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THE FLORIDA STATE UNIVERSITY
SCHOOL OF CRIMINOLOGY AND CRIMINAL JUSTICE

POLICE USE OF NONDEADLY FORCE:
OLEORESIN CAPSICUM SPRAY

By

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ABSTRACT

Much of the current knowledge regarding police-civilian violent encounters relies upon the lethal force literature. Focusing upon police-caused deaths restricts inquiry to the extreme end of the continuum and rivets attention on the product rather than the process. As a result, the present study analyzes "Use of Force" reports from one police agency to examine individual and situational characteristics in these incidents with a specific emphasis on police use of oleoresin capsicum (OC) spray.

A chi square test of significance is used to determine the impact of individual officer and offender characteristics and situational factors on level of force and use of OC spray. Officers use lower levels of force against female offenders while using higher levels against armed or threatening suspects. Additional findings support the hypothesis that officers who are at a physical disadvantage compared to the size of the offender resort more readily to pepper gas. Officers also prefer OC to personal and impact weapons when faced with Level Three, passive physical resistance, and Level Four, active physical resistance, actions. As suspects become more violent, OC use declines. Finally, the use of pepper spray significantly curtails officer and offender injuries. The implications of these findings for police organizations are discussed.

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POLICE USE OF NONDEADLY FORCE:
OLEORESIN CAPSICUM SPRAY

By
EUGENE V. MORABITO

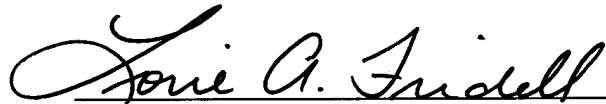
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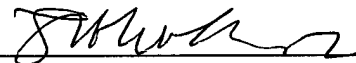
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This work is dedicated to my mother and father who always encouraged me to get an education: one of the few things no one can ever take from you.

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ABSTRACT

Much of the current knowledge regarding police-civilian violent encounters relies upon the lethal force literature. Focusing upon police-caused deaths restricts inquiry to the extreme end of the continuum and rivets attention on the product rather than the process. As a result, the present study analyzes "Use of Force" reports from one police agency to examine individual and situational characteristics in these incidents with a specific emphasis on police use of oleoresin capsicum (OC) spray.

A chi square test of significance is used to determine the impact of individual officer and offender characteristics and situational factors on level of force and application of OC spray. Officers use lower levels of force against female offenders while using higher levels against armed or threatening suspects. Additional findings support the hypothesis that officers who are at a physical disadvantage compared to the size of the offender resort more readily to pepper gas. Officers also prefer OC to personal and impact weapons when faced with Level Three, passive physical resistance, and Level Four, active physical resistance, actions. As suspects become more violent, OC use declines. Finally, the use of pepper spray significantly curtails officer and offender injuries. The implications of these findings for police organizations are discussed.

CHAPTER ONE

STATEMENT OF THE PROBLEM

Introduction

Violence is an inherent part of policing. In 1992, offenders killed 62 law enforcement officials and injured another 29,657 officers during 81,252 assaults (U.S. Department of Justice, 1994: 403, 407-408). On the other side of the police violence coin, authorities killed 297 citizens in 1990, the latest year for which data were available (National Center for Health Statistics, 1994: 233). There are no national records which tally the number of citizens injured by the police.

The police are empowered to use force to uphold laws and to maintain order. Few organizations in society are granted the power to coerce citizens legitimately. However, the others that are, which include the military and the courts, are tightly controlled by law. Laws governing police use of force, on the other hand, tend to be vague (Fyfe, 1979; Fyfe, 1988). Such ambiguity gives law enforcement officers a great deal of flexibility to decide when and how to use force. This equivocation also exposes officers who use force and their departments to an increased risk of civil liability. To combat this problem, some agencies have devised stringent use of force guidelines to clarify the relationship between levels of offender resistance and the corresponding police use of force (Croft and Austin,

1987; Frisby, 1993; Fyfe, 1979; Sparger and Giacomassi, 1992).

Such policy directives carefully delineate the authority of the police to use force, but do not increase society's knowledge of the dynamics of police-citizen confrontations. Sadly, researchers have not studied the use of force phenomenon thoroughly. Often the data sources do not provide accurate or complete information. In addition, methodologies do not address the full spectrum of official action. Previous studies focus almost exclusively on the most infrequent, but highly visible, issue of police use of lethal force. The overwhelming majority of force incidents, those situations which do not produce a fatality, have not received adequate attention.

Research on the use of deadly force employs a variety of problematic information sources and strategies. Several studies (Jacobs and Britt, 1979; Kania and Mackey, 1977; Kuykendall, 1981; Takagi, 1974) utilize national data based on the cause of death listed on death certificates. This source of information is now recognized as flawed (Sherman and Langworthy, 1979). Other studies use police records as their database (Alpert, 1989; Blumberg, 1981; Fyfe, 1979; Fyfe, 1980; Fyfe, 1981a; Fyfe, 1981b; Fyfe, 1982; Geller and Karales, 1981; Grennan, 1987; Matulia, 1982; Meyer, 1980; Milton et al., 1977; Robin, 1963; Sherman and Blumberg, 1981). No independent attempt is made to verify police reporting of firearms use, but research has revealed that police tend to report more police-caused homicides than coroners record (Sherman and Langworthy, 1979). Finally, studies based on newspaper stories (Harding and Fahey, 1973; Kobler, 1975; Waegel, 1984) are susceptible to editorial policy changes in reporting and may not capture all police-caused homicides (Sherman and Langworthy, 1979: 551).

Similarly, research strategies based on offenders killed (Jacobs and Britt, 1979; Kania and Mackey, 1977; Kobler, 1975; Kuykendall, 1981; Matulia, 1982; Robin, 1963; Takagi, 1974), offenders shot (Blumberg, 1981; Geller and Karales, 1981; Meyer, 1980; Milton et al., 1977), and police-weapon discharges (Alpert, 1989; Fyfe, 1979; Fyfe, 1980; Fyfe, 1981a; Fyfe, 1981b; Fyfe, 1982; Grennan, 1987; Sherman and Blumberg, 1981) miss the mark. These techniques ignore situations in which police could have used deadly force, but, for whatever reason, did not. The vast majority of police responses to potentially violent situations conclude without officers resorting to any violence, let alone lethal force (Bayley and Garofalo, 1989; Blumberg, 1989; Croft and Austin, 1987; Friedrich, 1980; Scharf and Binder, 1983; Sherman and Blumberg, 1981; Sherman and Cohn, 1986). Data sources and methodologies that allow examination of the situation surrounding police use of force, specifically less-than-lethal force, are necessary.

Research on nondeadly force takes two directions. The first approach examines authorized uses of force. These studies are few and suffer from serious methodological problems. For instance, inquiries in this area are old, constrained, or insignificant (Bayley and Garofalo, 1989; Croft and Austin, 1987; Friedrich, 1980; Holzworth and Brown, 1990). Findings based on outdated data do not address such variables as the recent effects of increased police officer education, use of female officers, risk of civil liability, and employment of oleoresin capsicum (OC) spray (Croft and Austin, 1987; Friedrich, 1980). Limited inspections (Bayley and Garofalo, 1989; Friedrich, 1980) ignore contextual factors and do not fully examine the situational influences surrounding police use of force. Finally, small sample sizes preclude significant results and make generalizations impossible

(Bayley and Garofalo, 1989; Holzworth and Brown, 1990).

The second research direction pursues excessive use of force (Barker, 1978; Bayley and Mendelsohn, 1969; Campbell and Schuman, 1968; Reiss, 1968; Worden, 1995).

While police brutality is an important issue, its occurrence is exceptionally rare (Friedrich, 1980; President's Commission, 1967; Worden, 1995). Additionally, varying definitions of police brutality and problematic methodologies hamper the measurement of excessive use of force (Bayley and Mendelsohn, 1969; Geller, 1985; President's Commission, 1967; Reiss, 1968). Study of this phenomenon does little to illuminate the largely unexplored area of police use of nondeadly force.

A new direction in use of force studies that considers the police-citizen encounter focusing on police use of less-than-deadly force is necessary. Most deadly force literature implies police use of lethal force occurs instantly in time. Researchers ignore factors that lead up to the final fatal action (Binder and Fridell, 1984). In fact, a series of contextual perceptions and decisions precedes the final act of pulling the trigger (Binder and Scharf, 1980; Fyfe, 1989; Scharf and Binder, 1983). A research design that views police-citizen encounters as a series of events culminating in a final outcome assumes that some use of less-than-deadly force may play a role in preventing the lethal application of police power. Thus, it behooves researchers to study police use of nondeadly force.

The goal of this study is to overcome data shortcomings, to expand the methodology, and to explore the largely unknown realm of police use of less-than-deadly force, particularly the employment of OC spray. The research will focus on police officer characteristics, offender traits, and situational factors as they affect police use of nonlethal

force. The Tallahassee Police Department (TPD) Use of Force Reports (Appendix A) and related documentation will provide information about these incidents.

Deadly Force Data and Methodology

The vast majority of studies concerning police use of power examine the employment of deadly force. However, data availability and research designs have constrained these examinations. Nevertheless, the information sources and methodologies employed in lethal force analyses inform the direction of nondeadly force inquiry.

There are no reliable nor valid national databases concerning police use of force. The two assessments that do exist are the *Vital Statistics of the United States* and the Federal Bureau of Investigation (FBI) *Supplementary Homicide Reports*. Unfortunately, these tallies deal only with police actions that result in death. Furthermore, there are no nationally compiled sources that track police use of nonlethal force. Two locally available sources of data--newspapers and police-generated reports--are not suitable for assembling national statistics because of regional reporting differences and the cost of gathering such figures on a large scale (Blumberg, 1986: 231-232). Consequently, studies that examine use of force across the United States tend to rely upon information contained in U.S. Government publications (Jacobs and Britt, 1979; Kania and Mackey, 1977; Kuykendall, 1981; Takagi, 1974).

The National Center for Health Statistics annually publishes *Vital Statistics of the United States*. Figures reported in *Vital Statistics* come from the cause of death listed on the Standard Death Certificate filled out by local coroners and medical examiners. Police-

caused deaths are coded as "death by legal intervention." By default, studies using this data source are confined to investigations of police-caused fatalities.

While one might assume that *Vital Statistics* would generate valid and reliable figures, several errors can affect the number of deaths reported in this document. The cumulative effect of these flaws results in a serious underreporting of deaths caused by police action. For example, a comparison of records from thirteen police departments with figures reported to the National Center for Health Statistics revealed that agency counts exceeded those from *Vital Statistics* in nine of the thirteen jurisdictions (Sherman and Langworthy, 1979: 552). Overall, the national figures underreported deaths due to legal intervention by 51 percent in the agencies surveyed. Based on the undercounts in their sample, Sherman and Langworthy (1979: 553) conclude that figures in *Vital Statistics* are at least 26 percent too low.

Another national source of police-caused deaths is the FBI *Supplementary Homicide Reports*. Police departments voluntarily submit these accounts to the FBI. These data are not generally available to researchers because the FBI does not vouch for their reliability (Sherman and Langworthy, 1979: 547). Matulia (1982) was one of the few researchers able to gain access to this source. However, in a comparison of police-generated reports from 14 city samples with numbers from the *Supplementary Homicide Reports* used by Matulia (1982), Fyfe (1988) found only two exact matches. In one case, the city of Indianapolis recorded 13 fatal woundings from 1973-74 while the FBI reports showed none (Fyfe, 1988: 175). Unfortunately, Matulia's (1982) use of FBI reports limited his research to police-caused fatalities at a time when research designs were expanding to

include wounds and all shots fired.

Newspaper reports and police-generated reports offer alternate data sources. However, researchers relying on news stories cannot study use of force nationally and again are limited to fatalities. Scholars have employed police-generated reports to contrast legal homicides among a handful of jurisdictions, but widespread comparisons are not feasible. Official reports, however, allow researchers to expand their study to all shots fired by the police.

Several studies relied on newspaper reports (Harding and Fahey, 1973; Kobler, 1975; Waegel, 1984). News stories differ in the facts reported from one accounting to the next. Furthermore, inconsistent editorial policies influence newspaper coverage of police use of force. The most thorough coverage occurs for police-caused deaths. Yet, even this reporting may not be complete. In large cities, such as New York, where murders are common, newspapers may not report all police uses of deadly force (Sherman and Langworthy, 1979: 550-551). Police use of nonlethal force is even less likely to come to the attention of the media consistently. Consequently, results based on this data source are questionable.

A final data source is police-generated reports. Several limitations affect scholars' abilities to use these documents. First, many police departments refuse to release these data to researchers. Second, police figures often differ from numbers obtained from other sources. Third, there would be a considerable cost involved in collecting data from more than a handful of agencies. Fourth, differences in definitions across departments could prevent meaningful comparisons between agencies (Sherman and Langworthy, 1979:

550). Finally, police administrators and internal affairs investigators examine records of police shootings during review boards and for potential administrative or judicial hearings. Knowing this, police officers are likely to report details of a shooting that show they complied with departmental policy and legal procedures (Geller, 1982: 152).

While bias may be present in official reporting, police records are still the most complete, valid, and reliable data sources. Many key variables examined in deadly force incidents (age, race, gender, experience, degree of injury) are objective factors that are most likely to be reported accurately. Additionally, officer veracity may be checked from independent witness statements and coroner reports concerning many key areas in agency reports (Geller, 1982: 152). Therefore, police-generated reports provide the most comprehensive data source for researchers examining deadly force encounters (Binder and Fridell, 1984: 252). The same is true for nondeadly incidents.

Official reports allow researchers to look at all shots fired by the police, not just woundings and deaths. Use of such records was an important expansion to the scope of research since Fridell (1989: 161-162) found that police homicide rates and discharge rates are not interchangeable when analyzing factors related to police use of deadly force. Yet, some researchers who have used police-generated reports have chosen to consider only woundings and fatalities (Blumberg, 1981; Geller and Karales, 1981; Meyer, 1980; Milton et al., 1977). Although an improvement over previous studies that looked solely at police homicides, methodologies that consider all shots fired are better (Alpert, 1989; Fyfe, 1979; Fyfe, 1980; Fyfe, 1981a; Fyfe, 1981b; Fyfe, 1982; Grennan, 1987; Sherman and Blumberg, 1981). Still, some criminologists have criticized these efforts for not

considering averted shootings as potentially lethal confrontations (Doerner and Ho, 1994; Fridell and Binder, 1992; Geller, 1985; Scharf and Binder, 1983). Preliminary findings indicate that police shooting situations differ from instances where officers avoided deadly force (Fridell and Binder, 1992). Consequently, further examination of all potentially violent police-citizen encounters may reach conclusions that differ from previous research. In order to examine police-citizen interaction, researchers must explore the decision process leading up to a deadly force encounter. Such an analysis highlights the need for inquiry into the use of less-than-deadly force.

The Police-Citizen Encounter

Deadly force methodologies that look at fatalities, woundings, or shots fired focus on the final act in a chain of events--the split-second decision that resulted in a weapon discharge. These studies ignore the process that leads up to the final resolution (Binder and Scharf, 1980; Fyfe, 1989; Geller, 1985; Reiss, 1980; Scharf and Binder, 1983). The decisionmaking mechanism consists of a series of choices that can narrow or expand the officer's options for dealing with an offender. Methodologies that concentrate on the results of a police weapon discharge ignore the decision options that provide alternate means for dealing with an offender (Reiss, 1980: 127).

Police use of deadly force is not foreordained in any potentially lethal situation. The decision to use mortal force is the result of a complex process. Choices made at one point affect later choices and the final outcome (Binder and Scharf, 1980: 118). Scharf and Binder (1983) have divided the decision chain concerning deadly force into five stages.

These phases are anticipation, entry and initial contact, dialogue and information exchange, final decision, and aftermath.

The anticipation phase includes the time from notification, call, report, or dispatch until officer arrival on the scene. During this period, the responding patrol officer obtains information from the dispatcher, fellow officers, or citizens. This input affects the officer's mind set. This mental image will color the individual's future actions upon entering the situation (Scharf and Binder, 1983: 112).

How the patrol officer enters the physical scene will affect the final outcome. For example, an individual who immediately seeks cover when dealing with an armed offender may preserve options and choices that would be lost if he or she openly confronted such a hostile individual. In the entry and initial contact phase, the officer receives direct impressions that confirm or refute the information received in the previous stage (Scharf and Binder, 1983: 113).

Communication between police officials and the offender occurs in the information exchange period. In some cases, this phase may be nonexistent or very short consisting merely of an order to "drop your gun." At the opposite extreme, this stage could last for hours or days as with hostage negotiations. In most police situations, this interval probably lasts several minutes (Scharf and Binder, 1983: 113-114).

In the final decision phase, the officer reaches a point where he or she makes a decision whether or not to use deadly force. The final frame is a deliberate action with carefully planned sniper operations. On the other hand, the ultimate outcome could be a spontaneous trigger pull. A choice to not shoot could occur if innocent bystanders move

into the area or if the offender drops his or her weapon and surrenders (Scharf and Binder, 1983: 114-115).

Finally, the aftermath stage could involve citizens admonishing or physically attacking the officer. If a shooting occurs, this phase includes report filing and administrative determinations concerning the validity of the shooting. Frequently, an officer must relinquish his or her weapon, field questions from internal affairs and superiors, and face temporary reassignment to another less critical job while officials review the shooting (Scharf and Binder, 1983: 115).

Officer responses and citizen actions contribute to the outcome during the decisionmaking phases. Some patrol officer choices can compress the process and increase the likelihood that the final decision will result in the use of deadly force. For example, if an officer charges into an armed situation with little prior knowledge of the setting and participants involved, he or she will increase the risk and the probability of resorting to deadly force. On the other hand, if the officer approaches from a position of concealment or cover, he or she gains time to observe the situation and to take action from a protected position. Such protection avoids the imminent danger inherent in an exposed position and preserves viable alternatives to deadly force (Fyfe, 1989: 476-477). Similarly, certain actions by potential offenders can increase the likelihood that the police will resort to force. Posing a direct threat to a police officer or demonstrating disrespect are two common precipitating factors (Binder and Scharf, 1980: 114-115).

Use of nondeadly force measures can increase an officer's options for dealing with offenders and preclude a lethal outcome. The use of less-than-deadly force techniques

increases officer alternatives and provides other options to firearms in certain situations. For example, the application of OC spray on a violent suspect could avoid the use of a police firearm. Unfortunately, police use of nondeadly force is an area that has not received a great deal of scholarly attention, but is critical to understanding the entire spectrum of police-citizen encounters.

In addition, the role of the citizen is also vitally important in the decisionmaking process. Police officers look for certain cues to guide their subsequent actions and decisions. Certain actions of potential offenders can increase the likelihood of police resort to force. Offender behavior is one of the most critical determinants of police action (Doerner, 1991; Doerner and Ho, 1994; Fridell and Binder, 1992; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). In departments that have clearly defined use of force policies, these offender actions trigger police responses designed to control the situation and avoid escalation to more extreme uses of force.

Nondeadly Force Data and Methodology

While the best available analyses regarding police use of deadly force rely on police-generated reports, studies on the use of nondeadly force have generally employed observer-gathered and survey-gathered data (Barker, 1978; Bayley and Garofalo, 1989; Bayley and Mendelsohn, 1969; Campbell and Schuman, 1968; Friedrich, 1980; Holzworth and Brown, 1990; Reiss, 1968; Worden, 1995). These techniques often produce small sample sizes and tap secondary or indirect sources of information. Even those studies that employ larger samples have found that police use of force is a rare event (Bayley and

Garofalo, 1989; Bayley and Mendelsohn, 1969; Campbell and Schuman, 1968; Croft and Austin, 1987; McLaughlin, 1992; Worden, 1995). In addition, many studies of nondeadly force focus on police brutality (Barker, 1978; Bayley and Mendelsohn, 1969; Campbell and Schuman, 1968; Reiss, 1968). Such an emphasis ignores the far more frequent uses of authorized force.

Official reports offer researchers a large source of data. The availability of greater sample sizes guarantees statistically relevant results. On the other hand, while observational inquiries can reveal rich detail, they are time-consuming and costly to conduct. Consequently, scholars rarely undertake such studies. Furthermore, this research design does not generally employ a large enough sample to produce definitive results (Geller, 1985: 164). Of six studies conducted on the authorized use of less-than-lethal force, one uses data obtained in 1966. Three of the five have problems reaching statistically significant conclusions. Finally, two use samples obtained from police-generated use of force reports. Yet, even these studies predate the widespread introduction of OC spray.

The most methodologically rigorous study (Friedrich, 1980) used data collected by Reiss in 1966 for the President's Commission on Law Enforcement and the Administration of Justice (1967). Friedrich (1980: 84) cited three approaches to explaining the use of force. The individual approach defined police use of force in terms of officer characteristics. The situational approach interpreted use of force by looking at the specific characteristics of the police-citizen encounter. Finally, the organizational approach viewed use of force as a result of the setting within which it occurred. An analysis of Reiss's

observational data using crosstabulations and multiple regression analysis controlled for the effects of these competing explanations.

While focusing on individual police officer characteristics and situational factors, this study could not overcome problems with sample size and data constraints. Police used force in only 5.1 percent of 1,565 incidents in which a citizen was a possible offender. Such a small sample size, about eighty cases, makes meaningful statistical analysis questionable. In addition, Friedrich's (1980) study utilized Reiss's data set, which is now almost thirty years old. Consequently, information gathered in 1966 constrained Friedrich's (1980) findings. For example, the research did not examine such individual officer characteristics as gender, age, education, height, and weight. A multiple regression analysis revealed that eighteen variables combined to explain only 12.8 percent of the variation in use of force (Friedrich, 1980: 94). While this effort highlights some variables as more important than others, the small sample size negates the results of a seemingly powerful statistical analysis. Furthermore, overlooked factors, not addressed by this study, may better explain the use of nondeadly force.

Worden (1995: 41-42) analyzed data collected for the Police Services Study (PSS) in 1977. Observers recorded information on 5,688 police-citizen encounters. In many cases researchers also prepared narrative accounts of the encounters. Police departments included in the PSS ranged in size from thirteen officers to over 2,000. They served populations ranging from 6,000 to 500,000. The departments and neighborhoods were selected to provide a rough cross section of organizational arrangements and residential service conditions for urban policing in the United States.

Consistent with many other studies (Bayley and Garofalo, 1989; Blumberg, 1989; Croft and Austin, 1987; Friedrich, 1980; Scharf and Binder, 1983; Sherman and Blumberg, 1981; Sherman and Cohn, 1986), Worden (1995: 42) found that police use of force was uncommon. Authorized employment of force comprised less than 1 percent of all encounters and use of improper force constituted less than one-half of one percent of all police-citizen interactions. Consequently, out of an overall sample of 5,688 cases, the researcher based his conclusions concerning justified and improper use of force on thirty-seven and twenty-three incidents, respectively. As with Friedrich (1980), Worden's (1995) small sample sizes dilute the relevance of his findings.

Bayley and Garofalo (1989) estimated the prevalence of violence in police work, analyzed the factors associated with the use of force, and compared the performance of patrol officers who were adept at defusing highly charged situations with a cross-section of all others. Observers monitored New York City police work in three precincts that were busy, mixed in ethnicity, and characterized by a diverse mixture of crime and calls for police service (Bayley and Garofalo, 1989: 3).

There were three major findings from this study. First, patrol officers rarely faced violence in public encounters. The research design attempted to increase the amount of conflict observed. Nevertheless, patrol officers arrived at the scene of ongoing conflict about once a week and most of that confrontation was verbal only. Officers became embroiled in incidents involving physical force about once every other week. This force consisted mostly of grabbing, shoving, pushing, or restraining (Bayley and Garofalo, 1989: 8).

Second, an analysis of 467 potentially violent mobilizations revealed three variables significantly correlated with police use of force. These three factors were conflict in progress at arrival, citizen weapon possession, and obscene/insulting remarks or gestures by citizens. However, these determinants accounted for less than 4 percent of the variation in police use of force (Bayley and Garofalo, 1989: 9).

Third, observations of police-citizen encounters noted differences in how officers identified as more skilled by their colleagues acted compared to less skilled officers. However, the study could not determine whether these officers were, in fact, more proficient (Bayley and Garofalo, 1989: 17). In summary, a small number of violent encounters formed the basis of the findings precluding a more definitive outcome. Also, many factors such as officer characteristics and offender traits were not considered.

Holzworth and Brown (1990: 99-101) used a sample of just six officers to examine decisionmaking cues. The authors concluded officers weighed the nature of the offense and suspect background information more heavily than suspect behavior, personal characteristics, and situational factors when deciding a course of action. Obviously, though, a sample of six officers hardly provides a statistically relevant database.

McLaughlin (1992) provided one of the few nondeadly force studies employing police-generated use of force reports. This author considered the influence of such factors as incident type, race (officer and offender), gender (officer and offender), age, and experience on police use of force. The study examined 168 cases from the Savannah, Georgia Police Department covering the year 1989. While this work provided interesting descriptive information in the form of percentage tables and use of force report narrative

excerpts, there was no substantive evaluation or conclusions concerning causation.

Furthermore, the study focused on physical control techniques and made no mention of pepper spray.

Finally, Croft and Austin (1987) conducted an inquiry that parallels the present study. The researchers compiled a sample of 1,179 nondeadly force incidents employing data obtained from use of force reports for the Syracuse and Rochester, New York police departments. Nevertheless, like McLaughlin (1992), this study predates the introduction of OC spray. The researchers applied the most exacting statistical techniques to compare high and low force officers within the two departments. However, for the most part, Croft and Austin (1987) presented only descriptive statistics of individual and situational factors.

Studies examining the excessive use of police force tend to be old and rely on researcher observations or police and citizen surveys (Barker, 1978; Bayley and Mendelsohn, 1969; Campbell and Schuman, 1968; Reiss, 1968). Observer-gathered data provide direct evidence of police conduct, but produce small sample sizes with limited explanatory power. Surveys generally furnish a larger data pool, but are indirect measures of police use of force and are subject to respondent biases.

Using data gathered by Reiss, the President's Commission (1967: 182) identified twenty of 5,339 public encounters with police as involving excessive use of physical force. Reiss's (1968: 12) report, however, claimed thirty-seven cases of police brutality. Brutality was described as an improper physical assault on a citizen. The definition included instances of handcuffing an offender who did not attempt to resist or flee. As a

matter of officer safety, police officers generally handcuff all offenders they arrest whether or not they resist or attempt to flee. There is no explanation for this discrepancy between two reports that purport to use the same data source. However, the Commission numbers may have omitted the questionable categorization of handcuffing as brutality.

Barker (1978: 270) surveyed a pool of forty-three officers in an unnamed Southern city about a variety of police deviance. One question concerned the extent to which an individual believed other officers engaged in police brutality. Thirty-nine percent of the sample believed fellow officers engaged in excessive uses of physical force.

Bayley and Mendelsohn (1969: 129) also polled police officers concerning their knowledge of brutality incidents. Out of 100 Denver police officers, 27 percent said they had personally witnessed an incident they considered harassment or excessive force.

Bayley and Mendelsohn (1969: vii) concurrently surveyed 336 white, 234 black, and 236 Hispanic participants to assess public beliefs in Denver, Colorado. While tapping a larger pool of respondents with differing beliefs, instances of police use of force were still rare.

Police brutality means physical assault to most people. However, a substantial proportion of surveyed minorities classified such nonphysical actions as not listening to their side of the story as brutality (Bayley and Mendelsohn, 1969: 124). Such differing interpretations could skew survey results. In addition, there were several race based variations. Only 8 percent of whites compared to 37 percent of blacks and 39 percent of Hispanics believed charges of brutality. Four percent of whites, 10 percent of blacks, and 24 percent of Hispanics claimed that Denver police had mistreated them or someone in their family. Overall, the number of police use of force cases was small and the vast

majority of minorities were not mistreated (Bayley and Mendelsohn, 1969, 125-127).

Campbell and Schuman (1968: 43) surveyed 5,764 people in fifteen major cities. There were 2,814 blacks and 2,950 whites in the sample. Thirty-five percent of blacks compared, to 10 percent of whites, believed the police unnecessarily "rough up people." Twenty-four percent of blacks and 7 percent of whites claimed it happened to someone they knew while 4 percent of blacks and 1 percent of whites claimed it happened to them. Once again, respondent bias could be a factor and such small percentages yield comparatively small sample sizes.

Studies that have attempted to examine police use of less-than-lethal force also utilize old data, identify only a small fraction of the possible explanations for the police use of force, and employ methodologies that generate small sample sizes or indirect measures. Only Friedrich's (1980) study fully exploited sophisticated data analysis, but the data set was so small, old, and constrained as to limit the usefulness of the findings. Why individual police officers make the decisions they do is a very complex matter affected by individual characteristics, situational influences, community variables, and organizational factors. One organizational element that clarifies patrol officer options is lucid use of force guidelines.

Florida Use of Force Continuum

Statutes, court rulings, and departmental policies constrain police use of deadly force. Generally, society places strict limitations on lethal force, but fewer restraints on nondeadly force. In this realm, much is left to the judgement of individual officers.

Unfortunately, a lack of appropriate, clear policy governing less-than-lethal force needlessly exposes officers and departments to liability and second guessing (Desmedt, 1984: 170-171).

Departments with clearly defined policies governing the use of force appear to log fewer deadly encounters (Fyfe, 1979; Fyfe, 1982; Sparger and Giacomassi, 1992). Such organizational procedures also limit civil liability and assist in the prosecution of criminal cases (Frisby, 1994b: 56). To avoid excessive force claims, the FDLE Bureau of Criminal Justice Standards and Training developed a use of force matrix (Appendix B) which delineates the proper police response to citizen aggression.

There are six offender resistance levels and six officer response levels. The six offender resistance levels are presence, verbal, passive physical, active physical, aggressive physical, and aggravated physical. The six officer response levels are presence, verbal control, physical control, intermediate weapon, incapacitating control, and deadly force (Frisby, 1993: 38). The Tallahassee Police Department employs a modified version of this continuum (TPD, 1986).

Presence is the first level of resistance and response. Citizen presence is his or her proximity to the scene of a suspicious activity. Officer presence is an appropriate response to all levels of resistance. Presence includes the officer's arrival on scene and interview stance. After arrival on-scene, the police official conveys his or her status through proper voice, identification, and body language techniques. Often the mere arrival or presence of a police authority defuses a situation. The interview stance protects the officer and forms the basis for a physical response, if necessary (Frisby, 1994b: 57).

Verbal activity is the next level of both resistance and response. Verbal resistance usually involves a suspect's refusal to obey the officer's instructions or commands. Police verbal response consists of consoling touches, verbal directions, and dialogue. These actions are acceptable for all levels of resistance. Consoling touch involves a soft, assisting physical touch when directing or a firm, strong physical touch before escalating to physical control. Under verbal direction, the officer commands the subject to engage in or to refrain from a certain activity. Finally, dialogue is a two-way communication aimed at problem identification and resolution (Frisby, 1994b: 57). While TPD policy guidelines endorse verbal activity as the next level, the agency does not include consoling touch (TPD, 1986: 4-5).

The remaining resistance levels involve a commensurate response to the physical actions of the offender. Passive and active physical resistance are resistance Levels Three and Four. Passive resistance occurs when an offender does not physically challenge the officer, but makes it necessary for an officer to apply physical measures to assert control. Active physical resistance involves evasive maneuvers to avoid police control, like fleeing police pursuit (Frisby, 1994b: 57).

Physical control is response Level Three and involves five subcategories. First, restraint devices are mechanical tools designed to restrict movement and ease search techniques. These devices include handcuffs, flex cuffs, leg irons, lateral restraints, and the like. They are an appropriate response for resistance Levels Two through Six. Second, transporters are techniques to control and/or move a subject from one point to another. Take downs redirect a subject to the ground limiting physical resistance and

simplifying the use of restraint devices. Pain compliance methods are ways to force a subject to comply with directions by inflicting controlled pain. Transporters, take downs, and pain compliance procedures are appropriate responses for resistance Levels Three through Six. Finally, countermoves impede the subject's movement toward an officer. Countermoves are appropriate responses for resistance Levels Four through Six (Frisby, 1994b: 57).

Response Level Four addresses intermediate weapons that include police batons and stun guns. These devices are an appropriate response for resistance Levels Four through Six (Frisby, 1994b: 57). While the above paragraphs describe Florida's guidelines on police use of force for Levels Three and Four, individual agencies are free to modify these stipulations.

The Tallahassee Police Department divides response Level Three, control and restraint, into soft techniques and hard techniques. Procedures designed to gain control of an offender with little risk of injury are soft techniques. These approaches include wrist locks, take downs, or pressure point tactics. Hard techniques include striking the suspect and the use of Electronic Restraint devices. The Tallahassee Police Department matrix authorizes such procedures when the offender increases his or her level of resistance by punching or struggling (TPD, 1986: 4-5). The department currently classifies the use of OC spray as a Level Three response although it had been previously designated at Level Four (Coe, 1994).

Oleoresin capsicum or pepper spray provides police with another nonlethal force option. Oleoresin capsicum is made from a naturally occurring inflammatory substance in

cayenne peppers. The spray causes swelling of the mucus membranes, as well as burning of the eyes and breathing passages. When an offender inhales OC, the respiratory tract becomes inflamed, breathing grows harder, and physical resistance becomes more difficult (Granfield et al., 1994: 1).

Level Five of suspect opposition is aggressive physical resistance. A hostile attacking movement that is likely to cause injury, but not death or serious bodily harm, constitutes aggressive resistance. The fifth level of response is incapacitating force. It is used to render an offender temporarily unconscious or unable to fend for himself or herself. This level involves some strikes and blows and is an appropriate response for resistance Levels Five and Six (Frisby, 1993: 38-39).

Finally, overt and hostile assaults conducted with the intent and apparent ability to cause death or to inflict grievous bodily harm are aggravated physical resistance, Level Six. Such attacks may or may not involve a weapon. The last police response level is deadly force. Use of lethal force is a last resort, only as a response to resistance Level Six. The use of firearms, as well as any other implements that are likely to cause death or serious bodily harm, is considered deadly force. For instance, the use of a police baton to strike a blow to the head or ramming with a police vehicle would be considered deadly force (Frisby, 1994b: 57).

In order to prevent unnecessary civil litigation and assist officer decisionmaking, FDLE developed a use of force matrix (Appendix B). The Tallahassee Police Department subsequently modified this state guideline for its purposes. The resulting policy defines appropriate officer response to various levels of offender resistance. While there is still a

substantial amount of officer judgement involved in use of force decisions, the matrix provides a tool to gauge the appropriateness of force application. In addition, the related use of force reports yield a wealth of information concerning offender characteristics and situational factors.

The Present Study

Police resort to deadly force in less than 1 percent of all police-citizen encounters. Yet, researchers focus extensively on this phenomenon. Such a narrow view limits the ability of lethal force studies to explain police application of force. The nondeadly force studies that do exist employ questionable methodologies and small sample sizes. As a result, the present study attempts to rectify this situation by examining a substantial number of violent incidents that the police resolve through less-than-lethal means.

Nondeadly force analyses employ several questionable research techniques. Observer studies are plagued by viewers' inability to comprehend and interpret what they see. Recent studies on police arrest decisions have exposed the limitations of observer-based methodologies (Klinger, 1994; Lundman, 1994). Paper-and-pencil attempts to gauge officer responses to hypothetical scenarios capture officer attitudes, but reveal little about actual behavior out in the field (Frank and Brandl, 1991). Consequently, the literature is rife with deficiencies that imperil definitive interpretation.

The present study strives to solve these shortcomings by examining police use of force reports. These accounts cover the nondeadly force spectrum, provide a large number of cases, do not rely on outsider observations, and deal with actual, not simulated,

situations. Analysis of this data source has the potential to shed new light and yield significant results concerning nonlethal police force.

Chapter Summary

Previous studies on police use of force focus almost exclusively on the most infrequent, but highly publicized, issue of officer application of lethal force. While these analyses of deadly force have steadily improved over the years, problems still remain. Most notably, researchers have made little effort to look at all potentially violent situations. A broader examination could explain why some equally threatening encounters end in a police shooting while others do not.

Part of this difference may result from police use of less-than-lethal force that avoids fatal options. Unfortunately, scholars have not probed this area adequately. The nonlethal force studies that do exist are old or limited in their approaches to the phenomenon. For instance, they universally predate the introduction of OC spray. Additionally, little effort is made to employ police use of force records to explore more common nondeadly police-citizen interactions. This area requires new emphasis since sanctioned applications of nonlethal force are far more common than either deadly or excessive force.

Despite flaws in the previous research, older studies provide valuable clues. Past inquiries have considered a range of factors that affect police use of lethal and nonlethal force. Units of analysis included individuals, situations, police organizations, and communities. Each improvement in research strategy better explained police use of force. A review of previous literature, which is the focus of the next chapter, will provide

invaluable guidance for the direction of the current study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Many factors can affect police behavior and researchers have offered numerous hypotheses to account for officer actions. Sherman (1980) categorizes the explanations of police performance using five levels of analysis. The individual tier examines personal characteristics of police officers. Situational explanations focus on the interaction between the police and citizens. The organizational level assumes that agency practices and management influence police behavior. The effect of the overall local environment leads to community explanations of patrol officer actions. Finally, legal explanations suppose that judicial and legislative decisions control police behavior. Taken together, these five levels of analysis would provide a complete picture of the factors that contribute to police behavior. Unfortunately, it is not feasible to examine all areas simultaneously in one study.

The present study examines individual and situational variables that influence officer decisions to apply nondeadly force, particularly OC spray. Research on police use of nonlethal measures provides some direction concerning these factors (Bayley and Garofalo, 1989; Croft and Austin, 1987; Friedrich, 1980; Worden, 1995). Nevertheless, the deadly force literature provides the bulk of information concerning variables that

impact police application of force. Consequently, a search for predictors of officer use of nonlethal force must explore this area of the literature.

Officer Characteristics

One could compile a virtually endless list of officer characteristics purported to have some bearing on police use of force. However, earlier reviewers (Geller, 1985; Geller and Scott, 1992; Sherman, 1980) have identified some of the more pertinent factors. For this study, gender, race, education, height, and age and experience are the salient individual characteristics under consideration.

Gender

The traditional argument against women in policing is that female officers cannot handle the violent nature of police work. Researchers, though, have refuted the notions that police work is extremely dangerous and that women are physically unable to handle hazardous encounters (Bell, 1982; Charles, 1982; Milton, 1972; Robin, 1963).

Nevertheless, the debate concerning women's ability to handle dangerous confrontations has led to two opposite, but equally erroneous, beliefs. The first viewpoint is that women will be less likely to employ force and not use it when appropriate. The second belief is that women, in an effort to compensate for their physical deficiencies, will resort prematurely to deadly force (Doerner and Ho, 1994; Grennan, 1987; Melchionne, 1976). Empirical studies (Bloch and Anderson, 1974; Croft and Austin, 1987; Doerner, 1991; Doerner and Ho, 1994; Grennan, 1987; Sherman, 1975; Worden, 1995) have failed to conclusively support either view, although most of these analyses are anecdotal or based

on small sample sizes.

Only one study (Grennan, 1987) deals solely and specifically with women police officers and their use of force. However, other research indicates that policewomen conclude incidents with less violence than their male counterparts. Bloch and Anderson (1974) matched eighty-six women with eighty-six comparison men hired at the same time in 1972. Both groups received patrol assignments in Washington, D.C. and were evaluated over a one year period. The researchers interviewed police officers and found that women acted less assertively and believed in less aggression (Bloch and Anderson, 1974: 4).

Sherman (1975) confirmed Bloch and Anderson's (1974) results. The study evaluated the first sixteen women recruited and placed on one-person motor patrol compared to a group of sixteen male officers from the same academy class in St. Louis County, Missouri. Female police officers performed less aggressively than their male counterparts, made fewer arrests, and engaged in less "prevention" activities like car and pedestrian stops. In addition, the study concluded that policewomen were less likely to use force, even though Sherman (1975) did not specifically study use of force issues. Violent or potentially violent situations occurred too infrequently to draw any firm systematic conclusions about this area (Sherman, 1975: 435-436).

Based on ninety-eight use of force incidents involving female officers in Rochester and Syracuse, New York, Croft and Austin (1987) reached mixed conclusions. The researchers divided officers into high and low force categories based on two formulas. The Standard Use of Force Ratio compared officer use of force incidents to the

individual's number of arrests. An Expanded Use of Force Ratio accounted for the number of days an officer spent on patrol. This latter method more fully captured potential exposure to use of force incidents. Croft and Austin (1987: C-85-C-86) divided officers into high and low force groups based on the median value for each formula.

An examination of the Standard Ratio revealed that policewomen were more likely than policemen to fall into the high force category. However, when examining the Expanded Ratio, no significant differences between men and women emerged. The disappearance of a gender-based use of force difference indicated that females spent a longer time on patrol relative to their number of use of force incidents (Croft and Austin, 1987: C-96).

Worden (1995: 53) found no significant difference between males and females concerning officer use of reasonable or improper force. However, his sample consisted of only 69 female officers. While he found no statistically significant variations, there were no policewomen involved in any use of force incidents.

Grennan (1987) attempted to correct for the problem of small sample size. He examined the relationship between gender and police-citizen confrontations in a sample of 3,701 incidents involving a firearms discharge by an officer. In a comparison of teams comprising male/female partners, policemen accounted for 76.5 percent of all firearms discharges. This finding supports the hypothesis that the male partner in male/female patrol teams was more likely to discharge his firearm during a violent confrontation than the female partner. However, male officers had more time on the force than female officers so seniority may confound any gender-based conclusion (Grennan, 1987: 82).

A final piece of support comes from two studies of unholstering and shooting behavior that occurred during "shoot/don't shoot" computer-assisted simulator training in a controlled setting. Female officers were more likely to stay holstered longer than their male counterparts (Doerner, 1991: 6). When they did draw their weapon, policewomen were less likely to hit the target and less likely to subdue the opponent with deadly force (Doerner and Ho, 1994: 61). While these results appear to support the hypothesis that policewomen act less aggressively than policemen, once again, experience appears to play a qualifying role.

Available studies suggest that women act less assertively during potentially violent confrontations involving deadly force, but the research is far from conclusive. Perhaps a reluctance to resort to deadly force would translate into an increased use of nonlethal force options by policewomen. On the other hand, if women do act less aggressively in all situations, female officers would be underrepresented in nondeadly use of force reports. At this point, past research is not sufficient to steer the present inquiry in a clear direction concerning gender and less-than-lethal force.

Race

Officer race is an important aspect in the sanctioned use of force. However, scholarly attention to offender race often overshadows this police characteristic. To fully explain minority overrepresentation in police-caused death statistics, researchers must consider police officer race. Nondeadly force research must also acknowledge this factor.

If police use of force were biased, white officers would be more likely to use force than black patrol officers. However, the most methodologically rigorous studies

(Friedrich, 1980; Fyfe, 1981b) indicate that black patrol officers are more likely to use force than white patrol officers. Other studies also support this conclusion (Croft and Austin, 1987; Geller and Karales, 1981). However, when researchers remove differential risk factors, race-based differences disappear (Doerner, 1991; Doerner and Ho, 1994).

Friedrich's (1980: 87, 90) multiple regression analysis found that black patrol teams were more likely to use force than all-white or mixed-race patrol teams. Similarly, Fyfe (1981b) in New York City, as well as Geller and Karales (1981) in Chicago, found that black officers were more likely than white officers to use deadly force both on-duty and off-duty. Fyfe (1981b: 377, 381) explained this result by noting that black officers patrolled the more hazardous areas. Furthermore, minority officers often lived in high crime areas. Consequently, these individuals faced more off-duty situations where deadly force was appropriate.

Geller and Karales (1981) attributed the disproportionate rate of black officer shootings primarily to off-duty incidents. Like Fyfe (1981b), Geller and Karales (1981: 1859) credit the higher rates of off-duty black officer discharges to residential patterns of black and white police officers. Once again, Chicago black officers were more likely to live in high crime areas. Consequently, they were involved in more off-duty shooting incidents because they faced more off-duty, deadly force situations.

Croft and Austin's (1987: C-96) examination revealed race-based disparities involving nondeadly force. Minority officers were more likely to be high force officers when calculating use of force based on arrests and numbers of days on patrol. In other words, black and Hispanic officers spent less time on patrol compared to their number of use of

force incidents. However, as with Fyfe (1981b) and Geller and Karales (1981), disproportionate minority assignment to higher risk patrol zones could explain this finding.

When differential risk factors are removed, officer race becomes insignificant. A limited empirical confirmation of the role of on-duty patrol assignment and off-duty residential patterns can be found in Doerner (1991) and Doerner and Ho (1994).

Although small sample sizes were involved, both studies employed a neutral, "laboratory" style environment of a firearms training simulator. As expected under such conditions, disparate shooting rates by race disappeared. Both studies found no significant racial difference in the rates of unholstering a weapon and using deadly force in an experimental setting.

Police use of deadly and nondeadly force are arguably different phenomena. Deadly force may be used by on- and off-duty officers, whereas nondeadly force is primarily an on-duty issue. Nevertheless, the implications of deadly force research are clear. Any analysis of police use of on-duty force and officer race must control for patrol assignment patterns.

Education

There is no conclusive evidence concerning the role of education and police officer use of force. Existing studies examine individual police departments making generalization impossible (Bozza, 1973; Cascio, 1977; Cohen and Chaiken, 1973; Croft and Austin, 1987; Finkenauer, 1975; Roberg, 1978; Sherman and Blumberg, 1981). One direct examination of the role of education on police use of deadly force reaches no substantial conclusion (Sherman and Blumberg, 1981). In other studies, Cascio (1977)

and Worden (1995) found no consistently significant effects of education on use of nondeadly force, but Croft and Austin (1987) did. Other analyses furnish no direct evaluation of the impact of education on use of force (Bozza, 1973; Cohen and Chaiken, 1973; Finkenauer, 1975; Roberg, 1978). However, they form a basis for some meaningful inferences concerning this area.

Officer education plays an uncertain role in the police use of deadly force. In Sherman and Blumberg's (1981) study of the Kansas City, Missouri Police Department, the only statistically significant finding involved changes in education. However, this finding was inconsistent. The authors compared officers with no change in education from the time of entry onto the police force to officers with a one to two year increase and to officers with a three or more year increase. Officers with the largest gain in years of schooling were most likely to shoot at a fleeing suspect and less likely to shoot at an offender who assaulted them with a gun. Conversely, officers with a one to two year increase in education were least likely to shoot at a fleeing suspect and most likely to shoot at a suspect who assaulted them with a gun (Sherman and Blumberg, 1981: 325).

The impact of education on the less-than-deadly use of force is similarly contentious. For example, in Dade County, Florida, there was a slight statistically significant negative correlation between the number of use of force reports and the amount of formal education for white officers. On the other hand, there were no significant correlations for use of force reports and the amount of formal education for black or Spanish-surnamed officers (Cascio, 1977: 91). While controlling for such factors as race, motivation, intelligence, age, and length of service, this study did not address area of assignment. If

minority officers patrolled higher risk areas, they would have faced a disproportionate exposure to higher levels of violence (Fyfe, 1981b). Thus, minority officers may have had more opportunities to use force regardless of educational background.

Worden (1995: 55) found no relationship between higher levels of education and use of force at the commonly accepted $p < .05$ level of significance. On the other hand, Croft and Austin (1987: C-100) concluded that officers with at least a bachelor's degree use more force compared with their time on patrol. Such conflicting results characterize the inquiry into the role of education in police behavior.

A study of the New York City police department provides additional ambiguous results (Cohen and Chaiken, 1973: 62). This research examined the effect of a variety of police characteristics on performance. One facet of the study was the effect of education on citizen complaints concerning the use of force. The results were decidedly mixed. Citizens logged at least one complaint against 15.8 percent of those with less than a high school education, 17.7 percent of those with a high school equivalency diploma, 11.5 percent of high school graduates, and 12.0 percent of those with some college education. Thus, there is no smooth correlation between higher levels of education and citizen complaints.

Other studies that may show officer propensities to use nondeadly force are equally conflicting. In New Jersey, college educated officers responded differently than non-college educated officers in discretionary situations. In nine out of ten sample scenarios, college-educated police recruits decided to handle particular situations without resort to official action (Finkenauer, 1975: 452). Similarly, Roberg (1978) found that officers in

Lincoln, Nebraska with higher levels of education had fewer dogmatic beliefs. These two analyses suggest that officers with more education would be less likely to resort to formal police action. Since use of nondeadly force is one type of formal police action, the inference is that college-educated officers would be less likely to resort to force. On the other hand, Bozza (1973) found that more educated officers in the Costa Mesa, California Police Department were more likely to make arrests. This suggests that officers with higher levels of education are more likely to resort to formal police actions including the use of force.

The contradictions between these studies could depend on regional differences in departments, small sample sizes, or lack of proper controls. In addition, the age of these studies could be a factor. Strong police interest in seeking college degrees began in the 1970s. Therefore, the number of college-educated officers on any given police force may not have been sufficiently large enough to allow for meaningful conclusions concerning the effect of education (Sherman and Blumberg, 1981: 328-329).

In short, the current evidence concerning the role of education on use of force is limited. In general, situational factors and clear administrative policies seem to override individual police officer characteristics (Brown, 1984; Friedrich, 1980; Fyfe, 1979; Waegel, 1984). The Tallahassee Police Department provides clear guidance in its use of force policy and force continuum procedures for particular situations. Given this fact, the education level of the TPD officer should play no role in the ultimate decision to use nondeadly force.

Height

Height became a popular research topic in 1973 when federal regulations required agencies to support height standards as a bona fide occupational qualification (Swanson and Hale, 1975; White and Bloch, 1975). Based on these studies, there is no support for the premise that height alone has anything to do with the likelihood of police assault. Furthermore, taller assailants do not target shorter officers (Swanson and Hale, 1975: 188). However, there is no substantive body of research that examines whether officer height affects police use of force.

One study assessed the response of fifty officers from a large northeastern city and its suburbs to three different written scenarios (Hayden, 1981). The subjects received a list of twenty topics. From this menu, officers rank-ordered those factors used to decide if the vignette presented a low, medium, or high chance of requiring a deadly force response. Among other things, Hayden (1981: 106) found that physical size was not a determinant in officer decisions to use deadly force.

No large body of empirical evidence exists to suggest that shorter police officers rely on lethal force to compensate for a lack of physical stature. However, firearms can exert control from a distance (Desmedt, 1984: 171). Thus, deadly force is most likely employed in scenarios where close physical contact is not a factor. On the other hand, many nondeadly force techniques require physical contact.

With sufficiently stringent policy guidelines, small officer stature should not result in a reliance on increased levels of force. However, within appropriate officer response levels, diminutive individuals may choose less physically demanding techniques over more

intrusive ones. Specifically, shorter officers might resort to OC more than a take down when dealing with larger suspects. Both actions are a Level Three response, but use of OC spray entails less risk to the officer. Preliminary data from TPD indicates that the introduction of OC spray reduced the overall number of use of force incidents involving physical intervention by officers (Frisby, 1994a). Unfortunately, there was no differentiation made based on officer stature. A more accurate model probably entails an interaction between officer and offender size. Specifically, smaller officers would be more likely to use OC spray when dealing with larger offenders. Thus, size of the officer and offender could play a role in individual decisions regarding authorized nondeadly force options.

Age and Experience

For practical purposes, it is virtually impossible to separate age from experience. To do this effectively one would need a substantial number of individuals who entered police work late in life compared to individuals who entered at a younger age. Otherwise, there is no logical way to separate the effects of increasing age from increasing experience. Nevertheless, Cohen and Chaiken (1973) attempted to separate the effects using 1,608 male candidates appointed to the New York City Police Department in 1957. They found that men who were younger at time of appointment accumulated slightly more total complaints than older men. Fifteen percent of men aged twenty-one to twenty-four at time of appointment received allegations of unnecessary force compared to 7 percent of men over thirty. However, departmental procedures proved fewer complaints against younger men. Thus, there was no significant relationship between age and substantiated

complaints (Cohen and Chaiken, 1973: 52).

Later studies could not cleanly separate the effects of age from experience. Some of these works suggested that rookie officers may resort to the use of lethal force prematurely (Blumberg, 1985; Doerner, 1991). Other research found no difference between more experienced veterans and less seasoned officers (Alpert, 1989; Friedrich, 1980; Fyfe, 1988; Hayden, 1981).

Similarly, nondeadly force research also reached conflicting conclusions. Croft and Austin (1987: C-100-C-103) found that younger, less experienced officers used more force. On the other hand, Worden (1995: 55) discovered no significant relationship between length of service and use of force.

As with officer race, patrol assignment and risk of exposure could influence this variable. Younger officers receive more dangerous patrol functions. Older, more experienced officers tend to occupy detective or administrative positions. Consequently, younger, less experienced officers have a higher chance of encountering situations requiring the use of force.

Offender Characteristics

While often considered part of the situational level of analysis (Sherman, 1980), offender characteristics are similar to police officer traits. Both sets of factors are unchangeable conditions brought into the encounter by the respective participants. Studies that treat offender qualities as situational elements could obscure the effect of truly situation-dependent variables. The present study considers offender gender, race, and

height as offender characteristics.

Gender

Males commit the overwhelming majority of crimes. Men commit 86 percent of violent crimes compared to 13 percent perpetrated by females (U.S. Department of Justice, 1994: 289). Moreover, of those arrested for violent crime, 88 percent are male and 12 percent are female. When based on their respective proportions in the population, authorities arrest men for violent crimes roughly seven times more often than women (U.S. Department of Justice, 1994: 430). Assuming police use restraining devices on virtually everyone they arrest, use of nondeadly force would be an appropriate consideration in every arrest situation. Consequently, males should be vastly overrepresented in cases where police use nondeadly force.

Race

There is no question that police kill black citizens more often than white offenders (Alpert, 1989; Blumberg, 1981; Fyfe, 1981a; Fyfe, 1982; Geller and Karales, 1981; Knoohuizen et al., 1972; Meyer, 1980; Robin, 1963; Takagi, 1974). However, controversy clouds the role of offender race in police use of deadly force incidents. Two "belief perspectives" dichotomize this dissension. The first school of thought maintains that police kill more minorities because they are racist. The second view holds that the disproportionately high rate of minority deaths stems from their higher arrest rate for violent crimes (Goldkamp, 1976). Studies have supported both approaches, but the preponderance of evidence supports the second belief perspective.

Studies which support the position that police officers are racist imply that "police

have one trigger finger for whites and another for blacks" (Takagi, 1974: 30). Some criminologists have criticized the validity of arrest statistics showing higher minority involvement in crime (Geis, 1965; Sutherland and Cressey, 1970). Furthermore, several analyses fail to show comparable rates of police-caused homicides and arrests (Fyfe, 1982; Knoohuizen et al., 1972; Meyer, 1980; Robin, 1963).

Police officers label racial minorities as crime prone. Consequently, blacks are singled out and receive extra attention in the form of higher arrest rates. This view also accounts for the disparate shooting rate between blacks and whites (Goldkamp, 1976: 172). Thus, certain authors dismiss elevated minority arrest rates because they are putatively skewed and caused by systematic discrimination against blacks (Geis, 1965; Sutherland and Cressey, 1970; Takagi, 1974).

Takagi (1974) argues that police arrest rates are poor indicators of black involvement in crime by examining police-caused deaths of the very young and very old. Both these groups are considered less crime prone than middle-age factions. Consequently, involvement in violent crime does not account for the elevated death rates of these two sets. Based on data from *Vital Statistics*, Takagi (1974: 30) reports that the rate per million for the years 1964 to 1968 of black deaths to white deaths was 1.75 to 0.12 for ages ten to fourteen and 4.76 to 0.14 for ages sixty-five and older.

However, a closer inspection of this data does not support a consistent police bias against blacks. There are several annual fluctuations in numbers killed by police during this period. Additionally, the raw number of deaths is so small that it could not reliably support a claim of a trend in police killings of old and young blacks (National Center for

Health Statistics, 1966; National Center for Health Statistics, 1967; National Center for Health Statistics, 1968; National Center for Health Statistics, 1969).

While arrest rates may not reflect societal crime rates perfectly, they arguably provide a generally accurate picture of who commits crimes. Arrest data reported to the FBI in 1992 indicates blacks are six times as likely as whites to commit the violent crimes of murder, forcible rape, robbery and aggravated assault (U.S. Department of Justice, 1994: 447). While such lopsided overrepresentation of blacks may suggest arrest biases, national crime victimization surveys support the trend that blacks commit more crime than their relative proportion in the population. Blacks reportedly perpetrated 33 percent of violent crimes in 1992 involving lone and multiple offenders (U.S. Department of Justice, 1994: 290, 292). This rate is almost three times as large as black citizens' representation in the general population.

Some studies that support the first belief perspective compare black police-caused homicide rates to black involvement in all crime (Knoohuizen et al., 1972; Robin, 1963). Robin (1963: 226) found that from 1950 to 1960 there were thirty-two cases of police-caused homicides in the city of Philadelphia. Eighty-eight percent of this number were blacks. Yet, black offenders accounted for only 30.6 percent of all arrests for all offenses reported to the FBI. When Robin (1963) considered only Part I offenders, 37.5 percent were black. Consequently, there was still a disparity between black deaths and involvement in serious crime. On the other hand, research in Chicago reached a different conclusion. From 1969 to 1970, 74.7 percent of civilian deaths involved black individuals while 55.4 percent of persons arrested were black. Conversely, 24 percent of civilian

deaths involved whites while whites accounted for 35.7 percent of persons arrested (Knoohuizen et al., 1972: 21). Harding and Fahey (1973: 311) examined this same data focusing on arrests for murder, robbery, aggravated assault, weapons offenses, and burglary. They found that blacks were arrested for these offenses 73.3 percent of the time. This result is almost indistinguishable from blacks' 74.7 percent portion of police-caused homicides.

While it may be tempting to dismiss Robin's (1963) result as a historical artifact, more contemporary studies found that more blacks are killed than whites even after controlling for blacks' higher arrest rate for violent and property crimes (Fyfe, 1982; Meyer, 1980). In Los Angeles from 1974 to 1978 blacks made up 55 percent of all suspects shot at compared to 46 percent of Part I arrests. Hispanics and whites each constituted 22 percent of suspects shot at while accounting for 24 percent and 28 percent respectively, of Part I arrests. Minority offenders also posed no more of a threat to officers than white suspects as measured by their actions prior to the shootings (Meyer, 1980: 103-104). Additionally, Fyfe (1982: 720) standardized for property crime involvement in Memphis, Tennessee from 1969 to 1976. He found that 4.3 black property crime suspects were shot at per 1,000 black property crime arrestees compared to 1.8 white property crime offenders per 1,000 white property crime detainees.

Contrary to these studies, the second belief perspective maintains that the disproportionately high rate of minority deaths stems from their disproportionately high arrest for violent crimes. Police officers kill more blacks because more minorities place themselves at risk by engaging in violent criminal behavior. This position dismisses the

labeling theory approach. Minorities actively choose to engage in criminal activity (Goldkamp, 1976: 173). While some analyses compare police-caused fatality and arrest rates (Alpert, 1989; Geller and Karales, 1981; Milton et al., 1977), others examine alternate measures of risk. These studies review the numbers of shots fired, extent of offender injury, and rates of offender fatalities (Blumberg, 1981; Fyfe, 1981a; Geller and Karales, 1981). Other examinations investigate individual officer decisionmaking (Holzworth and Brown, 1990; Holzworth and Pipping, 1985; Hayden, 1981; Dwyer et al., 1990). Still further research provides indirect evidence that police officers do not act on racial biases (Fyfe, 1980; Jacobs and Britt, 1979; Kania and Mackey, 1977; Worden, 1989). Taken as a whole, these studies fail to support the conclusion that police officers engage in systemic racist shooting behavior.

When considering police-caused homicides and arrest rates, Alpert (1989: 489) determined 59 percent of opponents shot at by the police were black compared to 73 percent of violent crime offenders. Similarly, police shot whites and black in equal proportion when considering forcible felony arrest exposure in Chicago from 1979 to 1980 (Geller and Karales, 1981: 1845). Finally, Milton et al. (1977: 22) examined aggregate levels of shooting incidents and index crime arrests for seven sample cities. This research discovered that 76 percent of shooting incidents compared to 73 percent of index crimes involved blacks.

Using other measures of risk, Fyfe (1981a: 104) found no disparity between shooting rates for white and black violent crime offenders in New York City. Black individuals' more frequent involvement in robberies and as opponents armed with guns accounted for

the disproportionate rate of black shootings. When examining risk to officers, Geller and Karales (1981: 1849) reported that black and Hispanic offenders were more likely to use or threaten to use a gun than white shooting victims.

Still one could claim racial bias if the circumstances surrounding a police shooting differed based on race. Fyfe (1981a), Blumberg (1981), and Geller and Karales (1981) conclude that conditions surrounding police shootings do not differ between the races. A white person with a gun is just as likely to get shot at as a black individual with a gun (Fyfe, 1981a: 105). Similarly, both black and white opponents engender the same level of police response. There is no difference in the number of officers involved, the number of shots fired, nor the death rate of opponents based on race (Blumberg, 1981: 162-163). Geller and Karales (1981: 1848) confirm this last finding that blacks are no more likely than whites to die of their wounds.

Further support for police even-handedness appears in an examination of individual police officers under scenario-style evaluation. Such research shows that officers make deadly force decisions based on situational factors. Variables such as actions of the offender, crime committed, and possession of a weapon consistently outweigh individual offender characteristics as input cues to officer decisions (Dwyer et al., 1990; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). Race of the offender does not affect police officers' decision to use deadly force.

Finally, several studies find that other factors better explain officer shooting patterns (Fyfe, 1979; Fyfe, 1988; Jacobs and Britt, 1979; Kania and Mackey, 1977; Sorensen et al., 1993; Worden, 1989). In general, individual offender characteristics and officer attitudes

explain little variation in behavior. Furthermore, organizational and social factors can affect police use of force significantly.

Worden (1989) concludes that situational cues that include offender characteristics and officer attitudes account for little variation in behavior. Other factors better explain police performance. These alternate variables include organizational and societal components.

Police agencies with clear use of force guidelines appear to have fewer fatal shootings (Fyfe, 1979). More restrictive policies also reduce police-caused homicides (Fyfe, 1988; Waegel, 1984). Consequently, the organizational climate can have a major impact on police-caused homicides. Departments that have clear procedures, promote compliance with the rules, and credibly review questionable shootings should reduce citizen fatalities. Such administrative guidelines can be more effective than statutory reforms (Waegel, 1984). Agency procedures that reduce citizen fatalities are sometimes prompted by legal rulings. For example, while Fyfe (1982) found an unexplained disproportionate black shooting rate in Memphis, a later study found improvement. Fewer shootings occurred after the Memphis Police Department instituted new use of force guidelines based on a Supreme Court ruling that outlawed indiscriminate shooting of fleeing felons (Sparger and Giacomassi, 1992).

Another set of factors that could account for variations in police shooting behavior are community characteristics. More violent communities will engender higher levels of police-caused homicides (Fyfe, 1980; Kania and Mackey, 1977; Sorensen et al., 1993). In addition, economic disparities are also plausible explanations for variable rates of

shootings (Jacobs and Britt, 1979; Sorensen et al., 1993).

While the preponderance of evidence supports the view that police officers do not engage in racist shooting behavior, there are still some questions. A complete answer as to why black offenders are shot at and killed more often cannot be found until researchers address several other concerns. For a truly definitive answer, one must know the race of the officers involved in the shootings, the distribution of officers by patrol area, and the racial composition of the criminal population (Robin, 1963: 227). In addition, information concerning all police-citizen encounters would be necessary to finally answer the question of police officer racism.

Police use of deadly force is a highly visible, well-reported event. Use of nondeadly force occurs across a wide ranging scale from verbal direction to techniques just short of deadly force. Some uses of nondeadly force are never reported. Criminologists do not adequately know how suspect race affects this area, but findings should parallel deadly force research. The few nondeadly force studies that address this area provide inadequate direction. Methodologically similar analyses reach opposite conclusions. Both Friedrich (1980) and Worden (1995) examined reasonable and improper police force. However, Friedrich (1980: 91) concluded that offender race had no impact on officer use of force while Worden (1995: 58) found a significant influence. Both studies employ a secondary analysis of a small sample of direct observations.

Racial bias should not be a controlling factor in police use of nonlethal force. This premise should be evident if researchers control for involvement in serious crime, threatening behavior, race of police officer, and patrol assignment. Since nonlethal force

inquiries in this area are inconclusive, more research is necessary.

Height

Suspect height and weight do not appear to be factors that affect police use of deadly force. When examining scenarios involving deadly force decisionmaking, suspect height and weight were not factors in police officers' decisions to use deadly force (Hayden, 1981: 105). Similarly, an examination of cues officers rely on when deciding to use deadly force revealed that suspect size was not a relevant consideration (Holzworth and Brown, 1990; Holzworth and Pipping, 1985). Thus, for situations involving police use of firearms, suspect height is extraneous.

Once again, however, firearms exert control from a distance (Desmedt, 1984: 171). Conversely, nondeadly force techniques require physical proximity. Interestingly, one study found that shorter assailants were overrepresented in instances involving assaults on police officers. One hypothesis is that smaller offenders perceive a physical disadvantage and compensate by initiating violent actions (Meyer et al., 1981: 9). From a police officer perspective, it is logical to assume that larger potential offenders would pose more of a threat to law enforcers. This situation could lead to cases where officers employ nondeadly force more readily to control these suspects.

As previously mentioned, officers would most likely employ nondeadly force commensurate with offender actions, but may rely on less physical techniques. Consequently, OC spray may be the favored Level Three restraint technique. Preliminary data indicate that employment of physical restraints declined after TPD's introduction of OC spray (Frisby, 1994a: 13). Additional study may explain the exact causes of this

observation.

Situational Factors

Study after study concludes that individual characteristics have limited explanatory power (Brown, 1984; Doerner, 1991; Doerner and Ho, 1994; Friedrich, 1980; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). Instead, situational factors provide a better basis for describing police use of force behavior. For example, Fridell and Binder (1992) suggest that interaction between officers and offenders is pivotal in determining whether officers employ deadly force. Situational factors shape the context of the police-citizen encounter and help determine the final outcome. For the present study these variables include the area of officer assignment, offender intoxication, offender actions, weapon possession, and officer actions.

Area of Officer Assignment

Area of assignment makes a difference in exposure to situations requiring the use of force. Studies suggest that officers assigned to higher risk beats, employ deadly force more often (Blumberg, 1981; Fyfe, 1980; Fyfe, 1981a; Geller and Karales, 1981). Logically, use of nondeadly force should follow a similar pattern. It is also important to control for this factor when analyzing the impact of officer race and offender race on use of force.

Offender Intoxication

Level of intoxication appears related to police use of deadly force. Alpert (1989: 490) indicated cocaine or high-alcohol blood levels were present in seven out of ten

police-caused fatalities in Miami in 1986. Elevated levels were also present in the first seven deaths in 1987. A similar pattern emerges in police use of nondeadly force.

Friedrich (1980: 88) concluded that police employed force more often as the level of intoxication increased. Officers used force in 2.2 percent of incidents where the offender was sober, 7.5 percent of the incidents where the suspect showed signs of drinking, and 11.4 percent of the incidents where the perpetrator was inebriated. Similarly, Croft and Austin (1987: C-45) found that 66 percent of all individuals involved in use of force incidents showed some signs of alcohol or drug use. Worden (1995: 58) concluded that citizen intoxication had a significant influence on officer use of force. However, both Friedrich (1980: 91) and Croft and Austin (1987: C-46) caution that this increased use of nondeadly force could have occurred because drunk offenders offered more resistance. Any conclusion concerning the effect of drunk suspects and police use of force should control for actions of the suspect.

Presence of Weapons

Offender possession of a weapon is another significant factor in officer use of deadly force. Dwyer et al. (1990: 299) found that a suspect having a weapon was one of four factors that significantly predicted shooting likelihood. In Horvath's (1987: 233) analysis of metropolitan and rural regions in Michigan, offenders possessed a weapon in 67 percent of the metropolitan shootings and in 74 percent of the rural incidents. Fyfe (1988: 187) found that assaults with a weapon comprised 87 percent of all police shooting incidents in New York, 59 percent in Philadelphia, and 77 percent in Chicago. Across seven cities, 57 percent of lethal engagements involved armed suspect (Milton et al., 1977: 24).

The implication for nondeadly force research is not clear. The use of increased levels of force against armed suspects is clearly consistent with use of force guidelines. However, officers have wider latitude to decide use of force response when dealing with suspects who are violent, but not armed. In virtually every nondeadly use of force case, it is reasonable to assume that some offender action caused a police response. Furthermore, given the policy guidelines at TPD, the officer's use of force should be commensurate with suspect resistance.

Offender Actions

Studies on police use of force are consistent in their conclusions that suspect actions have a major impact on police response (Dwyer et al., 1990; Fridell and Binder, 1992; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). The latest direction in deadly force research emphasizes the interaction between police and civilians. This school of thought believes that such interplay is a two-way street. The actions of offenders can affect the outcome just as surely as the actions of officers (Binder and Scharf, 1980; Fridell and Binder, 1992). Consequently, suspect behavior influences the use of force decision.

One aspect of offender deportment is the crime that the suspect commits. The offense that prompted the call for police intervention is a critical consideration. Several inquiries into officer decisionmaking support this assertion. For example, Hayden (1981: 106) found that most police officers focus attention on the crime that initiated the police response, not on the physical characteristics of the offender. Holzworth and Pipping (1985: 190) and Holzworth and Brown (1990: 97-98) confirm that officers pay a great

deal of attention to the nature of the call. Findings about the significant impact of suspect behavior are consistent for both deadly and nondeadly force.

In the area of deadly force, intent to inflict harm, commission of a felony, and leaving a building were three of four actions that significantly predicted shooting behavior (Dwyer et al., 1990: 299). In one Michigan study of metropolitan and rural police departments, violent activity precipitated most of the incidents (56 percent metropolitan, 52 percent rural). In addition, 92 percent of the city suspects and 89 percent of the country offenders were shot while involved in criminal activity at the time of police intervention (Horvath, 1987: 230).

A specific breakdown of crimes that led to police firearms discharges indicates that assaults, burglaries and robberies were the most common offenses. In New York City, police officers fired their weapons most frequently when responding to robberies (37.1 percent). Traffic stops accounted for 12.2 percent of the remaining discharges, suspicious persons investigations 11.6 percent, and response to disturbances 10.7 percent (Fyfe, 1981a: 101). Horvath (1987: 230, 232) found that the most common activities leading to police use of deadly force in the metropolitan region of Michigan were felonious assault (25 percent), burglary (24 percent), and other assaults (22 percent). In an aggregation of offender activity from seven cities that resulted in police shootings, 32 percent involved disturbance calls (this category included assaults), 21 percent involved robberies in progress, and 20 percent involved burglaries in progress (Milton et al., 1977: 25).

Some nondeadly force studies (Friedrich, 1980; Worden, 1995) suggest that the use of police force increases as the seriousness of the offense escalates. This condition could

occur because police informally sanction more serious offenders or more serious offenders are more likely to resist (Friedrich, 1980: 90). On the other hand, Croft and Austin (1987) claim that misdemeanor cases dominate use of force incidents. Such opposite findings could result from different departmental arrest policies.

In another study, Bayley and Garofalo (1989: 9-10) identified three factors as significantly related to police use of nondeadly force. These determinants were conflict at arrival, weapon possession, and obscene or insulting remarks or gestures. Unfortunately, the total R^2 for these variables was only .04. Evaluating the data in a different way, Bayley and Garofalo (1989) examined how well they predicted police use of force. When none of these predictors were present, only 6 percent of encounters resulted in police use of force. However, when one factor was present, police used force in 16 percent of potentially violent encounters. If two or three factors were positive, the use of force rate rose to 23 percent. Although these three predictor variables have sizeable effects when present, they are rarely encountered.

Offender actions during the police-citizen encounter clearly influence nonlethal officer reactions, but to the exact degree remains uncertain. More serious offender behavior should result in the increased use of force by police officers. However, too few occurrences of studied police use of nondeadly force are available to make finer distinctions.

Officer Actions

Officers use force when they need to control an individual. Officers need to control individuals to perform their lawful duties and to protect themselves or others against harm.

The correct amount of force is that which establishes control and neutralizes the threat or resistance (Desmedt, 1984: 172). The Tallahassee Police Department use of force matrix assists officers in understanding what level of force is appropriate to offender resistance.

The continuum implicitly allows officers to use slightly more force to control a situation than the offender exerts. For instance, if the offender is passively resisting, he or she poses no physical threat to the police officer. However, an officer may apply a pain compliance hold, use a transporter technique, or spray OC to accomplish his or her lawful duties. Such use of overcompensating force is necessary to positively control a situation.

There is no argument over the technical application of deadly force. No one much debates whether police use of a .45 caliber pistol was excessive force compared to a .38 caliber revolver. However, there is room for substantial disagreement concerning the amount of physical force police use when applying nondeadly force techniques.

Additionally, such hand-to-hand methods are time-consuming and difficult to master (Desmedt, 1984: 171). Consequently, when given a choice between competing methods of control suitable to the level of offender resistance, the most effective and least physical option would be preferable. One of the more promising recent developments that meets this criteria was the introduction of OC spray.

Oleoresin Capsicum Spray

Chemical agents are not new to law enforcement. Chloroacetophenone (CN) and ortho-chlorobenzylidene malononitrile (CS) tear gas have been available for over fifty years. Both are chemical irritants that cause watering and closure of the eyes. Neither are effective on animals. Chloroacetophenone gas acts quickly taking between two to five

seconds for a reaction. Ortho-chlorobenzylidene malononitrile takes twenty to thirty seconds to produce an impact, but the effect is more severe (McEwen and Leahy, 1993:

4). On the other hand, OC is an inflammatory agent made from an extract of the cayenne pepper. The substance first gained recognition for its ability to ward off bear attacks. The United States Postal Service subsequently adopted OC for use by its letter carriers to prevent dog bites (American Civil Liberties Union (ACLU), 1995).

Oleoresin capsicum spray has several purported advantages over the older CS/CN type tear gas. The first advantage of OC spray is its immediate incapacitation effect on all suspects, including mentally ill or intoxicated offenders and vicious animals. Second, there are no decontamination problems since the OC propellant evaporates. Third, OC spray is a stream instead of a mist so it is effective at greater distances, up to ten feet away. Finally, at the time of initial interest there were no documented health risks associated with OC (Clede, 1992: 58).

Preliminary studies indicate that these advantages are winning over police agencies. Of 228 police agencies and 150 sheriff departments surveyed in one study, 71 percent and 65 percent, respectively, employed chemical agents. Although CS and CN have been around for years, OC introduced in the late 1980s, was the predominant choice used in 41 percent of the departments with chemical agents. This proportion seems likely to increase since departments rated OC spray more favorably than other less-than-lethal options on the dimensions of effectiveness in subduing suspects, potential for citizen complaints, officer safety, and public safety (McEwen and Leahy, 1993: 8-10). In addition, preliminary indications from a study conducted in Baltimore County Maryland are that OC

is highly effective, minimizes injuries to officers, and reduces the number of citizen complaints of excessive force (No Author, 1995). Much of the general enthusiasm for OC is undoubtedly due to pepper spray's purported high effectiveness rate. However, at least some of these claims may be exaggerated.

Some manufacturers have made inflated assertions about OC's ability to stop attackers in their tracks. In at least one instance an officer lost his life when he relied on his OC spray to stop an armed attacker (Nowicki, 1995: 38). There is now mounting evidence that OC may not work on violent, goal-oriented, intoxicated or mentally ill attackers (Nowicki, 1995; ACLU, 1995).

An ACLU (1995: 4-5) study indicates that OC spray is unlikely to work on mentally ill or intoxicated individuals. Additionally, pepper spray's effectiveness rate is closer to 86 percent than the almost 100 percent touted by manufacturers. Besides questioning the product's effectiveness, the Southern California ACLU raises concerns about other OC advantages.

Initially thought to be safe for use on humans, the substance has come under increased scrutiny concerning health risks resulting from overexposure to the spray. Possible consequences include nerve and liver damage, cancer, and genetic mutations. Unfortunately, no agency has adequately tested OC to answer these concerns (ACLU, 1995: 8, 21). The ACLU (1995) has also questioned the chemical's role in in custody deaths.

An examination of twenty-six in-custody deaths implicates OC as a causal factor. However, because so little is known about pepper spray's effect on human physiology, no

official documentation lists OC as the cause of death. The Southern California ACLU recommends more stringent governmental control of police use of the product (ACLU, 1995: 22-23, 32).

On the other hand, so little is known about the toxic effects of OC that conclusions about its role in in-custody deaths seems premature. In California alone during a one-year period, the police employed pepper spray 9,000 times. In 99.7 percent of the pepper spray uses, no problem occurred. Of the twenty-six deaths occurring in California following an OC spray, twenty-four involved offenders high on drugs or mentally ill, yet only one-quarter of the suspects had a lethal drug level (ACLU, 1995: 28). However, there are at least three other possible explanations for these deaths.

Cocaine abuse and toxicity, excited delirium, and neuroleptic malignant syndrome (NMS) are alternate explanations for custody-related deaths. Cocaine stimulates both the nervous and cardiovascular systems. These physiological effects have produced fatalities in individuals with no other health problems, sometimes after only very low dosages of the drug. Alcohol use exacerbates the risk of fatal cocaine usage. Additionally, cocaine can induce excited delirium which results in impaired thinking and hallucinations. This condition is recognized as a potentially life threatening medical emergency. Finally, NMS is similar to excited delirium, but generally occurs in psychiatric patients on antipsychotic drugs. However, the syndrome may also affect individuals who are not taking drugs. In all these cases, autopsy findings generally reveal no specific cause of death (Granfield et al., 1994).

In summary, there is inadequate research on the role of OC in law enforcement and its

effect on suspects. There are indications that the substance can be an effective device when properly used for its intended purpose. In the case of TPD, OC is a Level Three tool that provides an alternative to a physical scuffle. When faced with a choice between physically engaging a hostile suspect and applying a spray from a "safe" distance, officers should resort more often to OC. Preliminary data support this hypothesis. After TPD introduced pepper spray, the use of personal weapons (hands and feet) declined from sixty-seven incidents in the first trimester of 1993 to fifty-eight in the third trimester (Frisby, 1994a: 13). While hardly an impressive reduction, this decrease merits further investigation. In addition, these statistics were compiled at a time when OC spray was considered a Level Four officer response (Frisby, 1994a: 13). Since that time, pepper spray was downgraded to a Level Three reaction (Coe, 1994). Such a reclassification encourages officers to use OC spray to avoid physical contact.

Chapter Summary

Many variables operating on multiple levels of analysis would be necessary to fully explain police use of nondeadly force. Unfortunately, time does not allow an examination of all possible causes of this behavior. Officer characteristics, offender characteristics, and situational factors provide enough coverage of the nonlethal force phenomenon to provide meaningful conclusions in an area that has not been adequately studied.

While individual characteristics have not exhibited much explanatory power in deadly force studies (Brown, 1984; Doerner, 1991; Doerner and Ho, 1994; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985), their role in nondeadly

encounters remains uncertain. At the very least, researchers must control individual variables such as race and gender to reveal pertinent findings.

More credence has accrued to situational factors surrounding the police-citizen interaction. Deadly force research has concluded that officers pay more attention to cues present in the encounter context (Dwyer et al., 1990; Fridell and Binder, 1992; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). Limited nonlethal force analyses have reached similar conclusions (Bayley and Garofalo, 1989; Friedrich, 1980). Additional study will shed more light on the role of officer-offender interaction and police application of nondeadly force.

Finally, scholarly studies on the use of OC spray are nonexistent. As more and more police agencies adopt this nonlethal weapon, too little is currently known to guide the introduction of pepper spray into the police arsenal. For example, initial indications are that TPD officers may be improperly utilizing OC gas through over-reliance on its effect, unrealistic assumptions concerning the time to take effect, and overspray of suspects (Maureau, 1994). Only additional research can conclusively address these concerns.

CHAPTER THREE

METHODOLOGY

Introduction

The previous two chapters focused upon substantive concerns associated with the literature on police use of force. The purpose of this chapter is to discuss the procedures used in this study. The research strategy calls for an analysis of TPD Use of Force Reports to examine the influence of different variables on police use of nondeadly force. Specifically, the research examines the role of officer gender, officer race, officer education, officer experience, offender gender, offender race, relative height and weight, offender weapon, offender intoxication and offender actions in level of force used and choice of OC spray.

The Study Site

The Tallahassee Police Department is located in the Florida capital. The city is home for state government as well as two major universities and one large community college. The population is over 130,000 inhabitants and the city encompasses an area of more than sixty square miles. There are 320 sworn positions in the department and the agency successfully underwent accreditation by The Commission on Accreditation for Law

Enforcement Agencies, Inc. in 1986. The 1994 Index Offenses for personal and property crimes in Tallahassee were above the state average (Florida Department of Law Enforcement, 1995).

The Use of Force Report

The Tallahassee Police Department Use of Force Report (Appendix A) contains various sections concerning use of force incidents. The first part contains information concerning the officer, the subject, and patrol assignment. Subsequent sections include statements which the officer selects to indicate his or her reason for use of force, the suspect's actions, the officer's actions, the police weapon used, and injuries. The next area contains space for the arresting officer to indicate the presence of other officers or witnesses and to add any additional information not previously covered. The officer then signs and dates the document, attaches a copy of the incident report, and forwards these materials up the chain-of-command for review.

The Tallahassee Police Department requires its officers to complete a use of force report whenever force is necessary to overcome suspect resistance. Submission of the form is mandatory for certain instances of nondeadly force application. Specifically, an officer must complete the form whenever there is an injury, if an impact weapon or OC spray is used, if an applied technique has the potential to cause significant injury, if the officer feels a brutality complaint is forthcoming, or anytime an officer unholsters his or her weapon and that action influences citizen behavior (TPD, 1986: 2-3).

The Study Group

This study focuses on all nondeadly use of force reports filed in the Internal Affairs Division of TPD from May 1, 1993 through December 31, 1995. Police canine and tactical team uses of force are not included. Twelve cases involving citizens' dogs are omitted from the statistical analysis. The resulting database contains 999 cases with 351 instances of OC use. A review of Internal Affairs' records shows that there were 879 use of force incidents during this timeframe. The addition of 120 cases to the sample results from including each police-citizen interaction from those encounters involving multiple officers and offenders.

Three different subsets of these data are employed in the analysis. The first analysis reviews 971 cases involving Level Three and Four use of force. The second data subset contains 366 incidents that occurred prior to June 27, 1994 when OC spray was considered a Level Four use of force. Of these cases, 169 involve Level Four uses of force with 126 OC discharges. The final subgroup consists of the remaining 633 applications of force that happened after pepper spray was reclassified to a Level Three response. Within this group, officers employed a Level Three use of force 587 times. They applied OC in 225 cases.

Plan of Analysis

The present study strategy is to compute crosstabulations and employ a chi square test of statistical significance. While not as desirable as multiple regression, such an

approach can allow for control of a limited number of confounding influences. All hypotheses will be examined with a one-tail test of significance at the .05 level.

The independent variables will be blocked into three groups. Individual officer attributes include gender, race, education, and age and experience. Individual offender factors include gender and race. Relative height and weight are listed as offender characteristics, but they depend on a comparison with officer physique. Finally, situational variables are officer area of assignment, offender intoxication, offender actions, and weapon possession.

Some cases lack data for certain variables. Rather than exclude the entire case from analysis, case-wise deletion is employed. Therefore, certain crosstabulations employ differing numbers of cases. Offender variables most frequently suffered from this problem.

There are two dependent variables which require two distinct analyses of the data. The first dependent variable is officer level of action. Specifically, this factor concentrates on distinguishing Response Level Three from Response Level Four. Data collection revealed that the sample is truncated at both the lower and higher ends of the use of force spectrum. Level One and Two use of force is rarely documented, Level Six, deadly force, is excluded from the study, and there are very few Level Five incidents. Consequently, the only meaningful analysis revolves around the middle levels of officer use of force.

The second dependent variable, officer use of OC spray, was evaluated in two parts. Prior to June 27, 1994, TPD considered OC spray a Level Four response. After this date, pepper spray was downgraded to Level Three force. In each stage, OC spray was matched against its comparable alternative. Therefore, the equivalent option for each

period was the baton during the early period and personal weapons during the latter timeframe.

Independent Variables

Individual Attributes

An examination of individual factors explores the role of officer and offender characteristics in the police application of nondeadly force. Officer traits are gender, race, education, and experience. Separating the effects of age from experience was impossible. Between the two, experience was selected as the most viable measurement. Table 1 lists officer characteristics and the coding scheme. Suspect characteristics, listed in Table 2, are gender, race, and relative height and weight. The following sections explain how these variables are operationalized.

Officer Gender. Past literature is unclear on the role of gender in police use of force (Bloch and Anderson, 1974; Doerner, 1991; Doerner and Ho, 1994; Grennan, 1987; Sherman, 1975). Nevertheless certain variations are likely to occur when employing nondeadly force techniques. Officers will be categorized as male or female to determine differences in use of force based on gender.

Officer Race. Field studies suggest that black officers employ deadly force more often than their white counterparts because blacks are disproportionately exposed to high crime areas. This disparity results from higher risk patrol assignments and residential patterns (Fyfe, 1981b; Geller and Karales, 1981). However, when tested in a neutral, laboratory environment, black and white officers demonstrate equivalent shooting

TABLE 1
OFFICER CHARACTERISTICS

Variable	Coding	n	%
Gender	0 = Male	896	89.7
	1 = Female	103	10.3
Race	0 = White	867	86.8
	1 = Black	83	8.3
	3 = Other	49	4.9
Education	0 = High School	62	6.2
	1 = >High School	21	2.1
	2 = AA Degree	291	29.1
	3 = >AA Degree	16	1.6
	4 = BS Degree	609	61.0
Experience	0 = Veteran	466	46.6
	1 = Rookie	533	53.4

TABLE 2
OFFENDER CHARACTERISTICS

Variable	Coding	n	%
Gender	0 = Female	136	13.6
	1 = Male	856	85.7
	9 = Missing	7	0.7
Race	0 = White	333	33.3
	1 = Black	649	65.0
	3 = Other	1	0.1
	9 = Missing	16	1.6
Relative Height	0 = Taller than suspect	535	53.6
	1 = Same	82	8.2
	2 = Shorter than suspect	353	35.3
	9 = Unknown	29	2.9
Relative Weight	0 = Heavier than suspect	581	58.2
	1 = Same	47	4.7
	2 = Lighter than suspect	343	34.3
	9 = Unknown	28	2.8

propensities (Doerner, 1991; Doerner and Ho, 1994).

A similar pattern should hold true for nondeadly force. However, the emphasis on OC sprays and data limitations concerning levels of force preclude an analysis of this exact phenomenon. Because of the greater influence of situational factors over personal characteristics, race should play no role in whether or not officers use higher levels of force or opt for OC spray over other techniques.

In order to examine this variable, officers are classified as white, black, or other. Although Hispanic and Asian officers represent a small proportion of all TPD officers, they engaged in 5 percent of the use of force incidents. Since arresting officers generally classified Hispanic offenders as white, Hispanic and Asian officers are included in the white category for subsequent analysis.

Officer Education: One of the current hiring requirements for TPD is that their candidates possess the equivalent of a two-year college degree. However, older officers did not have to meet this standard. Additionally, even new officers do not have to have an Associates Degree if they have an equal number of college credits. Consequently, officers were initially classified as having a high school education, high school plus, Associates Degree, Associates Degree plus, or Bachelors Degree.

Although some officers have more than four years of college education, TPD does not document this information. The frequency distribution reveals that education was not uniformly distributed between these categories. Consequently these categories are collapsed into Bachelor's Degree or no Bachelor's Degree for data analysis purposes.

Officer Experience. It is virtually impossible to differentiate the effects of age from

police experience. Increased age usually results in increased maturity which may aid police judgements. On the other hand, specific policing experience and its role in decisionmaking would more likely be the controlling factor. Further confounding any results is the assignment of officers. Rookie officers are more likely to patrol higher risk areas than older officers who may have moved into less hazardous duty assignments. Nevertheless, disproportionate risk factors should not lead to an increased level of force. A lack of past research into police use of OC spray makes the current study an exploratory inquiry into officer use of the spray. There is no literature to guide a hypothesis on use of pepper spray except for the studies that indicate situational and behavioral characteristics outweigh individual attributes (Brown, 1984; Doerner, 1991; Doerner and Ho, 1994; Friedrich, 1980; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). Thus, there should be no difference between rookies and veterans concerning employment of OC spray.

This study concentrates on experience as measured by months on the police force. Officers are classified as rookies if they have sixty or less months of time on the force. Veterans are those individuals with more than sixty months at TPD.

Offender Gender. As with officer gender, suspect gender is a biological function. The overwhelming majority of violent crime offenders are male. Subsequently, one would expect that the vast majority of suspects involved in nondeadly use of force incidents would also be male. Offenders were classified as male or female to assess this assumption.

Offender Race. Blacks are disproportionately represented in police-caused homicide statistics. Some researchers cite this fact as evidence of police racism. On the other hand,

blacks are also disproportionately represented in the violent crime statistics. Thus, they are overexposed to the risk of police use of force. However, there should be no difference in the level of force or specific tactic employed. As with officer race, offenders are categorized as white, black, or other. Arresting officers note only one Hispanic offender which is included in the white category during the subsequent examination.

Relative Height and Weight. The role of height is insignificant in deadly encounters, but may be a factor in nonlethal interventions. Weight alone is not specifically mentioned in previous literature. Many nondeadly force techniques require physical contact. Consequently, it may be fruitful to assess the role of height and weight in such interactions. Data concerning the role of height are rare. There is some indication that shorter offenders are more likely to assault taller officers, but the literature is not conclusive (Meyer et al., 1981). Still, it is logical to predict some interaction between officer and offender height and weight in potentially violent situations. The expectation is that height and weight will not affect the use of force when compared across levels of officer response. However, within levels, officers who are smaller relative to the suspects they face may employ OC spray more frequently.

A comparison of officer height and weight to offender height and weight forms the basis for evaluation. When both officer and offender heights and weights are known, the cases are coded as taller than suspect, same, or shorter than suspect. The comparable categories for weight are heavier than suspect, same, and lighter than suspect. For analysis purposes, officers who are taller than their adversaries are coded as officer advantage. Individual officers who are the same height or shorter than the suspect are

deemed to have a disadvantage. A parallel coding scheme is employed for relative weight. There are few cases where the officer and offender share the exact height or weight. Consequently, incorporating these cases into the officer disadvantage category simplifies the analysis and makes logical sense.

Situational Attributes

Situational factors include those variables which are present as a result of and develop during the course of the police-citizen encounter. These characteristics include area of officer assignment, offender intoxication, weapon possession, and offender actions. Table 3 and Table 4 depict these factors and the coding. A description of these variable operationalizations follows.

Area of Assignment: The city of Tallahassee contains eight patrol zones which are further divided into two sub-zones for a total of sixteen sectors. Some patrol areas expose officers to a greater risk of violence than others. Consequently, a larger portion of use of force reports should come from more dangerous zones and officers should employ higher levels of force when faced with a greater threat. On the other hand, OC spray is a lower level of force. Officer application of the product should occur in lower crime areas.

Unfortunately, data were not available to fully test this hypothesis. Table 4 lists the annual reported crime tallies for each of the eight patrol zones. No further breakout was available. In addition, fully three-quarters of the city fell into what would be a high crime category. Both these reasons limited the value of assigning crime risk to the patrol zones. In the first case, because the zones were so large and heterogeneous, saying that an entire zone was a high crime area could be grossly misleading. Many zones contain only a few

TABLE 3
AREA OF ASSIGNMENT REPORTED CRIMES

	1993		1994		1995	
	n	%	n	%	n	%
Zone						
1	23	1.8	19	1.8	20	3.4
2	73	5.8	71	6.6	34	5.7
3	65	5.2	90	8.3	68	11.4
4	153	12.3	131	12.1	96	16.2
5	227	18.2	147	13.6	81	13.6
6	209	16.8	175	16.2	97	16.3
7	349	28.1	307	28.2	125	21.1
8	147	11.8	143	13.2	73	12.3

TABLE 4
SITUATIONAL CHARACTERISTICS

Variable	Coding	n	%
Offender Intoxication	0 = Sober	4	0.4
	1 = Intoxicated	326	32.6
	9 = Not Reported	669	67.0
Weapon Possession	0 = No Weapon	472	47.3
	1 = Implied Physical Attack	111	11.1
	2 = Physical Attack	240	24.0
	3 = Implied Weapon	80	8.0
	4 = Weapon	96	9.6
Offender Actions	1 = Psychological Intimidation	2	0.2
	2 = Verbal Resistance	9	0.9
	3 = Passive Physical Resistance	119	11.9
	4 = Active Physical Resistance	502	50.3
	5 = Aggressive Physical Resistance	247	24.7
	6 = Aggravated Physical Resistance	45	4.5
	7 = Offenders Fighting	73	7.3
	9 = Missing	2	0.2

"hot spots" which distort the overall crime picture. Second, there was hardly any differentiation throughout the majority of the city based on a high crime/low crime categorization. The vast majority of the city fell into the high crime category. Therefore, this variable was dropped from the analysis.

Offender Intoxication. There is some evidence that more inebriated offenders are subject to more use of force. Consequently, zero-order associations should indicate that officers apply a higher level of force against intoxicated suspects. No literature guides a conclusion on officer use of OC spray on inebriated offenders. This is a new area of research, but the initial hypothesis is that the use of OC spray will be consistent with the expectation in the previous area. However, any conclusion that officers apply more force to intoxicated offenders must also examine suspect behavior.

This factor was initially measured in three discrete categories. Divisions were sober, intoxicated, and not reported. Cases were classified based on information contained in use of force and arrest report narratives since no objective measure, such as a blood or intoximeter test, was generally available. Descriptions of inebriated behavior were insufficient to distinguish between various levels of intoxication. Consequently, no further differentiation was possible. This variable was collapsed into a dichotomy of intoxication reported and intoxication not reported for the subsequent analysis. Additionally, because of the small number of confirmed sober individuals, these cases were combined into the intoxication not reported category.

Weapon Possession. Brandishing a weapon automatically places a suspect in resistance Level Six. Police officers are authorized to use deadly force at this level.

However, a Level Six response is not foreordained. Lesser measures starting at Level Three could be employed. Nevertheless, officers should employ force more often and at elevated levels when dealing with an armed assailant. On the other hand, while OC spray is available, its use should not be the primary consideration of an officer faced with a deadly weapon. Therefore, OC spray will be employed against less dangerous suspects.

This variable was initially coded in five discrete categories, from least dangerous to most hazardous, of no weapon, implied physical attack, physical attack, implied weapon, and weapon. However, as an instigator of officer behavior, the threat of an action is sufficient justification for a commensurate officer response. Therefore, the categories are collapsed into no attack/no weapon, physical attack (actual or implied attack without a weapon), and weapon (actual or implied attack with a weapon).

Offender Actions. Past research has clearly shown that suspect behavior greatly affects officer actions. As offender behavior becomes increasingly dangerous based on the crime committed and the level of resistance to officer intervention, use of nondeadly force should increase. Therefore, more violent offenders should be subject to higher levels of force. On the other hand, since OC spray is authorized at relatively lower levels of officer response, OC spray will be used on less violent suspects.

This variable classifies the six discrete levels of resistance depicted on the use of force report plus two additional categories for special circumstances. In the event more than one item was checked, the highest level indicated was coded. These levels, from least violent to most violent, are psychological intimidation, verbal resistance, passive physical resistance, active physical resistance, aggressive physical resistance, and aggravated

physical resistance. Two cases were resolved so quickly that offenders had no time to take any threatening action and are coded as unreported. Finally, a significant number of cases involve mutual affrays in which two or more offenders fought among themselves. No action was directed toward the officers. These instances are coded in a separate category, but prove problematic since they do not fall into the logical escalating sequence of offender resistance. Nevertheless, they represent a significant use of OC spray. Therefore, to include these cases in the analysis, they are coded as Level Four resistance when pepper spray was a Level Four officer response and as Level Three resistance after TPD downgraded OC spray.

Dependent Variables

The Tallahassee Police Department Use of Force Report contains information describing officer actions and use of police weapons. Two dependent variables are measured in this study. They are level of force and OC use. Oleoresin capsicum use is further divided into pre- and post-June 1994 segments. Table 5 lists the dependent variables. Each factor is discussed below.

Level of Force

Officers may choose from various levels of nondeadly force to control potentially violent encounters. The Tallahassee Police Department policy does not require use of force reports for officer response Levels One and Two. Consequently, these levels are not examined due to lack of data. In addition, the focus of this study is on nondeadly force. Since Level Six concerns deadly force, reports that culminate in a threatened or actual

TABLE 5
DEPENDENT VARIABLES

Variable	Coding	n	%
Level of Force	1 = Officer presence	1	0.1
	2 = Verbal direction/command	6	0.6
	3 = Physical control techniques	687	68.8
	4 = Intermediate weapons	284	28.4
	5 = Temporary incapacitation	16	1.6
	6 = Deadly Force	5	0.5
OC Use	Pre-June 1994	169	
	0 = Impact Weapon Use	43	25.4
	1 = Mixed	12	7.1
	2 = OC Use	114	67.5
	Post-June 1994	587	
	0 = Personal Weapon Use	362	61.7
	1 = Mixed	77	13.1
	2 = OC Use	148	25.2

lethal police response are not considered. Thus, data collection focused on Levels Three, Four, and Five, which are physical control techniques, intermediate weapons, and temporary incapacitation. However, some Level One, Two, and Six uses of force entered into the sample frame because of concurrent OC spray use. Because of the small numbers of cases within all categories except Level Three and Four, this variable was restricted to these two response actions.

Expected zero-order relationships are specified in Table 6. The observed chi square values for the situational variables should stray from the expected occurrences. More drunks, violent offenders, and dangerous suspects should be the subject of greater levels of police force.

Use of OC Spray

Officers have a wide choice of options within response Level Three. Such latitude could lead to differential choices on the part of individual officers. Specifically, it is postulated that certain officers will rely on OC spray as a less physically demanding response technique. If this is the case, one could also hypothesize that those officers resorting to OC spray would also suffer fewer injuries than others who adopted more physical response techniques. Additionally, offenders should also receive fewer injuries.

During the study period, TPD reclassified OC spray from a Level Four use of force down to a Level Three response. Consequently, during the early period pepper spray must be compared with other Level Four actions, specifically the use of impact weapons. This variable is measured in three categories for each timeframe. Some cases involve the use of both pepper spray and impact weapons and pepper spray and

TABLE 6
EXPECTED ZERO-ORDER RELATIONSHIPS BETWEEN INDEPENDENT AND
DEPENDENT VARIABLES

Independent Variables	Level of Force	OC Use
Officer Gender	No difference	No difference
Officer Race	No difference	No difference
Officer Education	No difference	No difference
Officer Experience	No difference	No difference
Offender Gender	No difference	No difference
Offender Race	No difference	No difference
Relative Height	No difference	Shorter
Relative Weight	No difference	Lighter
Offender Intoxication	Intoxicated	Intoxicated
Weapon Possession	More dangerous	Less dangerous
Offender Actions	More violent	Less violent

personal weapons. The mixed designation includes these instances in order to create mutually exclusive divisions. For the early period, the variable is coded as OC spray use, mixed, or impact weapon use. During the subsequent period, the coding is OC use, mixed, or personal weapon use.

Table 6 summarizes the anticipated zero-order relationships. The expected associations for individual factors are that shorter officers and lighter officers would resort more readily to OC spray. In the area of situational determinants, more inebriated, but less violent and less dangerous, suspects should feel the sting of OC spray more often.

Chapter Summary

This chapter summarized the methodological approach that is employed in this study. Information concerning the study site, use of force reports, and study group was presented. The plan of analysis called for a three part examination of the data. Various tables summarized the operationalization of the independent and dependent variables and presented the expected relationships between these variables. The next section presents the results of the study.

CHAPTER FOUR

RESULTS

Introduction

The purpose of this chapter is to present the results of the data analysis. The analysis consists of two parts. The first portion deals with the dependent variable concerning level of force. The second section covers the specific use of OC spray. The agency recategorized pepper spray from a Level Four use of force to a Level Three use of force in June 1994. Hence this portion of the analysis consists of two subsections that examine the effect of the independent variables on the officer choice of force within Level Four prior to June 1994 and within Level Three subsequently. In addition, officer and offender injuries are evaluated for each period relative to OC use and the comparable force level alternative. Prior to the OC downgrade this option was an impact weapon. After the change, personal weapons became the basis of comparison. Finally, the chapter concludes with a descriptive examination of OC effectiveness in various situations.

Choice of Level Three or Level Four Force

Crosstabulations and a chi square test of statistical significance are computed to analyze the data. Chi square calculations for all officer and offender variables are based on

a two-by-two crosstabulation with one degree of freedom. Situational factors contain more categories resulting in asymmetrical crosstabulations with degrees of freedom noted in the accompanying table.

Officer Characteristics

Table 7 depicts the results of this part of the analysis. Individual police officer characteristics have no significant relationship with the level of force employed. As predicted, officer gender, race, education, and experience play no role in determining the level of police force. Female officers are no more likely than male officers to resort to a Level Four response. White and black officers display similar response patterns. Officers with a four-year college degree behave like officers who do not have a Bachelor's Degree. Rookies and veterans are alike in their reactions.

Offender Characteristics

Table 8 indicates that most offender characteristics play no role in influencing police response. Offender race, relative height, and relative weight bear no relationship to the level of force. Police officers do not use a higher level of force on black suspects compared to white offenders. Neither taller nor heavier suspects provoked an increased level of police force. However, offender gender is a statistically significant factor. Officers employed a lower level of force on female offenders compared to male suspects.

Situational Characteristics

The only variable that shows a statistically significant relationship is offender weapon. Officers are more likely to proceed to Level Four when the offender is armed with a weapon. Both intoxication and level of offender resistance fail to achieve statistical

TABLE 7
ZERO-ORDER RELATIONSHIPS FOR OFFICER CHARACTERISTICS AND
LEVEL OF FORCE

	Level 3	Level 4	N	χ^2	Sig
Gender					
Female	70	29			
Male	617	255	971	.011	No
Race					
Black	61	18			
White	626	266	971	1.413	No
Education					
BS	411	180			
No BS	276	104	971	.922	No
Experience					
Rookie	375	150			
Veteran	312	134	971	.187	No

TABLE 8
ZERO-ORDER RELATIONSHIPS FOR OFFENDER CHARACTERISTICS AND
LEVEL OF FORCE

	Level 3	Level 4	N	χ^2	Sig
Gender					
Female	113	20			
Male	569	262	964	14.279	Yes
Race					
Black	437	189			
White	239	91	956	.593	No
Relative Height					
Officer Disadvantage	288	130			
Officer Advantage	379	145	942	1.162	No
Relative Weight					
Officer Disadvantage	262	116			
Officer Advantage	406	159	943	.593	No

TABLE 9
ZERO-ORDER RELATIONSHIPS FOR SITUATIONAL CHARACTERISTICS
AND LEVEL OF FORCE

	Level 3	Level 4	N	χ^2	df	Sig
Offender Intoxication						
Intoxication Reported	223	93				
None Reported	464	191	971	0.000	1	No
Offender Weapon						
Weapon	108	59				
Physical Attack	227	110				
No Attack/Weapon	352	115	971	9.682	2	Yes
Offender Actions						
Aggravated Physical Resistance	21	14				
Aggressive Physical Resistance	164	74				
Active Physical Resistance	361	133				
Passive Physical Resistance	89	30	886	4.294	3	No

significance. Intoxicated offenders do not elicit a greater level of force than their sober counterparts. Similarly, the level of offender resistance does not appreciably influence the officer response. Table 9 portrays the impact of these situational factors on the level of police force.

Use of OC Spray

The analysis of officer use of pepper spray is presented in two parts. On June 27, 1994, TPD downgraded OC spray from a Level Four to a Level Three use of force (Coe, 1994). The database was divided into two segments reflecting this change. Impact weapons and OC spray were comparable uses of force prior to the policy change. After the revision, OC spray was equivalent to personal weapons. This portion of the analysis focuses on the differences between pepper spray and its analogous option for each period. The number of officer and offender injuries is also examined.

Crosstabulations and a chi square test of statistical significance are computed to analyze the data. Chi square calculations for all officer and offender variables are based on two-by-three crosstabulations with two degrees of freedom. For the situational variables, degrees of freedom are indicated in the accompanying table.

Level Four OC Spray

Officer Characteristics. Table 10 reveals that gender, race, education, and experience are not significant. Female officers are no more likely to resort to OC spray than male officers. Similarly, the race of officers does not influence their choice of force. There is no difference between better educated officers and their lesser learned colleagues

concerning Level Four choices. Rookies are no more likely than veterans to prefer OC spray over the police baton.

Offender Characteristics. Suspect attributes do not determine officer use of force decisions. Table 11 depicts these findings. Female and male offenders are equally likely to face OC spray. Black arrestees were not "maced" or beaten any more frequently than their white counterparts. Finally, suspect height and weight did not influence the choice between pepper spray and impact weapons.

Situational Characteristics. Intoxication and offender weapon have no bearing on use of force within Level Four. On the other hand, suspect actions do have an influence. Table 12 summarizes these results. Intoxicated offenders are no more likely than sober suspects to encounter spray. The presence of a weapon does not influence the choice of Level Four tactics. Lastly, higher levels of resistance result in an appreciable shift in officers' weapon of choice. At offender resistance Level Three and Four (passive and active physical resistance, respectively), patrol officers prefer pepper spray to impact weapons. However, as suspect aggressiveness rises, officers change to impact weapons.

Level Three OC Spray

Officer Characteristics. Table 13 reveals that gender, race, education, and experience are not significant. Female officers are no more likely to resort to OC spray versus personal weapons than male officers. Similarly, the race of officers does not influence their choice of force. There is no difference between officers with a Bachelor's Degree and those without one concerning a preference for pepper spray. Rookies are no more likely than veterans to use OC spray over physical contact.

TABLE 10
ZERO-ORDER RELATIONSHIPS FOR OFFICER CHARACTERISTICS
AND LEVEL FOUR USE OF OC SPRAY

	Impact Weapon	Mixed	OC Spray	N	χ^2	Sig
Gender						
Female	5	1	18			
Male	38	11	96	169	.809	No
Race						
Black	2	1	15			
White	41	11	99	169	2.447	No
Education						
BS	23	8	67			
No BS	20	4	47	169	.757	No
Experience						
Rookie	23	7	56			
Veteran	20	5	58	169	.525	No

TABLE 11
ZERO-ORDER RELATIONSHIPS FOR OFFENDER CHARACTERISTICS
AND LEVEL FOUR USE OF OC SPRAY

	Impact Weapon	Mixed	OC Spray	N	χ^2	Sig
Gender						
Female	5	1	9			
Male	38	11	103	167	.497	No
Race						
Black	31	8	82			
White	12	4	30	167	.237	No
Relative Height						
Officer Disadvantage	25	6	48			
Officer Advantage	18	6	60	163	2.322	No
Relative Weight						
Officer Disadvantage	21	3	51			
Officer Advantage	22	9	57	163	2.335	No

TABLE 12

ZERO-ORDER RELATIONSHIPS FOR SITUATIONAL CHARACTERISTICS

AND LEVEL FOUR USE OF OC SPRAY

	Impact Weapon	Mixed	OC Spray	N	χ^2	df	Sig
Offender Intoxication							
Intoxication Reported	17	7	43	169	1.928	2	No
None Reported	26	5	71				
Offender Weapon							
Weapon	7	6	34	169	7.362	4	No
Physical Attack	21	5	44				
No Attack/Weapon	15	1	36				
Offender Actions							
Aggravated Physical Resistance	1	2	6	167	17.568	6	Yes
Aggressive Physical Resistance	16	5	16				
Active Physical Resistance	22	3	72				
Passive Physical Resistance	4	2	18				

Offender Characteristics. Suspect race and gender do not impact officer use of force decisions. Table 14 depicts these findings. Female and male offenders are equally likely to face OC spray. Black arrestees are not sprayed any more frequently than their white counterparts. However, officers show a distinct propensity to employ pepper spray against taller and heavier suspects.

Situational Characteristics. Intoxication has no bearing on use of force within Level Three. Conversely, offender weapon and actions influence police decisionmaking. Table 15 summarizes these results. Officers do not "gas" intoxicated offenders more frequently than other suspects. However, offender weapon significantly influences an officer's choice to abandon OC in favor of other techniques. More violent offender actions result in a similar shift away from pepper spray. Interestingly, the analysis reveals a shift in both cases toward officer use of personal weapons. However, this finding could be an artifact of the way the data are coded.

Injuries

As a Level Four and Level Three use of force, OC spray had a significant effect on the number of injuries for officers and offenders. Table 16 and Table 17 show that use of pepper spray reduced the likelihood of injury. Consequently, the less intrusive OC spray leads to fewer injuries for both officers and suspects compared to physical contact techniques.

Other OC Issues

This research also analyzes data concerning relevant OC issues. Specifically, OC effectiveness, officer contamination, and arrest decisions are examined. There are a total

TABLE 13
ZERO-ORDER RELATIONSHIPS FOR OFFICER CHARACTERISTICS
AND LEVEL THREE USE OF OC SPRAY

	Personal Weapon	Mixed	OC Spray	N	χ^2	Sig
Gender						
Female	37	3	17			
Male	325	74	131	587	3.609	No
Race						
Black	25	4	10			
White	337	73	138	587	.304	No
Education						
BS	212	51	100			
No BS	150	26	48	587	4.334	No
Experience						
Rookie	190	41	64			
Veteran	172	36	84	587	3.907	No

TABLE 14
ZERO-ORDER RELATIONSHIPS FOR OFFENDER CHARACTERISTICS
AND LEVEL THREE USE OF OC SPRAY

	Personal Weapon	Mixed	OC Spray	N	χ^2	Sig
Gender						
Female	67	7	21			
Male	295	70	122	582	4.495	No
Race						
Black	229	58	91			
White	131	19	48	576	3.860	No
Relative Height						
Officer Disadvantage	136	45	66			
Officer Advantage	224	32	64	567	14.580	Yes
Relative Weight						
Officer Disadvantage	110	44	64			
Officer Advantage	251	33	66	568	27.482	Yes

TABLE 15

ZERO-ORDER RELATIONSHIPS FOR SITUATIONAL CHARACTERISTICS

AND LEVEL THREE USE OF OC SPRAY

	Impact Weapon	Mixed	OC Spray	N	χ^2	df	Sig
Offender Intoxication							
Intoxication Reported	110	25	33				
None Reported	252	52	115	587	4.007	2	No
Offender Weapon							
Weapon	60	9	19				
Physical Attack	124	30	28				
No Attack/Weapon	178	38	101	587	18.832	4	Yes
Offender Actions							
Aggravated Physical Resistance	18	5	6				
Aggressive Physical Resistance	102	33	16				
Active Physical Resistance	212	31	39				
Passive Physical Resistance	25	8	83	578	180.546	6	Yes

TABLE 16
ZERO-ORDER RELATIONSHIPS FOR LEVEL FOUR USE OF OC SPRAY
AND INJURY

	Injury	No Injury	N	χ^2	df	Sig
Officers						
Impact Weapon	8	35				
Mixed	5	7				
OC Spray	7	107	169	15.667	2	Yes
Offenders						
Impact Weapon	8	35				
Mixed	6	6				
OC Spray	6	107	168	23.132	2	Yes

TABLE 17
ZERO-ORDER RELATIONSHIPS FOR LEVEL THREE USE OF OC SPRAY
AND INJURY

	Injury	No Injury	N	χ^2	df	Sig
Officers						
Personal Weapon	72	290				
Mixed	11	66				
OC Spray	2	146	587	29.156	2	Yes
Offenders						
Personal Weapon	73	289				
Mixed	12	65				
OC Spray	6	130	575	18.422	2	Yes

of 351 OC spray cases plus eleven situations where officers sprayed aggressive dogs.

Table 18 summarizes the various OC-related factors while Table 19 lists OC effectiveness rates under differing circumstances. Including OC misses and malfunctions results in an OC effectiveness rate of 70.7 percent. If misfires (misses and malfunctions) are eliminated from consideration, the success rate rises to 72.7 percent. Pepper spray enjoys a 73.9 percent effectiveness rate on mentally ill individuals. When applied to intoxicated persons, OC spray is 69.6 percent effective. In the cases involving dogs, OC spray is effective 72.7 percent of the time.

Enhancing factors (foot chases and physical struggles) are those characteristics of the encounter which increase respiration and presumably boost the effects of pepper spray. Foot chases and physical struggles are present in 57.3 percent of the cases and multiple applications of OC spray occur in 31.1 percent of the sample. When enhancing factors are present or multiple doses are used, OC effectiveness declines to 69.2 percent and 58.3 percent, respectively.

Pepper spray's success rate with mentally ill, intoxicated, or physically stressed individuals is not significantly different from OC's overall effectiveness rate. However, there is a significant difference between OC spray's overall rate and multiple dose effectiveness. All differences were evaluated using a z-test of proportions with a significance level of .05 or less.

Officers were contaminated by overspray in 7.7 percent of the cases. Fourteen percent of suspects sprayed were not arrested compared to 72.4 percent who were taken into custody. Officers issued a "Notice to Appear" to 2.8 percent of offenders, 4.8

TABLE 18
OC SPRAY CHARACTERISTICS

Variable	Coding	n	%
OC Effectiveness	0 = No	93	26.5
	1 = Yes	248	70.7
	2 = Missed	7	2.0
	3 = Malfunction	3	0.8
Enhancing Factors	0 = None	150	42.7
	1 = Foot Chase	49	14.0
	2 = Physical Struggle	152	43.3
Multiple Applications	0 = No	242	68.9
	1 = Yes	109	31.1
Officer Contamination	0 = No	324	92.3
	1 = Yes	27	7.7
Arrest	0 = No	49	14.0
	1 = NTA	10	2.8
	2 = Yes	254	72.4
	3 = Fled	17	4.8
	4 = Baker Act	18	5.1
	6 = Victim	3	0.9

TABLE 19

OC SPRAY EFFECTIVENESS ON MENTALLY ILL, INTOXICATED,
PHYSICALLY STRESSED, AND REPEATEDLY SPRAYED INDIVIDUALS

OC Effectiveness		n	%
Mentally Ill	No	6	26.1
	Yes	17	73.9
Intoxicated	No	34	32.4
	Yes	71	67.6
Dogs	No	3	27.3
	Yes	8	72.7
Enhancing Factors	No	60	30.8
	Yes	135	69.2
Multiple Applications	No	45	41.7
	Yes	63	58.3

percent fled officer control, 5.1 percent were hospitalized for mental problems, and 0.9 percent were victims who officers sprayed inadvertently.

Chapter Summary

Table 20 summarizes the present study's results. Individual officer characteristics have no influence on any of the dependent variables. The only individual offender attribute that reaches statistical significance is offender gender relative to officer choice of force level. Suspect characteristics exert no influence on the decision to employ pepper spray. Offender possession of a weapon is the only situational variable to influence the officer level of force.

When OC spray was classified as a Level Four officer response, less violent offender actions resulted in officer employment of OC. As resistance increased, officers shifted to impact weapons. No other factors contribute to the explanation of this officer choice.

After OC was changed to a Level Three use of force, offender actions retained its significance. Once again, officers preferred OC at lower offender resistance levels. Additionally, officers who were shorter and lighter than the suspects they face chose OC over other weapons. Offender possession of a weapon significantly influenced the decision to forsake pepper spray in favor of other options. Pepper spray, at both levels, significantly reduced the number of injuries to officers and offenders. The next chapter interprets these findings.

TABLE 20
OBSERVED ZERO-ORDER RELATIONSHIPS BETWEEN INDEPENDENT
AND DEPENDENT VARIABLES

Independent Variables	Level of Force	OC Use	
		Level 4	Level 3
Officer Gender	NS	NS	NS
Officer Race	NS	NS	NS
Officer Education	NS	NS	NS
Officer Experience	NS	NS	NS
Offender Gender	Less force with females	NS	NS
Offender Race	NS	NS	NS
Relative Height	NS	NS	Shorter Officer
Relative Weight	NS	NS	Lighter Officer
Offender Intoxication	NS	NS	NS
Weapon Possession	More dangerous	NS	Less dangerous
Offender Actions	NS	Less violent	Less violent

NS--Not significant at $p < .05$

CHAPTER FIVE

CONCLUSION AND DISCUSSION

Introduction

The purpose of this study was to examine individual and situational factors that contribute to police use of nonlethal force. The specific emphasis of this research concerned the application of OC spray. Preliminary findings in this area may help guide future researchers and police administrators since currently there is a lack of scholarly study on nonlethal force in general and pepper spray in particular.

Several findings come out of this study. Some are consistent with previous deadly and nondeadly force research while others are not. The following discussion is divided into consideration of officer, offender, and situational characteristics concluding with a look at OC-specific factors of injuries and effectiveness.

Officer Characteristics

Individual officer attributes of gender, race, education, and experience have no influence on any of the dependent variables. The overall findings in this section are consistent with studies that indicate individual factors are subordinate to situational factors in explaining use of force decisions (Brown, 1984; Doerner, 1991; Doerner and Ho, 1994;

Friedrich, 1980; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). Because of these nonsignificant findings, there is no need to control for such factors as patrol assignment risk.

Offender Characteristics

For the most part, offender attributes are not relevant considerations. However, offender gender is a significant factor in officer choice of force level. Offender gender is not related to Level Three or Level Four OC use. In addition, the interaction between officer height and weight compared to suspect height and weight is relevant to OC use when the spray was classified as a Level Three, physical control, response, but not as a Level Four, intermediate weapons, reaction. Height and weight is not a relevant consideration in officer choice of force level

Police officers are reluctant to employ higher levels of force against female suspects. Perhaps some misplaced notions of chivalry permeate the force decision process (Visser, 1983; Krohn et al., 1983). Alternatively, officers may feel they can handle female offenders without resorting to more severe force options. For example, male officers specifically stated in some use of force report narratives that they felt they could control a female suspect without relying on OC spray or the baton.

Relative height and relative weight are significant influences on the decision to employ pepper spray as a Level Three use of force. Deadly force research reveals that suspect height and weight are not relevant factors affecting police use of firearms (Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). However,

unlike deadly force, nonlethal techniques require close physical proximity. Consequently, officers may resort to OC spray more often when they perceive a physical disadvantage compared to the suspects they face. The equalizing potential of pepper spray is particularly noteworthy. One persistent problem in the hiring of female officers is their perceived frailness and subsequent resentment from male officers (Charles, 1981; Balkin, 1988). Oleoresin capsicum spray can eliminate this concern and remove any lingering roadblocks to full hiring of female officers.

On the other hand, relative size was not a significant factor when OC spray was classified as Level Four use of force. However, a substantial number of lesser force techniques must have failed, including the use of personal weapons, prior to reaching this response level. It is logical to assume that at this point in a confrontation officers and offenders are grappling in close quarters. The use of OC spray over the police baton would not be a sound tactical choice under such circumstances. Additionally, these cases occurred in the year immediately following the introduction of OC spray into the agency. It is also possible that unfamiliarity with the new product led to a preference for impact weapons.

Situational Characteristics

Past research suggests that situational factors outweigh individual characteristics (Brown, 1984; Doerner, 1991; Doerner and Ho, 1994; Friedrich, 1980; Hayden, 1981; Holzworth and Brown, 1990; Holzworth and Pipping, 1985). The present study supports this prevalent view. Situational factors have a pertinent influence on each of the three

dependent variables.

The only situational factor which fails to reach significance in any analysis is offender intoxication. Such a finding conflicts with previous research that concludes that officers use more force on intoxicated offenders (Alpert, 1989; Croft and Austin, 1987; Friedrich, 1980; Worden, 1995). Friedrich (1980) and Croft and Austin (1987) surmise that increased use of force could be related to greater resistance on the part of inebriated offenders. A finding of no significance for this factor supports the view that offender actions outweigh all other variables.

Offender weapon is significantly linked to the dependent variable level of force employed. Officers exert more force as the suspect threat of an attack or weapon increases. Such a response is a reasonable police reaction to offender behavior under the current use of force matrix. Offender weapon is also related to Level Three OC use, but not to OC spray use as a Level Four police response.

Interestingly, as the offender threat of an attack or weapon rises, Level Three OC spray use declines in favor of personal weapons. Much of this finding can be explained by the operationalization of this variable and an examination of the sequence of events. First, the weapon category included those cases where offenders implied weapon possession. Often officers merely grabbed these suspects to prevent them from producing a gun or knife. Second, officers use personal weapons in almost every use of force incident except for those where OC spray was the sole means of subduing an offender. In other words, it is impossible to sort out the time sequence between officer use of personal weapons and impact weapons. In at least some cases, offenders who were originally resisting at a lower

level escalated after officers placed their hands on the suspect. This conduct would create a situation where officers indicated a higher level of resistance compared to their initial level of response. Such a time order of events could explain why officers appear to prefer physical contact with seemingly more dangerous suspects.

Offender actions do not influence the level of force choice while significantly affecting officer use of OC spray as both a Level Three and Four response. Such a result is probably due to the truncated nature of the data used to evaluate the choice of level decision. The vast majority of use of force incidents involved officer threats of deadly force, which were eliminated from consideration. Inclusion of these cases would have demonstrated a clearly escalating officer response to increased offender resistance.

A clear relationship emerges when focusing on OC use. Officers are more likely to choose OC spray over an impact weapon when dealing with Level Four, active physical resistance, offenders. However, when offender opposition rises above this level (i.e., aggressive and aggravated physical resistance), officers revert to impact weapons. Six cases involving OC spray against aggravated physical resistance, Level Six, resulted from officer de-escalation from firearms to pepper spray.

When classified as a Level Three officer response, increasingly violent offender actions result in a decreased use of OC spray. Such a finding is consistent with the predicted relationship between these variables. As offender resistance rises beyond Level Three, the observed occurrences of OC sprays precipitously decline until reaching Level Six offender resistance. Once again, at this resistance level, officers initially drew firearms, but regressed to OC use. Within Level Three offender resistance officers vastly preferred

OC spray over personal weapons. Beyond this level, the relationship between offender resistance and officer actions is confounded by the time-order relationship between offender actions and officer responses. As mentioned previously, offenders often started out at a lower resistance level causing officer use of personal weapons. Subsequently, offenders escalated by not following officer instructions and physically resisting.

Injuries

Officer use of OC spray results in fewer officer and offender injuries relative to baton use and personal weapons. This finding confirms data coming from another study in Baltimore County, which also concludes that pepper spray reduces injury (No Author, 1995: 24). One explanation for this result could be that pepper spray minimizes the risk of injury by exerting control from a greater distance than both personal and impact weapons. Such a finding supports the move of OC spray to a Level Three use of force as a way to preclude costly loss of duty time or civil litigation.

OC Effectiveness

Oleoresin capsicum spray at TPD has an effectiveness rate substantially below previous success claims of almost 100 percent (No Author, 1995: 24). Pepper spray works only 70.7 percent of the time. This rate is lowered somewhat by misses and malfunctions. There is evidence in report narratives that officers could have precluded the malfunctions by properly shaking the OC canister prior to use. However, after elimination of these miscues, OC spray effectiveness rises to a paltry 72.7 percent.

The current study does not substantiate claims that OC spray works on a broader spectrum of individuals (i.e., intoxicated and mentally disturbed persons) than the earlier CN and CS sprays (Clede, 1992: 58). Pepper spray was effective on 73.9 percent of mentally ill persons and 69.6 percent of intoxicated offenders. These figures do not depart substantially from the relatively low, overall effectiveness rate.

Furthermore, one might expect that engaging in a physical struggle or a foot chase should enhance OC effectiveness due to increased respiration. However, these two factors had no impact. The spray affected only 69.2 percent of those suspects.

Finally, multiple OC applications resulted in lower effectiveness. Repeated doses affected only 58.3 percent of those suspects. Much of this success rate can be attributed to multiple officers applying spray simultaneously. Conversely, a large portion of the failure rate is due to the sequential application of additional bursts after an initial ineffective spray. Subsequent applications under these circumstances were rarely effective. Such a finding refutes the view that if a little OC is good, a lot is better. Previous evidence suggests that if OC will be effective, it will work with the first burst or not at all (Maureau, 1994: 2). Additionally, massive amounts of spray inhibit the product's ability to atomize. Without such dispersion, OC effectiveness is compromised (Clede, 1992: 57).

Improvements in the Study of Nondeadly Force and OC Spray

The purpose of this section is to explore potential improvements in the study of nondeadly force and OC spray. Specifically, analyses of less-than-lethal police actions

could benefit by methodologies that investigate the entire realm of police-citizen interactions, access additional information on arrest demographics, and control for offender threat. Pepper spray research could be improved by obtaining more information on the nature of situations leading to its use and by collecting more detailed information on its effectiveness.

The current direction in deadly force studies is to explore the larger context of events that surround the shoot/don't shoot decision (Geller, 1985; Scharf and Binder, 1983; Fridell and Binder, 1992). Such an approach could also benefit nondeadly force research. Specifically, one goal of this study was to assess the frequency of certain use of force incidents. However, without knowing the entire universe of potential use of force situations, no analysis was possible.

Additional information concerning individual characteristics of all arrested individuals could enhance the study. The present research was unable to determine if officers employed disproportionate force on certain groups of people. For example, information concerning the race of arrestees could prove helpful in this regard. Such information was not readily available from the TPD crime analysis section.

The rudimentary methodological approach used in this study precluded controlling for certain factors. Introducing controls into three-by-three and four-by-three crosstabulations is unwieldy at best. Consequently, while it would have been useful to examine the role of offender gender after controlling for offender weapon and offender actions, such an approach was not possible.

The OC portion of this study could be improved by breaking the police-citizen

encounter into distinct phases. Quite frequently, use of force situations, like criminal homicide, evolve over time (Felson and Steadman, 1983; Luckenbill, 1977; Savitz et al., 1991). For instance, a suspect may have been initially subdued using personal weapons. However, when officers later tried to place the offender in handcuffs, he or she violently resisted. This subsequent action then resulted in an OC spray or baton use. The after action report would indicate the use of these multiple enforcement tools against aggravated resistance, Level Five on the Use of Force Matrix. However, since the current study did not take the interactive nature of the confrontation into account, misleading conclusions were possible concerning the use of OC spray and other police tactics. Some attempt was made to control for this problem by coding mixed uses of OC spray and personal weapons, as well as OC spray and impact weapons. Nevertheless, the unfolding nature of the use of force scenario was not captured sufficiently.

Similarly, the current study focused on OC sprays. With this emphasis and limited time to collect data, only pepper spray use of force narratives were thoroughly perused. Consequently, details from descriptions of other police uses of force, which could have clarified the unfolding picture of the police-citizen encounter, went undiscovered. For example, while there was some evidence that use of a lower level tactic caused force escalation, the preponderance of cases intensified after offenders failed to follow police instructions designed to ensure officer safety. Additionally, in over 70 percent of the cases studied, officers responded with less force than the circumstances allowed.

More complete data from the officers could have improved the analysis of OC sprays. Much of the information contained in use of force and arrest report narratives was

incomplete for research purposes. For example, duration and the exact number of bursts was not usually noted. Officers often omitted other clues to OC effectiveness, such as decontamination procedures. As much information as possible concerning OC use was gleaned from the records resulting in the apparent low effectiveness of OC spray. Whether this is due to improper use of the spray or inherent deficiencies in the spray itself could not be resolved with the data currently available.

Recommendations for Future Research

A review of Sherman's (1980) five levels of analysis reveals that this research explored variables covering the individual and situational tiers. Fruitful avenues of research remain on the organizational, community, and legal levels. Some options for research in these areas will now be discussed.

An examination of organizational factors contributing to nondeadly force decisions could prove particularly valuable. For example, the agency decision to downgrade OC spray from Level Four to Level Three force may have had some unintended consequences. As previously noted, OC spray does reduce injuries. However, the other side of the coin reveals questionable uses of the spray. For example, OC use on crowds and on passively resisting offenders increased after its reclassification. When pepper spray was at Level Four, officers did not employ it against hostile crowds. After the downgrade, officers used OC in fourteen hostile crowd situations. These cases involved mass spraying of crowds which menaced the officers.

Additionally, OC was often used to gain compliance. Pepper spray's use to achieve

conformance is somewhat problematic. Strictly speaking compliance is the goal of every officer use of force. However, for purposes of this study, it was coded only if there was an absence of active physical resistance. For example, gain compliance was indicated for those cases where officers used OC spray on offenders who balked at getting in the police car or refused to place their hands in the proper handcuffing position. When OC spray was a Level Four use of force, there were fifteen cases where officers used it to gain compliance. After TPD downgraded pepper spray to a Level Three use of force, there were thirty-nine instances of its application in this fashion.

Interestingly, after the reclassification of OC spray, it appears to have become a force multiplier. In other words, when OC was classified at the higher level of force, the common way to place an uncooperative offender in a vehicle or apply handcuffs was through sheer numbers of officers. After the downgrade, a lone officer more readily applied OC spray as a back-up "cop in a canister" to control unruly violators. Such use precluded the need for additional officers at the same time the department was scaling back on patrols. Such a reduction in manpower, coupled with a newly available weapon, appears to have increased OC usage.

Although TPD policy allows the employment of OC spray against passive physical resistance, the present manner of its use appears unanticipated. The agency did not monitor the introduction of OC as a new weapon to determine its impact. Consequently, the problems mentioned above have developed unnoticed by upper echelon policy makers. In addition, the use of OC spray to allow single officers to more easily handle aggressive violators could backfire. In some cases, application of pepper spray caused an increase in

suspect resistance counteracting a single officer's ability to easily subdue the offender.

Investigation of community level variables could also add to the nondeadly force knowledge. Jacob and Britt (1979), Kania and Mackey (1977), and Sorensen et al. (1993) have all proposed the influence of community levels of violence on police use of deadly force. However, measures of environmental threat remain crude and unrefined. In this particular study, the blunt measure of zone crime eliminated this variable from consideration. Large patrol zones or reporting areas generally contain a diverse mix of establishments. Crime statistics for such large areas obscure the underlying causes of crime. Many times "hot spots" within geographic areas contribute disproportionately to the overall crime picture (Roncek and Maier, 1991; Sherman et al., 1989).

Although the current study did not track crime by specific location, there was evidence that certain locations had disproportionately more crime than others. For example, bars and night clubs frequently appear on use of force reports. One reason is that these locations employ off-duty officers who resort to force to quell disturbances. A detailed examination of specific locations may reveal pertinent factors surrounding the use of nonlethal force and contribute to the understanding of the dynamics surrounding OC sprayings.

Finally, legal considerations could produce some interesting findings concerning nonlethal force. Some studies indicate that police policies change only when the courts force adaptation through new constitutional interpretations or civil liability (Fyfe, 1979; Sparger and Giacopassi, 1992). However, civil liability may work both ways.

Out of 2,285 use of force reports submitted to TPD's Internal Affairs Division

between January 1, 1993 and December 31, 1995, investigators classified only two instances as unjustified force. This may indicate a propensity by the department to treat its officers rather leniently when examining unauthorized force. While it is generally thought that civilian liability concerns may affect police policy making, in this case, concern over employee grievances may have influenced such a lenient policy.

Chapter Summary

This study has found that offender gender and weapon possession significantly influence the level of force employed. In addition, smaller and lighter officers tend to rely on OC spray more than personal weapons. Officers tend to use OC spray on more violent suspects, up to a point. At a commensurate level of resistance, officers favor OC spray over batons and personal weapons. After a certain level of resistance, OC usage declines. This result is a reasonable expectation since officer response depends upon offender actions. Officers would not want to bring an OC canister to a gun fight. Similarly, OC is the preferred response against unarmed, resisting offenders. Once a weapon or implied weapon enters the situation, OC use tapers off. One key point tangentially related to this study is that agencies which introduce new tactics or weapons should closely monitor the implementation. Such an approach can determine the effectiveness of the new product and guard against unanticipated consequences before they become the basis of a law suit.

APPENDIX A

TALLAHASSEE POLICE DEPARTMENT USE OF FORCE REPORT

TALLAHASSEE POLICE DEPARTMENT
USE OF FORCE REPORT

OFFICER'S NAME _____ ID# _____ CASE# _____

DATE _____ TIME _____ ZONE/RA _____ SHIFT _____ HT _____ WT _____

SUBJECT'S NAME _____ DOB ____/____/____ SEX _____ HT _____ WT _____

ADDRESS _____

REASON FOR USE OF FORCE

☐ Necessary to Defend Self ☐ Necessary to Defend Another
☐ Necessary to Effect Arrest ☐ Necessary to Restrain for Subject's Own Safety
☐ Necessary to Prevent Violent Forcible Felony ☐ Other

SUSPECT'S ACTIONS (Levels of Resistance) You may check more than one

1. ☐ Psychological Intimidation (Attitude, Stance, Clenched Fist)
2. ☐ Verbal Resistance (Loud, Abusive, Profane, Threatening)
3. ☐ Passive Physical Resistance (Sat Still, Refused to Move)
4. ☐ Active Physical Resistance (Pulling Away, Breaking, Running, Linked Arms)
5. ☐ Aggressive Physical Resistance (Pushing, Punch, Kick, Charging)
6. ☐ Aggravated Physical Resistance (Numerous Kicks, Weapons, Motor Vehicle, Multiple Attackers, Bite)

OFFICER'S ACTIONS (Level of Control) You may check more than one

1. ☐ Officer Presence (Uniformed __ Marked Unit __ Plain Clothes __ Unmarked Vehicle __ Raid Jacket/Vest __)
2. ☐ Verbal Direction/Commands (Exact Words Used, See Report Narrative)
3. ☐ Physical Control Techniques (Physical Techniques Which Range From Pressure Point Control Through Wrist Locks, Takedowns, Sweeps, Punches and Kicks, O.C.)
4. ☐ Intermediate Incapacitation (Weapons Used to Control, Impact Weapons, Flashlight)
5. ☐ Temporary Incapacitation (Hard Techniques that are Intended to Render a Subject Temporarily Unconscious or Disabled With or Without Impact Weapons)
6. ☐ Deadly Force (When an Officer Must Shoot or Strike the Suspect in a Manner Likely to Cause Death or Great Bodily Harm)

POLICE WEAPONS USED

1. ☐ Personal Weapons (Hands, Feet, Knees)
2. ☐ O.C.
3. ☐ Stungun
4. ☐ Impact Weapon(s) (Side Handle Baton (PR 24), Expandable Baton (ASP), Straight Stick, Flashlight)
5. ☐ Other (Weapon of Necessity, i.e., Clipboard, Ticket Book)
6. ☐ Canine
7. ☐ Firearm (Ready Pistol)
8. ☐ Firearm (Pointed at Suspect)
9. ☐ Firearm (Discharged at Suspect)

INJURIES

1. () Was the Officer Injured? Yes ___ No ___
2. () Was the Suspect Injured? Yes ___ No ___
3. () Photographs Taken of Injuries? Yes ___ No ___ (# Taken ___)
4. () Names of Person(s) Providing Medical Attention:

ADDITIONAL OFFICERS INVOLVED:

ADDITIONAL WITNESSES:

ADDITIONAL INFORMATION:

() MORE INFORMATION TO FOLLOW

OFFICER'S SIGNATURE

DATE

CHAIN OF COMMAND REVIEW

SERGEANT'S SIGNATURE

DATE

JUSTIFIED

NOT JUSTIFIED

LIEUTENANT'S SIGNATURE

DATE

JUSTIFIED

NOT JUSTIFIED

INSPECTIONAL SERVICES

DATE

JUSTIFIED

NOT JUSTIFIED

PD 199 (Revised 5/95)

APPENDIX B

USE OF FORCE/LEVELS OF RESISTANCE MATRIX



USE OF FORCE / LEVELS OF RESISTANCE MATRIX

RESISTANCE LEVELS	6 Aggravated Physical	5 Aggressive Physical	4 Active Physical	3 Passive Physical	2 Verbal	1 Presence	Interview Stance Arrival	Touch (consoling)	Verbal Direction	Dialogue	Restraint Devices	Transporters	Take Downs	Pain Compliance	Counter Moves	Intermediate Weapons	Incapacitation	Deadly Force
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
							Officer Presence	1	Verbal Control	2	Physical Control	3	Intermediate Weapons	4	Incapacitating Control	5	Deadly Force	6
RESPONSE LEVELS																		

Checked areas represent suggested, acceptable, beginning response levels. Any response in an unchecked area requires explanation.

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BIOGRAPHICAL SKETCH

Major Eugene V. Morabito was born in Ellwood City, Pennsylvania on May 6 1960. He graduated from the United States Air Force Academy in 1982 in the top ten percent of his class. He obtained a Masters of Public Administration degree from Troy State University in 1994. Major Morabito received his commission in the regular component of the United States Air Force in 1982 and has served continuously on active duty since that time. He has held a variety of positions in the Security Police career field including Shift Commander, Officer-in-Charge, Law Enforcement, and Operations Officer. He is married to the former Annette Burchell of Princeton, Indiana. They have two children, Maryssa and Nicholas.