelihood (ML) covariance structure procedure (LISREL) that allows correlated disturbances (see *ibid.*). The results in Table 4 indicate that the residuals of black and white robbery rates are indeed strongly and positively correlated. Specifically, the correlation between the residuals of black and white adult robbery rates is .38 ( $t$  ratio = 6); the disturbance correlation for juveniles is .32 ( $t$  ratio = 5.1). Also, the changes in  $X^2$  resulting from freeing the between-race error covariances were significant at the .01 level for both groups. Hence, we conclude that the sources of black and white robbery rates not included in the models are positively related.

Having corrected for correlated errors, the table first presents the best-fitting ML estimates for juvenile robbery rates. The results clearly demonstrate that proactive policing of blacks has a significant inverse effect on black juvenile robbery, as compared to an insignificant effect of proactive policing of whites on white juvenile robbery. In fact, the unstandardized coefficient for black juveniles ( $-.159$ ) is some five times greater than the corresponding white juvenile effect of  $-.034$ . If we constrain the effect of police aggressiveness to be equal across race, the change in  $X^2$  is 3.4

**Table 4.** ML Parameter Estimates of SUR Structural Model of Police Aggressiveness and Rates of Race-Specific Robbery Offending, U.S. Cities, 1980

City Characteristics	White Robbery Rate		Black Robbery Rate	
	<i>b</i>	$\beta$	<i>b</i>	$\beta$
<b>Juveniles<sup>a</sup></b>				
Police aggressiveness				
White	-.034	-.10	—	—
Black	—	—	-.159 <sup>d</sup>	-.17
Family disruption				
White	.159 <sup>d</sup>	.25	—	—
Black	—	—	.088 <sup>d</sup>	.48
Per capita income <sup>c</sup>				
White	-.231 <sup>d</sup>	-.22	—	—
Black	—	—	-.292 <sup>d</sup>	-.18
Population				
White	.005 <sup>d</sup>	.21	—	—
Black	—	—	.011 <sup>d</sup>	.18
Western location	1.024 <sup>d</sup>	.43	1.445 <sup>d</sup>	.56
Inequality	.451	.11	-.570	-.12
<b>Adults<sup>b</sup></b>				
Police aggressiveness				
White	-.055 <sup>d</sup>	-.23	-.058 <sup>d</sup>	-.27
Black	—	—	-.091 <sup>d</sup>	-.17
Family disruption				
White	.160 <sup>d</sup>	.36	—	—
Black	—	—	.025 <sup>d</sup>	.23
Per capita income <sup>c</sup>				
White	-.084	-.12	—	—
Black	—	—	-.073	-.08
Population				
White	.003 <sup>d</sup>	.16	—	—
Black	—	—	.002	.05
Western location	.914 <sup>d</sup>	.56	.868 <sup>d</sup>	.58
Inequality	.770 <sup>d</sup>	.27	-.050	-.02

<sup>a</sup> Correlation between residuals of black and white juvenile robbery rates is .32 (*t* ratio = 5.11).

<sup>b</sup> Correlation between residuals of black and white adult robbery rates is .38 (*t* ratio = 5.96).

<sup>c</sup> Coefficient multiplied by 1,000 to reduce places to right of decimal

<sup>d</sup> Significant at .05 level

(degrees of freedom = 1), which is significant at .10. The evidence thus confirms that the racial difference is statistically significant.

Table 4 also presents the adult race-specific robbery model. In estimating the initial model, the modification indexes (see Joreskog and Sorbom, 1984: section III:19) revealed that the fit could be significantly improved if proactive policing of whites was allowed to influence black adult robbery rates. At first blush this may seem intuitively implausible, but when intergroup association patterns are considered, the notion that police actions toward whites may affect blacks not only makes sense but is predictable. The reason is that blacks are the minority and thus, because of group-size constraints, have more interracial contact with whites than whites have with blacks (Blau, 1977; Sampson, 1984). Hence, we might expect that police actions toward the majority group (whites) are quite visible to the minority, whereas proactive policing toward blacks has lower visibility for whites. For example, blacks are likely to perceive police surveillance and proactive patrols not only in black neighborhoods but also in commercial areas (e.g., downtown or business areas) where whites are more common. Indeed, the mean arrests per officer show that the police are some three times more likely to arrest whites than blacks for DUI and disorderly conduct. Interestingly, proactive policing of whites is virtually unrelated to proactive policing of blacks (.03), further suggesting the importance of the racial disaggregation of police sanction measures.

Therefore, we freed the parameter representing the effect of police aggressiveness toward whites on black adult robbery rates, thus significantly improving the fit of the model ( $X^2$  change = 10.11;  $p < .01$ ). The resulting ML parameter estimates indicate that police aggressiveness toward *both* whites and blacks have significant inverse effects on black adult robbery. Proactive policing toward whites also has a significant and fairly substantial inverse effect on white adult robbery. Note that the unstandardized effect of police aggressiveness toward whites is invariant across race ( $-.055$  versus  $-.058$ ;  $X^2$  difference not significant). Moreover, the relative effect of proactive policing of whites on black adult robbery is stronger than the effect of proactive policing of blacks.

Tables 3 and 4 indicate that proactive policing has a relatively stronger effect on adult robbery than on juvenile robbery. Because of this finding and the fact that juveniles bear little of the brunt of aggressive police action as defined in this study,<sup>11</sup> the remainder of our analysis focuses on adult robbery. In particular, we consider whether the race-specific results regarding the deterrent

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<sup>11</sup> For example, arrests of juveniles account for only 8% of the arrests for disorderly conduct and DUI in our sample. Because of the relative rarity of juvenile arrests for these offenses and the wide difference among the cities' classification rules for nonindex juvenile delinquency arrests, we do not examine race-age-specific measures of proactive policing.

effects of proactive policing on adult robbery in Table 4 arise from inadequate controls of variations in white and black population composition across cities. To assess this possibility we constructed residual scores from the regression of race-specific proactive policing on DUI and disorderly arrest rates. For example, we computed the residual of the regression of black DUI and disorderly arrests per police officer on black DUI and disorderly arrests per 100 blacks. This residual represents the variation in proactive policing of blacks that cannot be accounted for by the prevalence of blacks as offenders. Similarly, we computed the residual from the regression of white proactive policing on white arrests per 100 whites. Finally, we entered percent black in the equation because some have argued (e.g., Liska and Chamlin, 1984) that relative size variations in minority population are more important than absolute populations in influencing police behavior.

The best-fitting maximum-likelihood results for this respecified adult robbery model are presented in Table 5. The pattern and strength of the effects are quite striking. Confirming the results in Table 4, the residualized score of proactive policing of whites has significant inverse effects on both white and black adult robbery rates. In fact, the magnitude of effect of proactive policing of whites is the largest of all exogenous variables predicting black adult robbery, and the second largest for white adult robbery. Although the unstandardized effect of proactive policing of whites is slightly larger for black robbery than white robbery, the difference is not significant.

Perhaps more interesting is the finding that proactive policing of blacks has a smaller but nonetheless direct inverse effect on both white and black adult robbery rates. For example, the standardized effect of proactive policing toward blacks on adult robbery is  $-.28$  and  $-.21$  for blacks and whites, respectively. Aggressive police action against disorder offenses by blacks, who represent only 20 percent of the population, thus has a more salient deterrent effect on adult robbery than we initially expected. Therefore, when proactive police sanctions are racially disaggregated and the effects of population composition are removed, the results clearly suggest that police aggressiveness in controlling disorder by both whites and blacks has a pervasive crime reduction effect on adult robbery.<sup>12</sup>

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<sup>12</sup> In further tests we also relaxed the assumption that arrest certainty and robbery rates are simultaneously related. While the assumption is almost certainly true, by relaxing it we can estimate the direct effect of police aggressiveness on reported crime rates while controlling for the arrest/offense ratio. Such a test assumes the arrest/offense ratio is a fallible indicator of police effectiveness that, like proactive policing, is not determined by the crime rate. The major results above were corroborated. For example, the direct inverse effect of proactive policing on the aggregate robbery rate continued to be highly significant ( $t$  ratio =  $-4.45$ ). And even though the arrest/offense ratio was accounted for in the calculation of disaggregated offending rates, if we analyze raw arrest rates and enter the arrest/offense ratio on the right-hand side

**Table 5.** ML Parameter Estimates of SUR Structural Model of Police Aggressiveness (Residualized Method) and Rates of Race-Specific Adult Robbery Offending, U.S. Cities, 1980<sup>a</sup>

City Characteristics	White Adult Robbery Rate		Black Adult Robbery Rate	
	<i>b</i>	$\beta$	<i>b</i>	$\beta$
Police aggressiveness <sup>b</sup>				
White	-.128 <sup>d</sup>	-.39	-.142 <sup>d</sup>	-.48
Black	-.136 <sup>d</sup>	-.21	-.162 <sup>d</sup>	-.28
Family disruption				
White	.121 <sup>d</sup>	.27	—	—
Black	—	—	.032 <sup>d</sup>	.29
Per capita income <sup>c</sup>				
White	-.053	-.07	—	—
Black	—	—	.005	.00
Population size	.252 <sup>d</sup>	.26	.149 <sup>d</sup>	.17
Western location	.877 <sup>d</sup>	.53	.662 <sup>d</sup>	.44
Inequality	.489 <sup>d</sup>	.17	.078	.03
Percent black	.327	.07	-1.47 <sup>d</sup>	-.36

<sup>a</sup> Correlation between residuals of black and white adult robbery rates is .31 (*t* ratio = 5.99).

<sup>b</sup> Police aggressiveness is measured using the residuals obtained after regressing race-specific proactive policing rates (arrests per officer) on arrest rates for DUI and disorderly conduct (arrests per racial subgroup).

<sup>c</sup> Coefficient multiplied by 1,000 to reduce places to right of decimal

<sup>d</sup> Significant at .05 level

## VII. SUMMARY AND DISCUSSION

The present study tested two very different model specifications of the effect of the police on crime. The first followed Wilson and Boland (1978) in positing an indirect effect of police aggressiveness on robbery through arrest certainty, thereby permitting identification of the reciprocal effect of arrest certainty on robbery. In this simultaneous 2SLS model, police aggressiveness had the largest overall effects on arrest certainty, which in turn had significant and large negative effects on robbery.

But the arrest/offense ratio as a measure of deterrence has been seriously questioned on both empirical and theoretical grounds in previous research (Decker and Kohfeld, 1985; Nagin,

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of the equation the major results are substantively the same. These tests lend further weight to the argument that proactive policing has a direct impact on crime.

1978; Chilton, 1982). In conjunction with a strong theoretical rationale derived from a linkage of Wilson and Boland (1978) with the recent literature on urban disorder (e.g., Sherman, 1986; Skogan, 1986) that focuses on perceived threat and control of crime through control of disorder, our major analysis thus estimated the direct effect of police aggressiveness on the crime rate. In this analysis the arrest/offense ratio was not specified as a causal variable.

Consistent with predictions, proactive policing of DUI and disorderly conduct appeared to have significant deterrent effects on robbery rates with those effects conditioned by the age and race of the offender. The significant inverse effect of overall police aggressiveness on the aggregate robbery rate (Table 1) stems mainly from its deterrent effect on adult robbery offenders and black robbery offenders (Table 3). The age-specific pattern probably arises because juveniles are not the primary targets of legal arrests for driving under the influence and disorderly conduct. Juveniles thus may not perceive proactive policing of disorder as a threat of social control to the same extent that adults do.<sup>13</sup>

The relationship between proactive policing and adult robbery was further explicated by disaggregating the measures of police behavior. Specifically, the effect of total police aggressiveness in Table 3 masked a large negative effect of police aggressiveness toward whites on adult robbery rates by both racial groups (Tables 4 and 5) combined with an additional but smaller deterrent effect of proactive policing of blacks, also on adult robbery by both racial groups (Table 5). We attribute the stronger effect of aggressive policing toward whites on robbery to the fact that whites are the numerical majority (recall that they represent three-quarters of the population) and hence contribute disproportionately to DUI and disorderly arrests per officer (see the Appendix). Thus, even though racial composition was controlled in the analysis, proactive policing toward whites is in all likelihood tapping a general dimension of the aggressive nature of the police department. This makes the additional and *independent* deterrent effect of proactive policing toward blacks on adult robbery all the more impressive.

In any event, proactive policing has been shown to have significant and relatively strong inverse effects on robbery, especially adult robbery by both blacks and whites. Moreover, these results cannot be dismissed by reference to the standard objections to de-

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<sup>13</sup> However, even though they may not appear in FBI arrest data as arrestees (see n. 11 above), we nonetheless assume that juveniles are often detained and taken into custody for disorder offenses. Because many jurisdictions do not consider apprehensions of juveniles to be legal arrests, they are not reported to the FBI; also, research on juvenile processing by the police shows substantial use of informal means (Black and Reiss, 1970; Reiss, 1971). This suggests that future research exploring the deterrent effect of proactive policing on juvenile crime will need access to additional data sources on juvenile sanctioning.

terrence research. There are no common terms in the independent and dependent variables; simultaneity is not a reasonable explanation; and we analyzed both reported crime rates and disaggregated offending rates, estimated correlated errors, and controlled for the most important urban structural characteristics (e.g., inequality, region, family disruption, poverty, and population composition). Hence, on strict empirical grounds the results suggest that cities do vary significantly in their police practices, and that those with higher levels of proactive police strategies directed at public disorders also generate significantly lower robbery rates.

There are also distinct theoretical advantages to the conceptual model. With regard to police aggressiveness, the theory of direct effects did not focus on actual probabilities of getting caught but on threat communication and control of disorder. That is, the mechanism hypothesized to account for the results is the impact of police activities on changing the perceptions of potential offenders by controlling incivilities and disorder. This theoretical integration has strong support from recent research on urban public disorder (Sherman, 1986; Skogan, 1986; Greenberg *et al.*, 1985).

It is true, however, that our analysis was not able to choose definitively between the two alternative scenarios posed by Wilson and Boland (1978). One cannot determine empirically the direct effects of *both* police aggressiveness and the arrest/offense ratio on crime in a simultaneous equation model because such a model is unidentified. As emphasized by Fisher and Nagin (1978: 372), identification restrictions must ultimately be justified on a priori theoretical grounds, for the validity of restrictions can never be empirically tested using data generated by the model under consideration. For this reason we believe the strong theoretical framework in conjunction with the serious validity problems associated with arrest/offense ratios (Decker and Kohfeld, 1985; Chilton, 1982; Nagin, 1978) favors the interpretation that proactive policing directly decreases crime rates. Since the criminal justice system may be able to do very little in terms of changing actual probabilities of arrests for crimes such as robbery, it seems fruitful to continue exploring generalized deterrent effects that operate by controlling a narrower but highly visible class of suppressible urban problems.

In particular, further research should examine the crime reduction effects of proactive policing toward other offenses, such as solicitation for prostitution, public drinking, drunkenness, panhandling, and drug use and sales. The most pertinent test would appear to be experiments whereby police strategies are randomly assigned to different areas (see Sherman, 1986: 366–372). The results of the present study suggest that it would be especially useful, although probably unfeasible politically, to incorporate racial composition into an experimental design. For example, one design might implement proactive policing in two different sets of experi-

mental areas—white and black—that are then compared to racially matched control areas. But since such an experimental strategy is unlikely, further race- and age-specific research comparing citywide variations in police activity and crime is needed to yield clearer insights into the relationships among race, policing, and crime.

### VIII. CONCLUSION

Given the limitations inherent in nonexperimental research in general, and considering the specific limitations of the present study, policy implications are necessarily less than conclusive. Our intent, however, was to assess a theory of policing, not to determine how many crimes can be diverted given a certain policy. We are not suggesting therefore that the police should start being more aggressive. Obviously any crime control policy entails certain trade-offs, and it is quite conceivable that the costs of enacting policies based on the current research are too high relative to expected gains.

Indeed, Sherman (*ibid.*) has provided an excellent discussion of the concerns raised with proactive policing strategies. For instance, he notes (*ibid.*, p. 368) that there is anecdotal evidence that police aggressiveness, especially in black areas, may contribute to race riots. Similarly, the National Advisory Committee on Civil Disorders blamed police field interrogations for engendering poor police-community relations in the ghetto (*ibid.*). The restrictions on freedom entailed by an aggressive policing policy are also an important concern, especially if vigorous police actions to suppress disorder are linked to offenses that may not be considered particularly serious in many communities (e.g., public drinking, graffiti, prostitution, and congregation on street corners). Despite these potential problems, the outlook for achieving both crime reduction and social justice is not all that bleak. As Sherman (*ibid.*, p. 379) concludes,

Done properly, proactive strategies need not abuse minority rights or constitutional due process nor hinder community relations. But the difficulties of implementing such strategies are substantial, and great care is required to succeed at implementation.

These concerns and difficulties are beyond the scope of the present study, but they should not be ignored in future empirical and theoretical deliberations.



## APPENDIX

Means and Standard Deviations of Police  
Characteristics, Crime Rates, and Control  
Variables, U.S. Cities, 1980

	Mean	Standard Deviation
Police aggressiveness	5.44	3.37
White	4.23	3.10
Black	1.21	1.23
Robbery arrest certainty	.278	.115
Burglary arrest certainty	.122	.045
Population size*	12,307	.759
Western location	.263	.442
Inequality	1.546	.253
Percent black	20.3	16.50
Percent white	73.2	15.70
Black population	80,880	191,613
White population	223,689	381,010
Median income	19,271	3,248
White per capita income	6,432	1,045
Black per capita income	3,759	716
Divorce rate	.183	.039
White female-headed families	9.21	1.61
Black female-headed families	26.37	6.19
Robbery offense rate*	5.858	.729
Burglary offense rate*	7.830	.333
Robbery offending rate*		
White juvenile	5.403	1.051
Black juvenile	6.987	1.166
White adult	5.460	.740
Black adult	7.540	.669

\* Natural log transformation

## REFERENCES

- BLACK, Donald, and Albert J. REISS, Jr. (1970) "Police Control of Juveniles," 35 *American Sociological Review* 63.
- BLAU, Judith, and Peter BLAU (1982) "The Cost of Inequality: Metropolitan Structure and Violent Crime," 47 *American Sociological Review* 114.
- BLAU, Peter (1977) *Inequality and Heterogeneity*. New York: Free Press.
- BLUMSTEIN, Alfred, Jacqueline COHEN, and Daniel NAGIN, eds. (1978) *Deterrence and Incapacitation: Estimating the Effects of Sanctions on Crime Rates*. Washington, DC: National Academy Press.
- BLUMSTEIN, Alfred, Jacqueline COHEN, and Christy VISHER (1986) "Linking the Crime and Arrest Process to Measure Individual Crime Rates." Presented at the National Institute of Justice Annual Conference on Prediction, Denver (April 19).

- BOYDSTUN, John E. (1975) *San Diego Field Interrogation: Final Report*. Washington, DC: Police Foundation.
- BYRNE, James, and Robert J. SAMPSON (1986) "Key Issues in the Social Ecology of Crime," in J. Byrne and R. J. Sampson (eds.), *The Social Ecology of Crime*. New York: Springer-Verlag.
- CHAIKEN, Jan (1975) *Patrol Allocation Methodology for Police Departments*. Santa Monica: Rand.
- CHAMBLISS, William, and Robert SEIDMAN (1971) *Law, Order and Power*. Reading, MA: Addison-Wesley.
- CHILTON, Roland (1982) "Analyzing Urban Crime Data: Deterrence and the Limitations of Arrest per Offense Ratios," 19 *Criminology* 590.
- COOK, Dennis, and Sanford WEISBERG (1982) "Criticism and Influence Analysis in Regression," in S. Leinhardt (ed.), *Sociological Methodology*. San Francisco: Jossey-Bass.
- COOK, Phillip J. (1980) "Research in Criminal Deterrence: Laying the Groundwork for the Second Decade," in M. Tonry and N. Morris (eds.), *Crime and Justice: An Annual Review of Research*. Chicago: University of Chicago Press.
- DECKER, Scott, and Carol KOHFELD (1985) "Crimes, Crime Rates, Arrests, and Arrest Ratios: Implications for Deterrence Theory," 23 *Criminology* 437.
- EHRlich, Isaac (1975) "The Deterrent Effect of Capital Punishment: A Question of Life and Death," 65 *American Economic Review* 397.
- FISHER, Franklin, and Daniel NAGIN (1978) "On the Feasibility of Identifying the Crime Function in a Simultaneous Model of Crime Rates and Sanction Levels," in Blumstein *et al.*, 1978.
- FISHER, Joseph, and Robert MASON (1981) "The Analysis of Multicollinear Data in Criminology," in J. A. Fox (ed.), *Methods in Quantitative Criminology*. New York: Academic.
- GOTTFREDSON, Michael, and Don GOTTFREDSON (1980) *Decision Making in Criminal Justice*. Cambridge, MA: Ballinger.
- GOVE, Walter, Michael HUGHES, and Michael GEERKEN (1985) "Are Uniform Crime Reports a Valid Indicator of the Index Crimes? An Affirmative Answer with Minor Qualifications," 23 *Criminology* 451.
- GREENBERG, Stephanie, William ROHE, and Jay WILLIAMS (1985) *Informal Citizen Action and Crime Prevention at the Neighborhood Level: Synthesis and Assessment of the Research*. Washington, DC: U.S. Government Printing Office.
- HARGENS, Lowell (1987) "Estimating Multiequation Models with Correlated Disturbances," in J. S. Long (ed.), *Common Problems in Social Research*. Beverly Hills: Sage.
- HARRIES, Keith (1980) *Crime and the Environment*. Springfield, IL: Charles C Thomas.
- HINDELANG, Michael J. (1981) "Variations in Sex-Race-Age-Specific Incidence Rates of Offending," 46 *American Sociological Review* 461.
- (1978) "Race and Involvement in Common-Law Personal Crimes," 43 *American Sociological Review* 93.
- JACOB, Herbert, and Michael J. RICH (1981) "The Effects of the Police on Crime: A Second Look," 15 *Law & Society Review* 109.
- JORESBOG, Karl, and Dag SORBOM (1984) *LISREL VI: Analysis of Linear Structural Relationships by the Method of Maximum Likelihood*. Mooresville, IN: Scientific Software.
- KENNEDY, Peter (1979) *A Guide to Econometrics*. Cambridge: MIT Press.
- KMENTA, Jan, and R. GILBERT (1970) "Estimation of Seemingly Unrelated Regressions with Autoregressive Disturbances," 65 *Journal of the American Statistical Association* 186.
- LANGWORTHY, Robert (1985) "Wilson's Theory of Police Behavior: A Replication of the Constraint Theory," 2 *Justice Quarterly* 89.
- LISKA, Allen, and Mitchell CHAMLIN (1984) "Social Structure and Crime Control Among Macrosocial Units," 90 *American Journal of Sociology* 383.
- LOFTIN, Colin, and David McDOWALL (1982) "The Police, Crime, and Economic Theory: An Assessment," 47 *American Sociological Review* 393.
- MESSNER, Steven, and Scott SOUTH (1986) "Estimating Race-Specific Of-

- fending Rates: An Intercity Comparison of Arrest Data and Victim Reports." Unpublished working paper. Department of Sociology, State University of New York at Albany.
- NAGIN, Daniel (1978) "General Deterrence: A Review of the Empirical Evidence," in Blumstein *et al.*, 1978.
- PATE, Anthony, Wesley SKOGAN, Mary Ann WYCOFF, and L. W. SHERMAN (1985) *Reducing the Signs of Crime: Executive Summary*. Washington, DC: Police Foundation.
- REISS, Albert J., Jr. (1986) "Why Are Communities Important in Understanding Crime?," in A. J. Reiss, Jr., and M. Tonry (eds.), *Crime and Justice*, Vol. 8, *Communities and Crime*. Chicago: University of Chicago Press.
- (1971) *The Police and the Public*. New Haven: Yale University Press.
- SAMPSON, Robert J. (1986a) "Crime in Cities: The Effects of Formal and Informal Social Control," in A. J. Reiss, Jr., and M. Tonry (eds.), *Crime and Justice*, Vol. 8, *Communities and Crime*. Chicago: University of Chicago Press.
- (1986b) "Effects of Socioeconomic Context on Official Reaction to Juvenile Delinquency," 51 *American Sociological Review* 876.
- (1984) "Group Size, Heterogeneity, and Intergroup Conflict: A Test of Blau's *Inequality and Heterogeneity*," 62 *Social Forces* 618.
- SHERMAN, Lawrence (1986) "Policing Communities: What Works?," in A. J. Reiss, Jr., and M. Tonry (eds.), *Crime and Justice*, Vol. 8, *Communities and Crime*. Chicago: University of Chicago Press.
- (1983) "Patrol Strategies for Police," in J. Q. Wilson (ed.), *Crime and Public Policy*. San Francisco: ICS Press.
- SHERMAN, Lawrence, and Richard BERK (1984) "The Specific Deterrent Effects of Arrest for Domestic Assault," 49 *American Sociological Review* 261.
- SKOGAN, Wesley (1986) "Fear of Crime and Neighborhood Change," in A. J. Reiss, Jr., and M. Tonry (eds.), *Crime and Justice*, Vol. 8, *Communities and Crime*. Chicago: University of Chicago Press.
- SKOGAN, Wesley, and Michael MAXFIELD (1981) *Coping with Crime: Individual and Neighborhood Reactions*. Beverly Hills: Sage.
- SMITH, Douglas (1984) "The Organizational Context of Legal Control," 22 *Criminology* 19.
- SWIMMER, Eugene (1974) "The Relationship of Police and Crime: Some Methodological and Empirical Results," 12 *Criminology* 293.
- WILLIAMS, Kirk, and Richard HAWKINS (1986) "Perceptual Research on General Deterrence: A Critical Review," 20 *Law & Society Review* 545.
- WILSON, James Q. (1968) *Varieties of Police Behavior*. Cambridge: Harvard University Press.
- WILSON, James Q., and Barbara BOLAND (1981) "The Effects of the Police on Crime: A Response to Jacob and Rich," 16 *Law & Society Review* 163.
- (1978) "The Effect of the Police on Crime," 12 *Law & Society Review* 367.
- WILSON, James Q., and George KELLING (1982) "Broken Windows: The Police and Neighborhood Safety," *Atlantic* (March) 29.