The impact of TASERs on police use-of-force decisions: Findings from a randomized field-training experiment

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Abstract This paper presents findings from a randomized field-training experiment designed to study the impact TASERs on police officers' use-of-force decisions. Officers were randomly assigned to either a treatment group (with TASERs) or a control group (without TASERs) and then participated in training scenarios involving different levels of suspect resistance. The study investigates whether and to what extent officers armed with the TASER use it as an alternative to other types of less-lethal force (e.g., empty hands, pepper spray, and the baton) and the firearm, controlling for the level of suspect resistance. The findings indicate that officers who were armed with the TASER were significantly less likely to deploy pepper spray and the baton in response to aggressive physical resistance. Additionally, the results show that officers equipped with the TASER were less likely to discharge their firearm when confronted with suspect resistance that was potentially lethal. No differences in police behavior occurred in response to passive suspect resistance.

Keywords Use-of-force · Less-lethal force · TASER

1 Introduction

The use of conducted energy devices (CEDs) to control or subdue combative suspects is becoming a more common practice among police departments in the

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United States. The most popular CED is the TASER (M26 and X26 models), manufactured by *TASER International*.[1] The U.S. Government Accountability Office (2005) estimates that more than 7,000 police agencies in the US have adopted and deploy the weapon in some capacity, and more than 140,000 TASERs are currently equipped by officers in the field. By 2004 officers discharged TASERs about 70,000 times in the field, and this number is likely to climb in view of the fact that 700 police departments have procured the TASER for every line officer on duty (Amnesty International 2004).

Despite advances in CED technology and the increasing use of TASERs by police agencies, uncertainties remain about their appropriate use and effectiveness, as well as their potential for harmful physiological effects. For example, Amnesty International (2007) identified more than 290 cases since 2001 where individuals in the United States and Canada died after being shocked by police TASERs. Coroners found that the TASER served as a contributory factor in 20 of these incidents. The Amnesty report acknowledges that preexisting heart conditions, drug intoxication, and exposure to other types of police force played a role in many of the fatalities. The organization cites these deaths and other incidents reported in the media involving the gratuitous use of TASERs to support a temporary moratorium on their use. The American Civil Liberties Union (ACLU) has also expressed opposition to the use of the TASER in situations where there is not an immediate risk of injury or death to an officer or citizen (2005).

Conversely, proponents contend that the TASER is an effective less-lethal force option, and that serious injury and death may be avoided because the device can serve as an alternative to other types of police force that can result in death (McBride and Tedder 2005; U.S. Bureau of Justice Statistics 1999). If 1% of all TASER incidents are situations where an officer uses the device as an alternative to deadly force, then 1,000 individuals may be spared lethal force out of every 100,000 TASER incidents. Not every suspect subjected to lethal force dies, but hundreds of fatalities may be avoided.

Estimates of the relative costs and benefits of the TASER have been largely based on conjecture. However, various studies have examined either the costs or benefits of the device separately. Research on the costs of the TASER is primarily concerned with the potential for the weapon to disrupt the human heart rhythm and cause ventricular fibrillation (Sztajnkrycer and Baez 2008; Joint Non-Lethal Weapons Human Effects Center of Excellence 2005; McDonald et al. 2005; International Electrotechnical Commission 1994). On the other hand, studies on the benefits of CEDs typically describe the circumstances in which police officers have used the device and their assessment of its effectiveness (White and Ready 2007; Seattle Police Department 2002; Meyer and Greg 1992). What is not yet understood is the

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[1] TASER is an acronym for Thomas A. Swift's Electric Rifle based on the fictional Tom Swift adventure series by Victor Appleton (see "Tom Swift and His Electric Rifle: Daring Adventures on Elephant Island." NJ: Stratemeyer Syndicate 1911). The TASER model referenced in this study is the X26. The TASER X26 delivers a 5-W shaped pulse at a rate of 18 pulses per second of direct current electricity. With proper deployment and skin penetration of its two probes, the resulting electrical charge incapacitates the subject by electro-muscular disruption (Griffith 2003). Competitors to TASER International include Law Enforcement Associates and Stinger Systems; however, TASER International accounts for a substantial majority of stun devices sold in the United States.

extent to which police use the TASER as an alternative to other less-lethal and lethal force options, and the conditions under which it is used instead of more conventional weapons.

This paper presents findings from a randomized experiment designed to study the impact of equipping police officers with TASERs on their use-of-force decisions during field-training exercises. Specifically, the study investigates how often police officers use the TASER in response to different levels of suspect resistance. More importantly, the study examines the extent to which the use of the TASER is associated with reductions in the use of other conventional weapons (e.g., baton, pepper spray, and firearm) at different levels of suspect resistance.

The field experiment involves training scenarios in which a trainer performed the role of a suspect and police officers being trained were instructed to respond to the suspect's behavior in each training scenario as they would in a natural setting. The field-training scenarios required the officers to respond to three different levels of suspect resistance. The sample of research participants consisted of 64 patrol officers who were randomly assigned to either the treatment or control group. The 32 officers in the treatment group were provided with simulated versions of all the weapons they would normally carry on patrol, including simulated TASERs. The 32 officers in the control group were provided with simulated versions of all their weapons except the TASER. The purpose of the field experiment was to determine whether police officers equipped with TASERs differed from officers without TASERs in terms of their responses to different types of suspect resistance.

2 Police use of force and the emergence of the TASER

Police officers are authorized to use (or threaten to use) physical force to overcome suspect resistance, make arrests, and defuse volatile situations. It is widely recognized that this capacity to overpower uncooperative or combative suspects serves as a core function of the police (Bittner 1970). While the ability to use force often influences police–citizen interactions, research indicates that cases involving the application of force are relatively rare. Early observational research on police encounters in Boston, Chicago, and Washington, DC found that excessive force occurred in 2.4% of encounters (Reiss 1968) and reasonable levels of force occurred in 3.3% of the incidents (Freidrich 1980). More recently, the U.S. Bureau of Justice Statistics (1999) concluded that police used some type of force in 1% of all encounters with citizens. Terrill and Mastrofski (2002) note that use-of-force estimates increase substantially when researchers include handcuffing and verbal commands with other types of physical force. Moreover, survey research and citizen complaints often show greater police reliance on physical force than observational studies (see Dugan and Breda 1991).

Police officers are expected to apply a level of force that is reasonably necessary to obtain compliance or resolve disputes. About 70% of police agencies rely on a use-of-force continuum to provide guidance to officers when responding to different levels of suspect resistance (Terrill and Paoline 2006). However, because the rank ordering of force options permitted for different types of suspect resistance is not

universally accepted by police administrators, continuum policies tend to vary from one department to the next. The application of the force continuum is also complicated by the fact that police–citizen encounters are dynamic. Terrill (2001) and Alpert and Dunham (2004) have given consideration to this dynamic process by studying the different sequential patterns of behavior observed during encounters. Examining this interactive process offers important insights into how the broader social context shapes officers' decisions to apply and modify the level of coercive force.

With the introduction of the TASER to the police arsenal, many officers are being equipped with another less-lethal weapon that can be deployed in situations where pepper spray, the baton, and empty hand force are considered viable options. Researchers and policymakers have not yet fully explored the impact of this emerging technology on police decisions to use or refrain from using more conventional weapons. A wider range of options may change the decision-making process for line officers at the outset of an incident before any force has been applied, as well as during the course of the interaction as the need for physical force escalates or de-escalates.

3 Police use of the TASER

To date, relatively few independent empirical studies have been conducted on police use of the TASER in response to different levels of suspect resistance. In fact, much of the information available to the public and research community regarding the TASER is derived from the news media, reports published by CED manufacturers (e.g., TASER International) and interest groups (e.g., Amnesty International), and internal evaluations conducted by police agencies. The TASER M26 and X26 models have been available to police agencies since 1999 and 2003, respectively; however, it has taken time for police agencies to adopt this technology, develop policy guidelines to regulate its use (International Association of Chiefs of Police 2005; Police Executive Research Forum 2005), train officers, and compile data on field deployments. Consequently, the existing academic research is primarily concerned with describing the frequency and nature of TASER use by officers in the field, as well as departmental policies on the appropriate use of the device.

With regard to the prevalence of TASER use, an estimated 7,000 police agencies have adopted the device in some capacity (The U.S. Government Accountability Office 2005; TASER International 2002). The National Institute of Justice (NIJ) is currently supporting research to collect baseline data on the extent to which CEDs have been adopted and deployed by police agencies nationwide. Until these research findings become available, the primary source of information on frequency of use is internal reports issued by the police departments themselves.

Of those police departments that have incorporated the TASER into their routine operations, substantial variation exists in the number of sworn officers trained and equipped with the device. For example, the Los Angeles Police Department (LAPD) has trained the entire force to use the TASER and has approved the purchase of 6,800 CEDs, according to department spokesperson (Francis 2006). The Las Vegas Metropolitan Police Department (LVMPD) has also provided TASERs for all

uniformed services, including members of patrol divisions and patrol supervisors (LVMPD 2006a, 2006b). In contrast, a number of agencies have taken an approach similar to that of the Seattle Police Department (SPD) by arming a smaller division of first-responding officers with the TASER. About 280 officers in the SPD carry the device, 90% of whom are first-responding officers. The SPD reported 570 deployments from December 2000 to August 2004, which averages about 13 incidents per month (Seattle Police Department 2004). The New York City Police Department (NYPD) provides TASERs exclusively to members of the Emergency Services Unit (ESU), which is responsible for situations that require advanced equipment and expertise.[2] This specialized unit consists of several hundred officers, which is a small proportion of the 35,000 sworn officers on the force. The NYPD discharged the weapon 375 times from January 2002 to December 2005.

Research on the nature of TASER use by the police consists of a limited number of studies describing the circumstances in which officers have deployed the weapon in the field and their assessment of its effectiveness. White and Ready (2007) examined all incidents in which officers in New York City used the TASER over a 3-year period (2002–2004). The subjects involved in 243 incidents were primarily male (88%), about one-half were African-American (51%), and the average age was 36 years. A large proportion of the subjects engaged in violent behavior directed at the officer or someone else at the scene (94%), and about one-third were armed with a weapon (40%). It is not surprising that most subjects were described as emotionally disturbed (95%), considering that a main function of the NYPD Emergency Services Unit is to respond to volatile situations involving the mentally ill (White and Ready 2007).

An increasing number of police agencies are conducting internal investigations in regard to the conditions under which officers deploy the TASER. The Seattle Police Department (2002) and the Madison Police Department are two such agencies that have examined the characteristics of field deployments (TASER International 2006). Findings indicate that the demographic traits of subjects involved in TASER incidents in Seattle and Madison are comparable to subjects in New York City. However, a greater proportion of subjects in Seattle and Madison are reported to be white (49% and 43%, respectively, compared to 20% in New York). Additionally, Seattle and Madison differ from New York with regard to the proportion of subjects armed with a weapon (25% and 21% respectively, compared to 40%) and those described as mentally ill (22% and 16% respectively, compared to 95%).

Research on the effectiveness of the TASER has relied on field reports that gauge whether the device functioned properly during deployments, enabling the officer to control or arrest the subject. The Madison Police Department found that the weapon functioned effectively during 77% of all deployments ($n=92$) from July 2003 through January 2005. Both the Seattle and New York City Police Departments reported that the device resulted in a successful outcome 85% of the time. The most common situations that resulted in an unsuccessful outcome were when one or both of the probes missed the suspect, and when clothing worn by the suspect blocked the device from penetrating the skin.

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[2] Supervisors also have access to a TASER that they can sign out from the station.

A number of police departments that have adopted the TASER have subsequently experienced reductions in the number of serious injuries sustained during police–citizen encounters. In 2004, police departments in Cincinnati, OH, Austin, TX, and Charlotte-Mecklenburg, NC, experienced reductions in suspect and officer injuries after adopting the TASER (TASER International 2006). These findings are noteworthy; however, before-and-after comparisons do not take into account a variety of other factors (e.g., crime trends, changes in police leadership, training, etc.) that may contribute to reductions in injuries sustained during police–citizen encounters.

Police department use-of-force policies provide officers with guidelines to follow during police-citizen encounters. The appropriate level of police force depends on the nature of suspect resistance encountered and the threat to officers and citizens. As police agencies adopt the TASER, many have begun to adjust their use-of-force policies to incorporate this new force option. The Government Accountability Office (2005) found that departments are not consistent regarding the level of resistance needed to authorize the TASER. While it appears that many departments place CEDs at the same level as pepper spray (International Association of Chiefs of Police 2005), there is considerable variation in terms of policy. Some agencies authorize use of the TASER when the suspect is assaulting an officer; others permit use of the device at a lower level of resistance, such as when the subject is actively resisting arrest; and yet others allow for use of the device after continued passive resistance (The U.S. Government Accountability Office 2005).

In addition to studying force-continuum policies, it may also be beneficial to study how officers are using TASERs in response to different amounts of suspect resistance during field-training scenarios. Specifically, how often do officers use the TASER as a response to different types of suspect resistance? To what extent do officers use the TASER as an alternative to other less-lethal and lethal force options? What are the circumstances in which greater use of the TASER is associated with a reduction in other types of force? These questions are relevant to studying the effects of the TASER, its potential to cause or prevent serious injury, and the relative costs and benefits of adopting the device on a broader scale.

4 The study site: Las Vegas Metropolitan Police Department

The TASER was introduced to the Las Vegas Metropolitan Police Department in August 2003, and it was fully deployed in all command areas by June 2004. The LVMPD has equipped all operational personnel with the TASER, including all members of patrol units. In November 2004, the department revised its use-of-force policy, which narrowed the circumstances in which officers were allowed to deploy the TASER. The current policy guidelines indicate that use of the device is permitted when an officer encounters physical resistance while making an arrest, and also as a form of self-defense against a combative suspect (see LVMPD 2006a, 2006b).

More specifically, the LVMPD's use of force policy identifies six levels of suspect behavior, ranging from compliant behaviors at the beginning of the continuum (levels 1 and 2) to passive resistance in the middle (level 3), to increasing levels of physical resistance at the end of the continuum (levels 4–6). The police department identifies the use of CEDs as an appropriate course of action in response to physical

resistance requiring arrest/control (level 4) and self-defense (level 5), but not in response to situations where the firearm is immediately necessary (level 6). Thus, the device is placed at the same level as pepper spray at level 4 and at the same level as the baton (when used to strike or jab a suspect rather than as an escort technique) at level 5.

Use-of-force reports indicate that the TASER was used 579 times by LVMPD officers in 2004. The adoption of TASERs in Las Vegas coincided with a reduction in the use of pepper spray and the baton (Shoemake 2005). Without empirical support, however, is not possible to determine whether this relationship is causal or coincidental. One of the purposes of the current study is to lay the groundwork for estimating the impact of arming officers with the TASER on their decisions to use other force options. The research is timely for the LVMPD in light of current issues surrounding the appropriate use of the TASER—a topic that has been prominent in the news media in Las Vegas and on the national stage (see, for example, McCabe 2006; Berenson 2004).

5 Methodology

5.1 Research questions

This field experiment addresses several research questions:

1. How often do police officers use the TASER as a response to different levels of suspect resistance? In general, the LVMPD's use-of-force policy indicates that the TASER is permitted when an officer encounters resistance while making an arrest and as a form of self-defense in response to physical resistance (LVMPD 2006a, 2006b). Is TASER use during field-training consistent with this policy?
2. To what extent do police officers use the TASER as an alternative to other force options? For example, how often do officers who are armed with the device use it to supplement or replace empty-hand force in response to non-physical types of suspect resistance? When confronted with physical resistance, do officers armed with the TASER use other types of less-lethal force (e.g., pepper spray and baton) less often than officers who are not armed with the TASER? Finally, when faced with potentially lethal resistance, do officers armed with the TASER use their firearm less often than officers who are not armed with the TASER? Empirical studies to date have not measured the use of the TASER compared to other force options at specific levels of suspect resistance.
3. What are the circumstances under which use of the TASER is associated with a reduction in the use of other less-lethal and lethal options? For example, do LVMPD officers use the TASER as an alternative to the baton or pepper spray only in response to certain levels of suspect resistance?

5.2 Research design

The LVMPD Training Bureau's Advanced Officer Skills Training (AOST) Unit conducted field-training scenarios in the spring of 2006. During each of the field-training scenarios, a trainer performed the role of a suspect and two police officers

being trained were instructed to respond to the suspect's behavior as they would in a natural setting. Each scenario required the officers to respond to one of three levels of suspect resistance: non-aggressive resistance, aggressive resistance, and potentially lethal resistance. Police personnel and researchers worked together to collect background records on a random sample of 64 police officers participating in the study (see Table 1). The researchers developed an observational code sheet containing 47 items to document specific actions taken by the officers during the field-training scenarios. A researcher and a field-training officer gathered the observational data as the scenarios unfolded by checking boxes to indicate the nature and frequency of force options applied during each scenario. The coding sheets were checked for inter-rater consistencies between scenarios.

The 64 police officers participating in the experiment were randomly assigned to either a treatment or control group. The 32 officers assigned to the treatment group were provided simulated versions of all equipment they would normally carry on patrol, including simulated TASERs. The 32 officers in the control group were provided simulated versions of all their equipment except the TASER.

Depending on the scenario, the officers responded verbally, with empty handed force, or with simulated versions of weapons they would normally use in the field (e.g., handguns with simunition rounds, foam batons, and inert pepper spray). The simulated TASERs that were provided to the treatment group use a standard X26 TASER equipped with a simulation cartridge.[3] This simulation cartridge is deployed in the same manner as the standard TASER air cartridge but it does not conduct electricity to its target. The purpose of the experimental design was to determine whether police officers equipped with the TASER differed from officers without the TASER in terms of their responses to different levels of suspect resistance.

It is important to note that the researchers documented when an officer used more than one weapon during a field-training scenario. An attempt was also made to track the sequence of police actions for each pair of officers. However, the purpose of the analysis was not to study the order of force options applied as the scenarios unfolded, but to determine whether specific types of force were used at any point during the simulation. Moreover, the researchers were not able to capture the precise timing of each police action and how these actions corresponded with changes in suspect behavior. Although it would have been desirable to examine the changes in suspect and officer behavior longitudinally, this level of precision was beyond the scope of the study.

Each pair of police officers was presented with the exact same three AOST field-training scenarios. The three scenarios, described in detail in Appendix 1, represented different levels of suspect resistance. In the first scenario (non-aggressive resistance), the suspect resisted the officers by refusing verbal commands and by physically attempting to escape, but he made no effort to aggressively strike at the officers. In the second scenario (aggressive resistance), the suspect aggressively resisted the police officers by assuming a fighting stance, threatening the officers, and then engaging the officers with his fists (but with no weapon). The

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[3] TASER Simulation Cartridge Model #44205

Table 1 Descriptive statistics for the random sample of police officers participating in the TASER experiment (*n*=64)

Police officer characteristics	Mean	SD	Minimum	Maximum
Age in years	31.81	5.64	21	48
Gender (female)	.06	.24	0	1
Race (non-white)	.22	.42	0	1
Years of police experience	6.13	4.55	1	26
Body weight	199.77	30.72	130	250
Height in inches	70.14	2.98	64	77
Military experience (y/n)	.41	.49	0	1
Rank (PO II)	.75	.44	0	1

third scenario (potentially lethal resistance) was a simulation involving potentially deadly force. The suspect threatened and then advanced on the police officers with a deadly weapon (a cinder block).

Additional discussion about the third scenario (potentially lethal resistance) is warranted. Typically, CEDs are not viewed by police agencies as an appropriate force option when a suspect has a firearm and poses an immediate threat to the life of an officer or citizen. In this situation, police are trained to use lethal force. As one LVMPD officer explained, "You don't bring a TASER to a gun fight." However, in addition to situations where the suspect has a firearm, other "level 6" scenarios exist where suspect resistance becomes potentially lethal, but where the threat is not as imminent as when the suspect has a gun. For this experiment, the AOST Unit designed the level 6 "cinder block scenario" so that the suspect quickly escalates to lethal resistance, but where the officer still has some discretion to use the TASER (because of the short range of the suspect's weapon). This scenario allowed the researchers to compare the treatment and control groups in those "borderline" level 6 cases that do not involve a firearm.

The pool of eligible participants in the study included all LVMPD uniformed services required to fulfill annual field-training requirements administered by the AOST Unit. Several measures were taken to protect against threats to the validity of the experiment. Selection bias and reactivity were of particular concern because of the small number of subjects and the need to keep the simulations as realistic as possible. First, police officers scheduled for training on the days of the experiment were randomly assigned to either the treatment or control group. The officers did not have knowledge of group assignment or the goal of the study prior to the field-training scenarios. Second, participants in both the treatment and control groups received the same briefing from the field-training officer prior to entering the simulations. Third, the same AOST officer performed the role of the "suspect" in each scenario for participants in both the treatment and control groups. The individual followed precisely the same script. Fourth, to prevent officers from anticipating the escalation of suspect resistance from one scenario to the next, the training scenarios were presented to each pair of officers in the treatment and control groups in the following order: aggressive resistance; non-aggressive resistance;

potentially lethal resistance. Participants who completed the field-training scenarios were not allowed to communicate with the officers who had yet to complete the training scenarios, regardless of their assignment to the treatment or control group.

This experiment did not include a pretest, meaning that members of the treatment and control groups were not observed participating in field-training scenarios before the treatment condition was applied (i.e., assignment of TASERs). Thus, it is not possible to compare the differences in police use-of-force decisions before and after the TASER was made available to the treatment group. Accordingly, the research design can be described as a posttest-only design with random assignment to treatment and control groups.

Although the classic experimental design that contains both pre- and post-tests is generally considered the optimal approach for controlling for rival causal factors, there are clearly situations in which retesting at Time 2 poses more of a threat to the internal validity of the study than testing only once after the treatment is applied (Cook and Campbell 1979). This is particularly the case in simulation and scenario-based research where the artificiality of the experimental setting during the pretest at Time 1 may result in atypical or unnatural behavior by participants at Time 2. It is possible that the subjects develop an understanding of the purpose of the study or how they should behave during the simulation. In this study, because police use-of-force decisions were made by officers under pressure with little reaction time, we believe a pretest would have interfered with the important task of making the simulations as realistic as possible.

The random assignment of officers was an important component of the research design because it provided assurance that there was no reason to expect systematic bias between the treatment and control groups. The random assignment yielded two groups that were similar in relation to their demographic characteristics and work experience (see Table 2). Specifically, participants assigned to groups did not differ significantly in terms of their age, sex, racial background, police experience (in years), height, and rank. However, there were two statistically significant differences between participants assigned to the treatment and control groups. First, police officers in the control group were slightly heavier, on average, than officers assigned to the treatment group (204 pounds compared to 195 pounds,

Table 2 Comparison of police officers randomly assigned to treatment (TASER) and control groups

Police officer characteristics	Treatment group ($n=32$)	Control group ($n=32$)
Mean age in years	31.22	32.41
Percent female	6.30	6.30
Percent non-white	18.70	25.00
Mean years of experience	6.03	6.22
Mean body weight *	195.06	204.47
Mean height in inches	69.87	70.41
Percent military experience *	31.30	50.00
Percent rank PO II	71.90	78.10

* $p<.05$; ** $p<.01$

respectively). Also, a greater proportion of participants in the control group reported having military experience (50% compared to 31%, respectively).

It is difficult to know how these differences would impact the outcome of the study. Officers who are physically larger and those who have military experience may be more or less inclined to use the TASER or other types of less lethal force. While it would have been useful to compare use-of-force reports by officers in the two groups, this information was not accessible at the time of data collection. Overall, the size of the differences in weight and military experience were relatively small, and the differences here do not suggest any systematic biases in the data.

6 Considerations and limitations

A number of methodological limitations of this experiment should be considered. First, it should be noted that each police officer participating in the study was paired with another officer from the same group (i.e., treatment or control) during each of the training scenarios. Therefore, the results of the study do not explain how officers unaccompanied by a partner would use the TASER in response to varying levels of suspect resistance. It is possible that officers working alone would use the TASER less often or under different circumstances than officers working with a partner.[4] Conversely, the presence of the partner may prompt an officer to discharge the TASER more frequently. The field researchers recorded the force options used by each paired officer, but it was not always possible to capture the precise timing in which they occurred because officers responded to suspect resistance under pressure within a matter of seconds. While this was necessary for the training scenarios to be realistic, it would have been difficult to determine whether one officer's behavior was influenced by another officer even if the exact time ordering was ascertained.

This relates to the larger issue of whether the analysis should be conducted by examining 64 officers separately or 32 pairs of officers. Arguably, each pair of officers could be viewed as a single case, which has substantial implications for the analysis. We made the decision to conduct the analysis using the 64 participants rather than 32 pairs based on two reasons related to the nature of the training scenarios and a third methodological reason. First, as noted above, the scenarios were carried out quickly, and officers often did not have enough time to coordinate their responses. Many officers responded simultaneously during the scenarios and were not used to being paired with regular partners in the field. Second, field training emphasizes that officers should make an independent assessment of threat on the street, particularly in situations where there is a risk of contagious shootings

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[4] While the LVMPD usually deploys one-officer units on patrol, department policy indicates that individual units are required to support each other in responding to service calls comparable to situations involved in the three training scenarios. To illustrate this point, a review of the LVMPD Communications Bureau's rules for dispatching officers to disturbance calls requires the assignment of "two patrol officers" or "any two police officers." Arguably, the scenarios used in the experiment can be most accurately described as typical disturbance calls. However, it is also important to recognize that many situations escalate before back-up officers arrive on the scene.

(see White and Klinger 2009). Third, the larger sample size allows for greater statistical power. Although we decided to use the more sensitive design, we also ran the analysis using pairs to check for any inconsistencies in the outcome.

In terms of statistical power, it is generally recognized that sensitive designs have a power level greater than .80, and at minimum it is advised that statistical tests have a power level above .50. This indicates that a significant finding is more likely than not if the null hypothesis is false (Weisburd and Britt 2007). Power analysis for this study shows a power level of 94.1% for large effects (i.e., 38% difference; .78 versus .40), 64.4% for medium effects (i.e., 25% difference; .65 versus .40), and 19.9% for small effects (i.e., 10% difference; .50 versus .40). Nonparametric tests, such as the Chi-square test, are less statistically powerful than parametric tests because they involve nominal-level data. While this study is sensitive enough to detect significance for large differences between the treatment and control groups, some caution should be used when considering moderate effects because .64 is a bit below the .80 criterion that is often used to define a statistically powerful study.

Another consideration relates to whether the officers armed with the TASER should be classified as the treatment or control group. Because LVMPD officers normally carry the device, the treatment group could be seen as the officers who have been deprived of a tool that they are used to carrying. Such officers might act differently than officers who have never been equipped with TASERs. Police who are used to dealing with situations without the TASER may develop an ability to resolve incidents with what they do have, and establish a comfort level with this equipment. Conversely, an officer who is missing a piece of equipment that he is used to carrying may feel uncomfortable. Thus, the question is whether officers trained with the TASER and then deprived of the device react differently than officers who have never carried the weapon. This is an important empirical question that should serve as a basis for further study. For the purpose of this experiment, we identify the treatment group as those officers who are carrying the device and the control group as those who are not. The findings are less straightforward when the TASER officers are designated as the control group, and it makes intuitive sense to view the treatment group as possessing something that the control group does not possess.

Another limitation of the experiment relates to its scope within the broader use-of-force literature. It is important to recognize that the type of crime and the manner in which the encounter is initiated (i.e., proactive traffic stop, call for service, etc.) are also important contextual factors that mediate the relationship between suspect resistance and the use of force. While working with the Miami Metro-Dade Police Department, Fyfe (1989) found that breaking down police–citizen encounters into successive stages over time can affect the expected outcome. Also related to this broader context of use-of-force decisions is the impact of sensory distortions (Klinger and Brunson 2009; Solomon and Horn 1986), communication skills, the presence of other citizens and officers (Freidrich 1980; Smith and Visher 1981), and organizational culture and policies (Skolnick and Fyfe 1993; Westley 1970). Although our study measures differences between the treatment and control group in whether specific force options were used *at any point* in the simulation, it does not control for variability in these background conditions that exist in a natural setting.

7 Findings

A researcher observed and recorded information concerning each officer's use-of-force decisions as they responded to different types of suspect resistance during the three training scenarios. The researcher used a coding instrument containing a series of check boxes to document the weapons used by the officer during each scenario (e.g., empty hands, pepper spray, baton, firearm, or TASER) and the order in which they were used. The observational data and background records were then manually entered into an SPSS data set for analysis. The findings below provide a comparative analysis of force options used by officers assigned to the treatment and control groups at each of the three levels of suspect resistance separately. The differences between the treatment and control groups in their use of force were tested for statistical significance using Yates' corrected Chi-square.[5]

Table 3 compares the types of force used by officers in the treatment and control groups in response to non-aggressive resistance. In this first scenario, the suspect resisted verbal commands and physically attempted to escape, but made no effort to attack or strike at the police. Empty hand force was by far the most frequent response to the suspect's resistance for both the treatment and control groups. Specifically, 25 officers (78.1%) in the treatment group and 26 officers (81.3%) in the control group resorted to empty hand force during the scenario. Furthermore, two officers (6.3%) in the treatment group and five officers (15.6%) in the control group used pepper spray. The TASER was deployed twice by members of the treatment group. Overall, the control group used empty hand force and pepper spray more frequently than the treatment group, but these differences were small and not statistically significant. This suggests that being armed with the TASER did not influence officers' decisions to use other less-lethal force options in response to non-aggressive resistance.

Table 4 examines the force options used by police officers in the treatment and control groups in response to aggressive resistance. In this second scenario, the suspect threatened the officers, took a fighting stance, and then physically engaged the officers with his fists (but not with a weapon). Statistically significant differences between the treatment and control groups were observed in relation to police use of pepper spray and the baton. More specifically, 11 officers (34.4%) in the control group used pepper spray in response to suspect resistance during this scenario, whereas none of the participants in the treatment group used pepper spray. Additionally, 22 officers (68.8%) in the control group used the baton in this training scenario, while 13 officers (40.6%) in the treatment group used the baton. The TASER was deployed by 11 officers (34.4%) in the treatment group. These findings call attention to the possibility that officers in the treatment group were using the TASER as an alternative to pepper spray as well as the baton in response to aggressive suspect resistance.

Table 5 compares the types of force used by officers in the treatment and control groups in response to potentially lethal resistance—the only scenario where deadly force by the police may be justified. In this last scenario, the suspect refuses verbal commands, threatens the officer with a weapon (i.e., cinder block), and then quickly

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[5] Yates' Chi-square is continuity corrected for 2×2 tables that contain sufficient cell counts.

Table 3 Comparison of force used by police officers in the treatment (TASER) and control groups in response to non-aggressive resistance

Type of force used by police	Treatment group (n=32)		Control group (n=32)	
Empty hand force	25	(78.1%)	26	(81.3%)
Pepper spray	2	(6.3%)	5	(15.6%)
Baton	3	(9.4%)	3	(9.4%)
Firearm	0	(0.0%)	0	(0.0%)
TASER	2	(6.3%)	NA	NA

Note: The sum of the percentages displayed in each column may not equal 100% because the officers can apply more or less than one force option during the field-training scenario

* $p<.05$; ** $p<.01$

advances on the officer with the cinder block held over his head. The two groups did not exhibit any significant differences in their use of less-lethal weapons. Few officers in either group relied on empty hand force (one officer in the treatment; none in the control), pepper spray (one officer in the treatment; two in the control), or the baton (one officer in the treatment; two in the control) during this scenario. In contrast, the treatment and control groups showed statistically significant differences in the use of the firearm. About half of the participants in the control group (17 officers; 53.1%) used the firearm compared to seven officers (21.9%) in the treatment group. Additionally, the TASER appeared to be a viable option for some members of the treatment group, 14 (43.8%) of whom discharged the CED during this scenario. This suggests that officers in the treatment group may be using the TASER as an alternative to the firearm when confronted with potentially lethal resistance.

8 Discussion

A number of findings and policy implications for this experiment warrant further discussion. First, being armed with the TASER did not significantly impact how

Table 4 Comparison of force used by police officers in the treatment (TASER) and control groups in response to aggressive resistance

Type of force used by police	Treatment group (n=32)		Control group (n=32)	
Empty hand force	7	(21.9%)	4	(12.5%)
Pepper spray **	0	(0.0%)	11	(34.4%)
Baton *	13	(40.6%)	22	(68.8%)
Firearm	0	(0.0%)	0	(0.0%)
TASER	11	(34.4%)	NA	NA

Note: The sum of the percentages displayed in each column may not equal 100% because the officers can apply more or less than one force option during the field-training scenario

* $p<.05$; ** $p<.01$

Table 5 Comparison of force used by police officers in the treatment (TASER) and control groups in response to potentially lethal resistance

Type of force used by police	Treatment group (n=32)		Control group (n=32)	
Empty hand force	1	(3.1%)	0	(0.0%)
Pepper spray	1	(3.1%)	2	(6.3%)
Baton	1	(3.1%)	2	(6.3%)
Firearm *	7	(21.9%)	17	(53.1%)
TASER	14	(43.8%)	NA	NA

Note: The sum of the percentages displayed in each column may not equal 100% because the officers can apply more or less than one force option during the field-training scenario

* $p<.05$; ** $p<.01$

officers responded to situations involving non-aggressive suspect resistance. Most of the officers in both groups responded to the first scenario using empty hand force. LVMPD policy allows for use of the TASER at this level of resistance (level 4), when the device is used to arrest and control a suspect. Nonetheless, the treatment group only used the TASER twice (pepper spray was also used twice and the baton was used three times). A possible explanation for the infrequent use of the TASER at this level is that officers are used to dealing with passive resistance by using empty hand tactics—or they consider other tools to be unnecessary. Also, in light of media attention that had been critical of the TASER, officers could be wary of using CEDs in situations that do not involve active physical resistance, even if it is permitted on a lower level of the force continuum. The potential "slippery slope" for overusing the device has been a concern in the mainstream media (Ready et al. 2008). On the whole, however, this finding suggests that departments that have TASER policies that are similar to the LVMPD in terms of restrictiveness may not experience a proliferation of TASER incidents at the level of passive resistance. This finding also calls attention to the importance of training and effective communication in minimizing the use of CEDs in response to low levels of suspect resistance.

During the aggressive resistance scenario, being armed with the TASER was associated with 34.4% fewer officers using pepper spray (11 officers in the control group used pepper spray compared to none in the treatment group) and 28.2% fewer officers using the baton (22 officers in the control group used the baton compared to 13 officers in the treatment group). These differences were statistically significant and suggest that LVMPD officers are using CEDs when they would have otherwise used pepper spray and the baton in response to aggressive resistance. If TASER use is associated with similar reductions in the use of pepper spray and the baton on a national scale, it follows that one might expect a considerable shift in the distribution of coercive force methods used by police in the United States.

If officers are, in fact, favoring the TASER over other less-lethal methods when faced with aggressive suspect resistance, the field would benefit from further studies on why this might be the case. While beyond the focus of this study, a debriefing period after scenario-based research could be used for interviewing officers about their decision-making. There are several reasons, for example, why officers may use

the TASER as an alternative to pepper spray at this level of suspect resistance: officers could find it easier to subdue and handcuff suspects with CEDs than with pepper spray; there may be less risk of engaging in a physical altercation with the suspect; and officers could be more reluctant to use pepper spray because of its unintended effects (e.g., officers getting sprayed). Likewise, there may be reasons why officers use the TASER as an alternative to the baton. Unlike the baton, for instance, the TASER allows officers to maintain a safe distance from a suspect who is violent or combative. It is worth noting that the officers used the baton in a narrower range of circumstances than pepper spray, mainly at the level of aggressive physical resistance (about 80% of all baton uses were at this level, compared to 52% of all pepper spray uses).

During the lethal-resistance scenario (level 6), the group difference in firearm use was statistically significant (21.9% of the treatment group and 53.1% of the control group discharged the firearm). While the range of force options was more limited at this level of resistance, 14 (43.8%) officers in the treatment group found it appropriate to deploy the TASER when the suspect advanced on them with a deadly weapon (cinder block). There are a number of implications based on these findings and the nature of this scenario.

Police departments do not view CEDs strictly as an alternative to deadly force, although organizations such as Amnesty International and the ACLU have argued that they should only be used in this situation. Most situations where the police use physical force involve a multi-stage exchange of verbal and physical communications; they often occur under pressure; and an escalation or de-escalation of coercive and defiant actions can take place at various stages throughout the interaction. The level and type of force deemed necessary by the responding officers at the outset of the encounter may be different than what is appropriate at later stages. Lethal force situations where the suspect has a firearm and poses an immediate threat to citizens or officers at the outset of the encounter are different than situations that escalate to the point where deadly force is needed but where the suspect does not have a gun. Although both situations would be characterized as level 6 scenarios by the LVMPD, the TASER may not be appropriate in the former situation because an ineffective deployment could be disastrous. On the other hand, the TASER may be well suited for the latter situation when the suspect does not have a weapon with the same range as a firearm, and when the situation has not yet escalated to the point where deadly force becomes necessary. This is the type of situation where the TASER has the capacity to save lives.

The officers participating in this field experiment were instructed to react to different levels of suspect resistance as they would in a natural setting. Overall, the officers had substantial experience, averaging more than 6 years on the police force. The use of the TASER by police officers in Las Vegas and other jurisdictions is shaped in part by policy and field training. Such processes do not always provide opportunities to examine how emerging technologies impact the use of more conventional force options. It is through training and repetition under controlled conditions that officers learn the standards for using the TASER and how to deploy the weapon under demanding circumstances. This technology does not exist in a vacuum, and therefore assessments of its effectiveness and appropriate use will depend on how it is implemented and regulated by individual police agencies. Until

large-scale field observations can be carried out to document how CEDs fit within the broader spectrum of force applied by officers in the field, research will continue to depend on departmental surveys and use-of-force reports completed by officers. Simulation and scenario-based experiments may offer additional insights into how the diffusion of new technologies affects police behavior at different levels of the force continuum.

During the debriefing period, officers in both the treatment and control groups described the scenarios in terms of their realistic qualities. Officers regularly reported that the simulations were accurate depictions of real-life use-of-force encounters. They often used language such as, "this is the type of person we deal with on a routine basis," or "we deal with things like this all the time." In addition, for added realism, AOST bases its scenarios on actual cases pulled from use-of-force reports.[6] The AOST training officers and researchers also met on several occasions to scrutinize the details of the three training scenarios.

A final consideration relates to the external validity of this field experiment. To what extent can the study findings concerning police use of the TASER be generalized to patterns of TASER deployment by other police agencies? Equally important, was police officer behavior during the training scenarios representative of how LVMPD officers typically use the TASER in a natural setting? These are imperative questions for which we have no definitive answers. It is possible that officers would deploy the TASER differently within a real-world setting. Simulation and scenario-based experiments can raise external validity concerns because of the controlled conditions in which subject behavior is observed. However, research using simulations and scenarios can be a critical tool for uncovering patterns of behavior that are not easily discernable in daily life. Despite external validity concerns, Milgram's (1974) research on obedience to authority was insightful because his approach exposed behavioral tendencies that were difficult to observe in everyday life. Presently, it is difficult to use field observations to study whether police use of the TASER is associated with a reduction in the use of other less-lethal options. CED technology is fairly new and data collected on TASER use does not yet delve into the questions posed in this study. This experiment begins to lay the groundwork for future research using a valuable and underutilized data collection methodology—training scenarios.

Simulation and scenario-based exercises have been demonstrated to be effective training tools in several fields that involve individuals performing complex, high-stress activities, including medical training for physicians and nurses (Hammond 2004; Long 2005; Hravnak et al. 2007), firearm training in the military (White et al. 1991), and flight training for aviators (Salas et al. 1998).

The incorporation of role-play scenarios into police training has become more common in recent years (Van Hasselt and Ramano 2004; Van Hasselt et al. 2008). Little research, however, has explored the extent to which officers' behavior in field-training scenarios predicts or corresponds to actual responses during real-life

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[6] The training scenario involving potentially lethal resistance is not as "typical" since deadly force situations are rare, although officers did report that the scenario "felt" real. In designing this scenario, the choice of a deadly weapon other than a firearm—in this case, a cinder block—was important. A cinder block essentially allows officers to consider a wider range of responses.

situations (Van Hasselt et al. 2008). In one of the few attempts to examine this issue, Van Hasselt et al. (2005) provide some support for the validity of police role-play scenarios involving hostage negotiation—they determined that officers experienced in hostage negotiation perform better than inexperienced officers during role-play simulations. Nevertheless, the external validity of this technique remains an important consideration for future research in the field of criminal justice.

Appendix 1–Description of field-training scenarios

Non-aggressive resistance training scenario: The vehicle stop

Start of scenario Officers stop a driver for expired license plates. The suspect apologizes for any wrongdoing and states that he is in a rush to get to work because of a computer problem that only he can resolve.

Details After obtaining the driver's information and calling it in, the officers are told that the driver has an arrest warrant for battery domestic violence. The suspect complies when officers ask him to exit his vehicle and approach the car, but refuses to place his hands on the hood and becomes argumentative. When the officers move to pat the suspect down or take him into custody, the suspect refuses and attempts to get back in his vehicle stating that he has to get to work.

Suspect resistance Suspect demonstrates non-aggressive resistance. He makes no attempt to attack or strike at the officers, but refuses verbal commands and physically tries to escape. The suspect maintains active yet non-aggressive resistance.

Aggressive resistance training scenario: The trailer park

Start of scenario Officers respond to a call from a trailer-park manager stating that a transient matching the suspect's description was throwing rocks at cars and windows. As officers arrive at the scene, the suspect is leaning against a wall.

Details The suspect initially complies with the officers if they ask him to walk toward the car. (When the suspect is asked about the rocks, he states that some kids were doing it and that he chased them off). However, once the officers start to approach, the suspect states, "you're not touching me," runs a short distance, then turns toward the officers and takes a fighting stance. If the officers do not take action within 10 seconds, the suspect engages them with fists.

Suspect resistance The suspect demonstrates aggressive resistance. He refuses verbal commands, threatens officers with his fists, and then aggressively engages the officers with his fists. The suspect never uses a weapon. The suspect maintains aggressive resistance.

Potentially lethal resistance-training scenario: The school yard

Start of scenario Officers respond to a call from a teacher stating that someone matching the suspect's description was hanging around the school playground when children were outside and was acting strangely. When they went inside, he started yelling and throwing around a trash can. As officers arrive at the scene, the suspect is walking toward a trash can.

Details The suspect refuses all verbal commands. As officers exit the car, the suspect grabs the trash can and throws it at their car. As officers pursue, the suspect runs to a stack of cinder blocks, grabs one, holds it over his head, and threatens the officers. If the officers do not take action within 10 seconds, the suspect quickly begins to advance on the officers.

Suspect resistance Suspect demonstrates potentially lethal resistance. He refuses verbal commands, threatens officers with a weapon, and advances on officers with a weapon.

References

Alpert, G. P., & Dunham, R. G. (2004). *Understanding police use of force: Officers, suspects, and reciprocity.* Cambridge, UK: Cambridge University Press.

American Civil Liberties Union. (2005). *Stun gun fallacy: How the lack of TASER regulation endangers lives*. American Civil Liberties Union of Northern California: September 2005.

Amnesty International. (2004). *United States of America. Excessive and lethal force? Amnesty International's concerns about deaths and ill treatment involving police use of TASERs*. London: Amnesty International. AI Index: AMR 51/139/2004.

Amnesty International. (2007). *Amnesty International's concerns about TASER use: Statement to the U.S. Justice Department inquiry into deaths in custody.* London: Amnesty International. AI Index: AMR 51/151.2007.

Berenson, A. (2004). *Claims over TASER'S safety are challenged*. New York Times. Retrieved on August, 20, 2006 from http://www.mindfully.org/Technology/2004/Taser-Safety-Challenged26nov04.htm.

Bittner, E. (1970). *The functions of police in modern society*. Washington, D.C.: U.S. Government Printing Office.

Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: design & analysis issues for field settings*. Boston: Houghton Mifflin Company.

Dugan, J. R., & Breda, D. R. (1991). Complaints about police officers: a comparison among types and agencies. *Journal of Criminal Justice, 19*(2), 165–171.

Francis, M. (2006). *Stun-gun maker TASER may get a business jolt*. MSNBC. Retrieved on August 20, 2006 from http://www.msnbc.msn.com/id/14391347/.

Friedrich, R. J. (1980). Police use of force: individuals, situations, and organizations. *The Annals of the American Academy of Political and Social Science, 452*, 82–97.

Fyfe, J. J. (1989). Police/citizen violence reduction project. *FBI Law Enforcement Bulletin, 58*, 18–25.

Griffith, D. (2003). Recharged: Taser International's new X26 is smaller, but more effective than any Taser on the market. *Police: The Law Enforcement Magazine, 27*(6), 16–21.

Hammond, J. (2004). Simulation in critical care and trauma education and training. *Current Opinion in Critical Care, 10*(5), 325–329.

Hravnak, M., Beach, M., & Tuite, P. (2007). Simulator technology as a tool for education in cardiac care. *The Journal of Cardiovascular Nursing, 22*(1), 16–24.

International Association of Chiefs of Police. (2005). *Electro-muscular disruption technology (EMDT). A nine-step strategy for effective deployment*. Alexandria, VA: IACP.

International Electrotechnical Commission. (1994). *Effects of current on human beings and livestock*. Technical Report-Type 2, Publication 479-1.

Joint Non-Lethal Weapons Human Effects Center of Excellence (HECOE). (2005). *Human effectiveness and risk characterization of the electromuscular incapacitation device—a limited analysis of the TASER*. Part 1: Technical Report. Part 2: Appendices. March 2005.

Klinger, D. A., & Brunson, R. K. (2009). Police officers perceptual distortions during lethal force situations: informing the reasonableness standard. *Criminology & Public Policy, 8*(1), 117–140.

Las Vegas Metropolitan Police Department. (2006a). *Procedural order PO-21-06: Use of the electronic control device (ECD)*. Las Vegas, NV: Las Vegas Metropolitan Police Department.

Las Vegas Metropolitan Police Department. (2006b). *Procedural order PO-35-06: Use of force*. Las Vegas, NV: Las Vegas Metropolitan Police Department.

Long, R. (2005). Using simulation to teach resuscitation: An important patient safety tool. *Critical Care Nursing Clinics of North America, 17*(1), 1–8.

McCabe, F. (2006). *Man dies after LV police use TASER*. Las Vegas Review – Journal. Retrieved on October 9, 2006 from http://www.reviewjournal.com/.

McBride, D. K., & Tedder, N. B. (2005) *Efficacy and safety of electrical stun guns*. Arlington, VA: Potomac Institute for Policy Studies Report, Number 05-04. Potomac Institute for Policy Studies.

McDonald, W. C., Stratbucker, R. A., Nerheim, M., & Brewer, J. E. (2005). Cardiac safety of neuromuscular incapacitating defense devices. *Pacing and Clinical Electrophysiology, 28*, 284–287.

Meyer, A., & Greg, W. (1992). Nonlethal weapons: Where do they fit? Part II. *Journal of California Law Enforcement, 26*(3), 53–58.

Milgram, S. (1974). *Obedience to authority*. New York, NY: Harper and Row Publishers.

Police Executive Research Forum. (2005). *PERF conducted energy device policy and training guidelines for consideration*. Retrieved on August 23, 2006 from http://policeforum.mn-8.net/login.asp?loc=&link=.

Ready, J., White, M., & Fisher, C. (2008). Shock value: A comparative analysis of news reports and police records on TASER deployments. *Policing: An International Journal of Police Strategies and Management, 31*, 148–170.

Reiss, A. J., Jr. (1968). Police brutality—answers to key questions. *Trans-action, 5*, 10–19.

Salas, E., Bowers, C. A., & Rhodenizer, L. (1998). It is not how much you have but how you use it: toward a rational use of simulation to support aviation training. *The International Journal of Aviation Psychology, 8*(3), 197–208.

Seattle Police Department. (2002). *SPD special report: The M26 TASER year one implementation*. Retrieved on June 3, 2006 from http://www.theiacp.org/research/CuttingEdge/SeattlePDTaser.pdf.

Seattle Police Department. (2004). *Seattle Police Department TASER use and deployment fact sheet*. Retrieved on August 23, 2006 from http://www.taser.com/documents/seattlepduse.pdf#search=.

Shoemake, R. (2005). *Quantitative analysis of use of force and its impact on the Las Vegas Metropolitan Police Department in 2004. LVMPD Internal Report*. Las Vegas, NV: Las Vegas Metropolitan Police Department.

Skolnick, J., & Fyfe, J. (1993). *Above the law: Police and the excessive use of force*. New York, NY: Free Press.

Smith, D., & Visher, C. (1981). Street level justice: situational determinants of police arrest decisions. *Social Problems, 29*, 167–178.

Solomon, R., & Horn, J. (1986). Post shooting trauma reactions: A pilot study. In J. Reece & H. Goldstien, (eds.) *Psychological Services for Law Enforcement*. Washington, DC: United States Government Printing Office, 383–393.

Sztajnkrycer, M., & Baez, A. (2008). *Excited delirium and sudden unexpected death*. Available at: http://www.acep.org. (accessed on 1/9/08).

TASER International. (2002). *Advanced TASER M26 field report analysis*. Retrieved on June 10, 2006 from http://www.taser.com/.

TASER International. (2006). *TASER non-lethal weapons: Field data as of July 2006*. Retrieved on September 23, 2006 from http://www.taser.com/facts/documents/Injury_Reduction_Stats_2Q_2006.ppt.

Terrill, W. (2001). *Police coercion: Application of the force continuum*. New York, NY: LFB Scholarly Publishing LLC.

Terrill, W., & Mastrofski, S. (2002). Situational and officer-based determinants of police coercion. *Justice Quarterly, 19*(2), 215–248.

Terrill, W., & Paoline, E. (2006) Police use of force policy types: Results from a National Agency Survey. Paper presented at the Annual Research Conference of the American Society of Criminology, Los Angeles, CA.

U.S. Bureau of Justice Statistics. (1999). *Contacts between police and the public: Findings from the 1999 National Survey.* U.S. Department of Justice.

U.S. Government Accountability Office. (2005). *TASER weapons: Use of TASERS by selected law enforcement agencies.* Report to the Chairman, Subcommittee on National Security, Emerging Threats and International relations, Committee on Government reform, House of Representatives.

Van Hasselt, V. B., & Romano, S. J. (2004). Role-playing: A vital tool in crisis negotiation skills training. *FBI Law Enforcement Bulletin, 73*(2), 12–17.

Van Hasselt, V. B., Baker, M. T., Romano, S. J., Sellers, A. H., Noesner, G. W., & Smith, S. (2005). Development and validation of a role-play test for assessing crisis (hostage) negotiation skills. *Criminal Justice and Behavior, 32*(3), 345–361.

Van Hasselt, V. B., Romano, S. J., & Vecchi, G. M. (2008). Role playing: Applications in hostage and crisis negotiation. *Behavior Modification, 32*(2), 248–263.

Weisburd, D., & Britt, C. (2007). *Statistics in criminal justice* (3rd ed.). Springer Press: New York.

Westley, W. (1970). *Violence and the police.* Cambridge, MA: MIT Press.

White, M., & Ready, J. (2007). The TASER as a less-lethal force alternative: Findings on use and effectiveness in a large Metropolitan Police Agency. *Police Quarterly*, forthcoming.

White, M., & Klinger, D. (2009). "Contagious fire?" An empirical assessment of the "problem" of multi-shooter/multi-shot deadly force incidents in police work. Crime and Delinquency. In press. Pre-published in OnlineFirst June 24, 2008 as doi:10.1177/0011128708319581.

White, C. R., Carson, J. L., & Wilbourn, J. M. (1991). Training effectiveness of an M-16 rifle simulator. *Military Psychology, 3*(3), 177–184.

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