

THE IMPACT OF CONDUCTED ENERGY DEVICE POLICIES ON CITIZEN
COMPLAINTS AGAINST THE POLICE

by

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DEDICATION

This work is dedicated to my wife, Bobbie and my three kids, Luke, Livia and Liah for always being supportive of me and encouraging me to finish.

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I first want to thank God for carrying me through this whole process. Next, there were numerous people that provided help and assistance to me during this long journey and I couldn't have done this without them. My wife and kids have always supported me and challenged me to finish and for this I am extremely grateful. I am also blessed for the help I received from my committee members: Brian Withrow, Christine Sellers, Jeff Dailey, Pete Blair, and Scott Bowman, as they provided me great feedback and encouragement throughout this process. Thank you all for everything. Brian Withrow, I would have never finished without your help and support. Last, I want to thank my parents for instilling in me the importance of going to college and getting an education. I am extremely indebted to them.

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ABSTRACT

Research has shown that police department policies have increased the deployment of CEDs and decreased suspect fatalities (Ferdik et al., 2014), but it has not yet been determined whether CED policies and training have had an impact on citizen complaints. This study examined survey responses of 244 police departments drawn from a national sample of 950 administered by Tailored Statistical Solutions. Using a negative binomial regression analysis the study examined the impact of three policy restriction variables and four training variables on the number of citizen complaints reported by a department after controlling for four common predictors of citizen complaints. The findings in this study were mixed.

None of the *Training* variables were found to affect the number of citizen complaints. However, two out of three *Restrictiveness* variables were found to have an effect on the number of citizen complaints. Citizen complaints decreased as the distance between the ranks of CED use and firearms use on the force continuum decreased. Furthermore, citizen complaints decreased the higher the level of administrative review for non-injury CED deployments. Nevertheless, three of the four control variables remained significant when policy restrictions and training variables were included in the model. Citizen generated complaints increased when 50 percent or more of a department's officers are issued CEDs, when the total number of CED deployments increased, and when the number of officers in the department increased. The limitations of this study as well as future directions for research are also discussed.

I. INTRODUCTION

On October 13, 2007, Robert Dziekański, a 40-year-old Polish national, arrived at the Vancouver (British Columbia) airport. He did not speak English and ran into difficulties with administrative procedures. After a lengthy delay, an agitated Dziekański acted out and Canadian authorities were summoned. Four police officers arrived and after a brief interaction with Dziekański, they deployed a conducted energy device (CED). Paul Pritchard, a tourist who was nearby, used his camera phone to document the event. After Dziekański was exposed to the CED, he ultimately died. The actions of the police were called into question with the broad dissemination of the Pritchard footage on social media.

This tragic incident became the source of much controversy throughout the world, which spurred the Canadian government to launch a public inquiry and resulted in criminal charges against the officers involved. The public became outraged by the actions of the officers and their use of a CED. Police-community relations suffered dramatically because of this tragic event. Moreover, the family of the deceased filed complaints on the officers and questioned the CED policies and training that these officers received (Brown, 2016).

In another incident, on May 2009, 72-year-old Kathryn Winkfein was pulled over in Travis County, Texas for speeding. She was driving 60 mph in a 45 mph zone when she was stopped by the officer. The officer's dashboard camera captured Mrs. Winkfein refusing to sign her speeding ticket. The officer can be seen shoving her, which he said he was doing to keep her away from oncoming traffic. During this interaction, Winkfein yelled, "You're going to shove me? You're going to shove a 72-year-old woman?" The

officer can be heard on his patrol car videotape warning the woman about a half dozen times that he would tase her if she didn't stand back, to which she replied, "Go ahead, tase me." The officer then tased Mrs. Winkfein, causing serious injury to her as she lost her balance and fell down onto the concrete. Mrs. Winkfein went on to complain against the officer and sue the police department for the officer's actions.

This incident sparked much debate from the community because of how the officer handled the situation with the elderly female. Could the officer have been more understanding and sympathetic since he was dealing with an older female? What type of CED training or policy was this officer exposed to? Was deploying a CED really the best way to handle the situation? Concerned citizens did not understand why the officer could not use better people skills in his interaction with the elderly female or physically restrain the elderly female without using this type of force. As you can imagine, this was yet another example of a bad encounter between the police and a citizen which caused further public uproar and damaged police-community relations (ABC News, 2009).

Highly publicized incidents such as these surrounding police use of force, conducted energy devices (CEDs), and citizen complaints have adverse effects on the relationship between the police and the community as well as the public's perceptions of the police. The bond between the police and the community it serves is being questioned daily. In order to prevent crime and ensure a better quality of life for all members of society it is extremely vital that the police and community have a strong relationship in order to work together to solve problems. The current research looks into citizen complaints against the police by identifying what role CEDs play in citizen complaints and under what conditions CED deployments have increased or decreased citizen

complaints. The goal of this current study is to gain a better understanding of citizen complaints against the police in order to strengthen the police-community relationship and build on it.

Police departments, as public institutions, rest on a grant of authority embedded in public trust and self-assurance. Citizen complaints of police misconduct represent an undermining of that foundation. Complaints that become news events can destroy confidence among an even broader audience. Situations such as the Dziekański and Winkfein cases grab headlines and reverberate throughout the popular, academic, and policy-making environments (Terrill & Ingram, 2016). Accusations of police abuse of citizens have been a vexing issue in American policing for many decades (McCluskey & Terrill, 2005).

Civil rights groups, for example, have alleged that racial and ethnic minorities are the frequent targets of excessive physical force and verbal abuse and that police departments do not adequately investigate citizen complaints (American Civil Liberties Union [ACLU], 1966, 1992; Littlejohn, 1981; National Advisory Commission on Civil Disorders, 1968; National Association for the Advancement of Colored People [NAACP], 1995). Official data indicate that African-Americans are overrepresented in citizen complaints and are less likely than white complainants to have their complaints sustained (Pate & Fridell, 1993). Citizen discontent with internal police department complaint procedures has led civil rights groups to demand the creation of external, or citizen review, procedures (McCluskey & Terrill, 2005). Citizen review has spread rapidly in the United States and in other countries in recent years (Goldsmith, 1991; Walker & Wright, 1995).

Citizens' beliefs that officers are using unnecessary or excessive levels of force can quickly destroy police legitimacy and can lead to severe consequences including loss of life, civil disorder, criminal prosecution, and large civil judgments (Terrill & Ingram, 2016). Even though researchers have devoted more than four decades of research to identifying the correlates of police-citizen violence, relatively little study has focused on the relationship between departmental procedures and use of force as predictors of citizen complaints. Police depend on the support and assistance of citizens to function effectively. This dependence is perhaps most apparent in a police department's efforts to fight crime, as citizens serve as the primary source of information on criminal activity as victims, eyewitnesses, bystanders, and informants (Harris, 2011). Therefore, the relationship between a police department and its citizens is vitally important.

Initially perceived as "police-community relations," the focus on the relationship between police and citizens has shifted to a larger normative context grounded in legitimacy (Walker & Archbold, 2014). In this context, citizens cooperate with the police and comply with the law because they believe it is the right thing to do (Mazerolle, Antrobus, Bennett, & Tyler, 2013; Tyler, 2006). A compelling body of research has confirmed the consequences of police legitimacy, including greater citizen compliance with police commands during encounters; better cooperation with police, for instance, in reporting crimes and providing information; and obedience to the law (Hinds, 2009; Hinds & Murphy, 2007; Tyler, 1990; Tyler & Huo, 2002). Citizens' beliefs of police as reasonable, however, can be feeble and inadequate, especially in the wake of a police-citizen encounter ending in violence.

The events in Ferguson, Missouri in August 2014 clearly validate this point¹. As a result, scholars have devoted significant attention to the identification of correlates of police-citizen violence over the past 40 years, and a considerable body of literature has developed with regard to the individual, organizational, and community-level factors that increase the risk of violence (Fyfe, 1979; Jacobs & O'Brien, 1998; Terrill & Reisig, 2003; White, 2002).

Davis (1971) asserts that police officers are responsible for upholding the law and apprehending those who break it and, in some situations, exercising broad discretionary powers to do so. Sherman (1980) believes police use of physical force is equivalent to police violence. He defines police violence as “any behavior by a police officer, acting pursuant to their authority and/or power as a sworn law enforcement officer, that includes any type of physical force or deadly force, whether justified or not, against any individual” (Sherman, 1980, pg. 69). In view of Sherman’s definition, explanations for police use of force in the extant literature have been quite varied (Alpert & MacDonald, 2001). The damage done by police excessive force can be severe and long lasting, remarkably exceeding the direct impact on the individual officer and citizen involved (White & Ready, 2010). Fyfe (1988) explains that use of force situations have led to civil disorder and riots, the firing of police executives, millions of dollars in law suits, criminal prosecutions, and damaged police-community relations.

As a response to citizen complaints about police use of excessive force, many departments developed a “use-of-force continuum,” which illustrates verbal and physical

¹ In Ferguson, Missouri there were protests and riots that began the day after the fatal shooting of Michael Brown by white police officer Darren Wilson on August 9, 2014. The disorder sparked a strong debate in the United States about the relationship between law enforcement officers and African Americans as well as use of force policies nationwide.

actions an officer can take in response to different levels of suspect resistance and behavior. The use of force continuum will generally emphasize the minimum and maximum recommended force options accessible to the officer (Walker & Katz, 2002). Terrill and Ingram (2016) assert that the force used by police officers is expected to be related to the amount of suspect resistance. With the use of force continuum model, the force can be calculated by two basic standpoints: 1) any use of force that is not unnecessary or excessive is considered reasonable and 2) force used prior to citizen resistance or which continued after resistance has stopped is considered unnecessary (Klahm, Frank, & Liederbach, 2014). Excessive force is the use of greater force than is required to obtain compliance (Adams, 2005; Harris, 2009a; Phillips, 2015; Worden, 1996). Fyfe (1988) asserts that the officer is allowed to remain one level above the suspect resistance as the interaction progresses. For example, an officer may be allowed to use a less lethal weapon, such as pepper spray or a conducted energy device (CED), in response to physical resistance by a suspect.

The authority to use coercive force is a central component of the police function (Bittner, 1970; Klockars, 1985). The Bureau of Justice Statistics (BJS) (2011) found that although police use of force is a statistically rare event, occurring in about 1.4% of all police-citizen encounters, the volume of encounters in a given year translates into an estimated 560,000 use of force incidents per year, or more than 1,500 events per day. Moreover, use of force by police is much more common in arrest encounters, as research indicates about one in five arrests involves the use of some level of force by police (Hickman, Piquero, & Garner, 2008). Research also shows that the vast majority of incidents involve lesser forms of force, including grabbing and control holds, with

weapons use being much less common (Alpert et al., 2011; Hickman et al., 2008). Police use of deadly force is exceptionally rare (Bureau of Justice Statistics (BJS), 2001). The BJS (2001), for example, examined national data on police shootings from 1976 to 1998 and concluded that the number of fatal shootings averaged just 400 per year and that the number had not changed significantly during that time despite large increases in the U.S. population and the number of sworn police officers. Furthermore, research on individual police departments over time suggests that the use of force has actually decreased in recent years (White, 2001; White & Klinger, 2012).

Despite the numerous studies that have been conducted over the years to measure the types, frequency, and correlates of police coercion, there has been little agreement derived across academics and practitioners regarding many of the most fundamental issues surrounding the use of force by police (Harris, 2011). In contrast to this larger body of literature, however, recent studies regarding the use of one type of weapon, conducted energy devices (CEDs) have generated somewhat consistent findings (Terrill & Ingram, 2016).

CEDs have been used by law enforcement since at least the 1980s (Kaminski et al., 2015). They are handheld devices that use compressed nitrogen to launch two or four, depending on the manufacturer and device, tiny barbed darts secured to a power source by insulated wires that project outward to maximum distances of 15-35 feet (Kaminski et al., 2015). When the darts attach to clothing or penetrate the skin, they deliver short electric pulses with very low average current that interrupts the electrical signals from the central nervous system to the peripheral body, typically leading to neuromuscular incapacitation (Kroll & Ho, 2009). CEDs also have a stun mode used for pain

compliance. The introduction of CEDs as a use-of-force alternative significantly shifted the use-of-force landscape (Kaminski et al., 2015).

Although early models of the CED were not widely accepted during the 1980s, partially because they were less effective than newer models, the number of law enforcement agencies employing 100 or more sworn officers adopting CEDs grew substantially following the marketing of a certain type of CED, the TASER model M-26TM in 1999 (Meyer, 2009). In fact, according to the Bureau of Justice Statistics, only 14.5% of agencies deployed CEDs in 2000, but this percentage tripled by 2003 (43.9%) and as of 2007, 74.9% of agencies deployed CEDs (Law Enforcement Management and Administrative Statistics, 2006, 2003, 2011).

Among the reasons law enforcement agencies adopted less-lethal weapons such as CEDs was to gain compliance from resistive and combative suspects while reducing both the likelihood and the severity of injury to officers and suspects (Thomas et al., 2011). Thus, a vital question is whether or not CEDs are effective in gaining compliance and reducing injuries and the severity of injuries. With the general implementation of CEDs during the 2000s, many law enforcement agencies have since reported significant reductions in officer and suspect injuries; however, these studies were not independent and relied on overly simplistic pre-post-test comparisons (Thomas et al., 2011).

By utilizing more sophisticated research designs and statistical methods, several independent studies have since been conducted, with the majority reporting that the use of CEDs significantly reduced injuries to suspects and/or officers as well as the severity of injuries to suspects (Lin & Jones, 2010; MacDonald et al., 2009; Paoline, Terrill, & Ingram, 2012; Smith et al., 2007; Taylor & Woods, 2010). Moreover, these studies

reported that the risk of moderate to severe harm from the use of CEDs was quite low (Thomas et al., 2011). Although most recent studies of the use of CEDs by police have shown that they significantly reduce the number and severity of injuries to citizens compared to other types of force and have similar effects on injuries to officers or are minor, Terrill and Paoline (2011), utilizing a non-experimental design to examine CED usage in seven mid-to large-size U.S. police agencies, question these findings.

Using different methods and measures, they reported significant increases in citizen injuries involving the use of CEDs compared to other types of force across a majority of their statistical models. Terrill and Paoline (2011) emphasized the importance of their findings by noting that their study “was the first to report a fairly consistent increased risk between the use of CEDs and citizen injuries,” leading them to suggest that “recent policy recommendations made by a number of researchers (MacDonald et al., 2009; PERF, 2005; Smith et al., 2007; Taylor & Woods, 2010) . . . are premature” (Terrill & Paoline, 2011, p. 24). Terrill and Paoline (2011) speculated that the differences in their findings when compared to other studies of similar size, scope, and design may be due to the presence of minor dart punctures as “injuries,” and further articulated several reasons why they departed from previous approaches regarding the measurement of citizen injury associated with CEDs. They proposed to the research community to decide how to better operationalize CED-related injuries.

Although publicized by some for their ability to minimize harm, the adoption and use of CED technologies have not been without controversy (MacDonald, Kaminski, & Smith, 2009; Smith et al., 2007). Concerns and anxieties have been raised across a broad range of issues such as: 1) low placement on use-of-force continuum leading to overuse;

2) adverse health effects; 3) disproportionate use on minorities; 4) multiple or sustained applications; 5) intentional misuse; 6) exaggeration of incapacitative effects; 7) whether adoption reduces or increases injuries to suspects; 8) their use on passive resisters; 9) their use on vulnerable groups such as children, the elderly and the mentally ill; and 10) their contribution to sudden in-custody death (American Civil Liberties Union of Northern California, 2005a, 2005b; Amnesty International, 2004; Kaminski et al., 1999; Kaminski, Engel, Rojek, Smith, & Alpert, 2013; Lin & Jones, 2010; Terrill & Paoline, 2012a; Thomas et al., 2010; White & Ready, 2009, 2010). The current debates surrounding the adoption, placement, and use of CEDs, coupled with the relatively few large-scale studies on this issue, indicates a need for continued research on these devices.

Moreover, department policies and training guidelines are beginning to emerge based on court decisions involving CED use by police (Scholsberg, 2005). Legal cases are split in their support of and opposition to the use of CEDs. Smith et al. (2007) point out that as police departments move toward formulating and refining their policies and training guidelines for CED use, they can rely on numerous court rulings that provide valuable lessons that should be considered and incorporated by agencies seeking to limit their exposure to civil liability while continuing to use force effectively and humanely when necessary.

Consequently, most courts are explicit in permitting the use of CEDs to control actively resistant or assaultive suspects (Smith et al., 2007). Although a few courts have allowed excessive force cases to go to trial on the use of CEDs against verbally resistant or non-compliant individuals (*Green v. Fewell*, 2006), the importance of the case law allows the use of a CED under these circumstances especially if the officer can articulate

a reasonable fear of injury to himself, the suspect, or a third party (*Stanley v. City of Baytown*, 2005). Ultimately, the use of a CED, like any other application of force by the police, will be judged by courts and juries under a reasonableness standard (*Graham v. Connor*, 1989).

Nevertheless, many police departments maintain that clear departmental policies guiding training and restrictions on use of CEDs may reduce excessive use of force. Well-defined policies can have a positive effect on employee behavior and may even provide a vital understanding into what causes employees to engage in misconduct (Kinnaird, 2006). With poorly written and communicated policy or no policy at all, there can be a higher likelihood of police deviance or negligent behavior. Moreover, without well-defined policies and procedures that protect the department, the department may be held liable and accountable for any misconduct or excessive force that its officers are involved in (Kinnaird, 2006). A *policy* is defined as “A definite course or method of action to guide and determine present and future decisions or a guide to decision making under a given set of circumstances within the framework of corporate objectives, goals and management philosophies” (Bizmanuals.com, 2001). A *procedure*, on the other hand, is often defined as a particular or consistent way of doing something (Kinnaird, 2006).

Kinnaird (2006) observes that policy is almost always viewed with more importance than procedure. Although both produce accountability measures for the department, policies tend to hold more credibility as they are often guidelines that are set in stone and that hold legal implications (Taylor & Woods, 2010). For instance, consider use of force policies and legal cases such as *Graham v Connor* (490, US, 386 1989),

which weighed whether the officer's use of force is objectively reasonable in light of the facts and circumstances and that usually corresponds with departmental force policies (Kinnaird, 2006). To digress from this policy would implicate the officer and department on both a criminal and a civil level. Then again, an inconsistency from a departmental procedure on handcuffing may or may not be harmful to the officer (Kinnaird, 2006). Many police departments allow discretion in following certain procedures with only major negligence necessitating interdepartmental discipline (Taylor & Woods, 2010).

To further examine the relationship between policy and complaints, Holden (1994) identifies multiple ways in which problematic departmental policies can generate complaints: (1) policy is formulated strictly at the top of the organization, with little or no input from those who must implement the policy; (2) policy statements are vague or poorly written; (3) there is no clear, concise reason for having the policy; (4) policy statements were written for the wrong reason, detracting from effectiveness rather than facilitating agency objectives; and (5) policy statements are a product of evolution; each administrator adds to the policy without subtracting anything (Holden, 1994). Through policy analysis, researchers provided several key performance indicators that would help lower citizen complaints: (1) policy is the product of thoughtful analysis; (2) goals of the policy statement provide guidance for officers; (3) policies are designed by using the same guidelines for setting priorities as those used in the design of training programs; (4) policies are short, general guidelines; (5) policies are accurate statements of the organization's values and philosophies; and (6) the design of a policy requires the understanding that there is a limitation on human memory (Holden, 1994).

The kinds of policies that police departments often have in place to cover CED

use provide officers with the guidelines necessary for the safe carrying, handling, deployment, and use of the CED. These policies contain training requirements that officers must undergo in order to be approved to carry a CED. Typically, this training will consist of two parts which consist of: 1) officers have to take and pass a CED approved training class; and 2) officers must be able to demonstrate proficiency in using the CED (TASER International, 2006). Departmental policies also elaborate on situations and circumstances where officers may not deploy their CED. Some situations where officers may not deploy their CED are the following: 1) when the officer knows a subject has come in contact with flammable liquids or is in a flammable atmosphere; 2) when the subject is in a position to fall and possibly sustain substantial injury or death; 3) punitively for purposes of coercion; 4) to escort or jab suspects; 5) to awaken unconscious subjects; 6) on a handcuffed prisoner; 7) when the subject is visibly pregnant, unless deadly force is the only other option; 8) the subject is in or around water where drowning could result; and 9) against frail persons of any age (Adams & Jennison, 2007). Departmental policies also have CED procedures in place for proper reporting, supervisor notification, and medical treatment. These policies are put in place to protect the department from lawsuits and to ensure that their officers are held accountable for their actions (Adams & Jennison, 2007).

Research has shown that police department policies have increased the deployment of CEDs and decreased suspect fatalities (Ferdik et al., 2014), but it has not yet been determined whether CED policies have had an impact on citizen complaints. The purpose of the present study is to investigate if citizen complaints are lower in jurisdictions that have more restrictive CED policies and greater CED training

requirements. The common assumption is that departments with more restrictive policies would be associated with a lower number of CED deployments, which would in turn generate a lower number of citizen complaints. Additionally, departments with higher CED training requirements would be associated with a lower number of citizen complaints. Thus, police department policies governing the use of CEDs will have an influence on citizen complaints because the policies will dictate whether or not officers utilize the device and how they use the device. The present study uses data from a nationally representative sample of U.S. law enforcement agencies to investigate the impact of training and restriction policies on the number of citizen complaints.

The research findings presented here can contribute to the growing body of literature on CED use by law enforcement agencies. As the implementation of CEDs by law enforcement agencies and their use by officers increases, it is important for researchers to continue to examine not only the effects and effectiveness of CEDs, but also the policies and procedures that influence its use. CED policies and procedures are constantly being updated by police departments in an effort to address emerging issues associated with this somewhat new technology. The results of this study will demonstrate indirectly whether CED deployment, when guided by policy, can have a positive influence on police-community relations.

Chapter two of this dissertation will present a review of the literature, offering a discussion on citizen complaints against police, police use of force, CED training and policy implications, legal cases involving CED use, and current research on CEDs and injuries in addition to citizen complaints. Next, chapter three will describe the methodology used to investigate the research questions, including the data source,

sample, measures, and analytic plan. Subsequently, chapter four will report the results of the data analysis and chapter five will present a discussion of the findings as well as the limitations and future direction of this research.

II. LITERATURE REVIEW

In this chapter, literature relevant to citizen complaints against the police and police investigatory methods for handling citizen complaints is discussed. The police are empowered with far reaching powers and a significant degree of discretion in order to perform their responsibility to preserve the law and protect citizens (Lambo, 2010). Because of these facets of police work, it is essential that the community place their trust in the police and hold the police accountable for their actions (Lambo, 2010). Accountability is extremely imperative when police actions may be labeled as misconduct (Harrison & Cunneen, 2000). Individual police officers can be held accountable for their misconduct through departmental investigations. Moreover, police departments can be held accountable for their policies and procedures regarding police misconduct if their procedures are not well-written (Harrison & Cunneen, 2000).

Next, this chapter will examine the literature on the police use of force continuum and intermediate weapons, specifically, the history and development of conducted energy devices (CED). The use of force by law enforcement is an essential and challenging part of policing. Police officers, on occasion, must use or threaten to use force to restrain those that violate the law even though such force is uncommon. In fact, only 1.5% of all contacts with civilians result in police use of force (Schatmeier, 2013). Mastrofski (2004) states research on use of force policies in controlling officers' actions is rare and limited to guidelines aimed at the high end of the use of force continuum.

Third, research on CEDs and their relation to injuries and deaths is reviewed in this section. Controversy over the physiological effects of CEDs includes the claim that they are inherently dangerous devices that cause hundreds of deaths by interrupting

normal cardiac rhythm (Schlosberg et al, 2005; Zipes, 2012). However, studies looking at the link between CED usage and death cast serious doubts on this accusation (Melekian & Wexler, 2011; Morgan, 2008; Vilke & Chan, 2007).

This chapter concludes with the discussion of legal cases involving CEDs, CED training and policy implications. From the beginning of 19th century American policing until the last years of the 20th century, officers had only a few options when it came to using physical force against citizens, which encompassed the following: bodily force, a baton, or a firearm (Gates, 1992). What changed near the end of the 20th century was that a variety of new sorts of non-lethal weapons began to be introduced into American policing (Hubbs & Klinger, 2002). The type of non-lethal device that has seen the highest level of adoption is the CED (Adams & Jennison, 2007).

Citizen Complaints against Police

Community trust in the police is threatened when reports of police misconduct occur. As varying citizen protests throughout U.S. history demonstrate (e.g., Detroit, 1960s; Kent State, 1970s; Miami, 1980s; and Los Angeles, 1990s), including those most recently in Missouri, New York, South Carolina, Maryland, and Texas, the amount of community dissatisfaction in relation to perceived or actual police deviance can be significant (Kaminski, Engel, Rojek, Smith & Alpert, 2015). The United States is experiencing the most extensive period of civil unrest since the 1960s because of the common practice of citizens voicing their displeasure with their police departments by filing complaints alleging police misconduct (Terrill & McCluskey, 2002).

Although citizen surveys tap into beliefs about police treatment, it could be argued that when a citizen files a formal complaint against an officer, this represents a

greater expression of dissatisfaction with the police process (Schaible, De Angelis, Wolf, & Rosenthal, 2012). In this sense, citizen complaints could be more threatening to police legitimacy than attitudinal displeasure voiced as part of a survey questionnaire.

Understanding the causes of citizen complaints can potentially assist in establishing and preserving police legitimacy (Schaible et al., 2012). Within the framework of citizen complaint research, scholars have done an extraordinary job at uncovering several important findings.

First, the existing research generally shows that a small percentage of officers account for a disproportionate amount of citizen complaints (Christopher, 1991; Harris, 2009, 2011; Lersch & Mieczkowski, 1996, 2000; McCluskey & Terrill, 2005; Walker, 2001). Next, verbal discourtesy and improper use of force allegations are often the most commonly filed complaints (Dugan & Breda, 1991; Hickman, Piquero, & Greene, 2000; Lersch & Mieczkowski, 1996). Third, few citizen complaints are often sustained (Dugan & Breda, 1991; Hassell & Archbold, 2010; Hickman, 2006; Lersch & Mieczkowski, 1996; Liederbach, Boyd, Taylor, & Kawucha, 2007; Manis, Archbold, & Hassell, 2008; Terrill & McCluskey, 2002). Last, numerous officer-based correlates of complaints have been identified, the most consistent being gender, age or experience, and education (Brandl, Strohline, & Frank, 2001; Harris, 2009; Lersch & Kunzman, 2001; Lersch & Mieczkowski, 1996, 2000; Manis et al., 2008; McElvain & Kposowa, 2004).

According to Seneviratne (2004), complaints are unsolved problems where remedy is needed, and effective methods for dealing with them are an important part of the accountability of that service. Citizen complaints ensure that police officers are held accountable for their actions. Complaints offer citizens an opportunity to become

involved and voice their concerns about the services they receive from the police (Guzman & Frank, 2004; Lersch & Mieczkowski, 2000; Worrall, 2002). They provide police departments with ways to identify and control those officers who cause problems, as well as a way to measure officer performance and productivity (Lersch, 1998; Lersch & Mieczkowski, 2000; McCluskey & Terrill, 2005; Terrill & McCluskey, 2002).

Law enforcement policies, practices, and procedures for handling citizen complaints are important because they help the police maintain citizens' trust and build partnerships with communities (Hickman, Piquero, & Greene, 2000; Johnson, 2004; Seneviratne, 2004). Like the citizen complaints themselves, procedures hold the police accountable for their actions, prevent and reduce future incidents of police misconduct and abuse of citizens, and control police power and behaviors (Cao, Deng, & Barton, 2000; Greene, 1999; de Guzman & Frank, 2004; McCluskey & Terrill, 2005; Seneviratne, 2004).

Research on Citizen Complaints

To reiterate, current research shows that a few police officers are often responsible for a disproportionate number of citizen complaints within a certain law enforcement agency (Kaminsky et al., 2015). In the early 1980s, an examination of citizen complaint data in Houston revealed that just 12% of officers accounted for 41% of all complaints (U.S. Commission on Civil Rights, 1981). A decade later, the Christopher Commission released its review of the Los Angeles Police Department in the aftermath of the Rodney King riots (Christopher, 1991). The Commission reported that “the top 10% of officers ranked by number of excessive force or improper tactics allegations accounted for 27.5% of all such allegations” (Christopher, 1991, pg. 36). In the same year, Dugan

and Breda (1991) reported similar results from a survey of 165 police agencies in Washington State involving citizen complaints. Dugan and Breda (1991) found only 4.4% of officers accounted for all the sustained complaints.

Furthermore, Lersch and Mieczkowski (1996), drawing on citizen complaint data from a large unidentified Southeastern police agency, reported that just 7% of officers accounted for more than one third of all citizen complaints generated over a 3-year period. In addition, Harris (2011) examined citizen complaint data longitudinally over 14+ years (1987–2001) in a large northeastern agency, finding that 5.4% of the officers comprised roughly 20% of the 3,070 citizen complaints filed. Moreover, disproportionate findings have also been reported in cities such as Boston and Kansas City (Walker, 2003). It is important to note that while the inference is often that these officers are problem officers, there is some evidence to indicate that such officers may be more productive as well (e.g., via stops, searches, force, and arrests; Brandl et al., 2001; Hassell & Archbold, 2010; Lersch, 2002; Terrill & McCluskey, 2002).

Prior research has also found that verbal rudeness and improper use of force complaints are often the most common complaints filed by citizens (Terrell & McCluskey, 2002). Hickman et al. (2000) tracked 178 police officers graduating from the Philadelphia police academy for 3 years and found that verbal rudeness and improper use of force complaints accounted for 72% of all complaints filed during that time period. Dugan and Breda (1991) found a similar percentage, where verbal rudeness and improper use of force complaints accounted for 59% of all complaints. Lersch and Mieczkowski (1996) also found that these two forms of complaints accounted for 62% of all complaints. Additionally, Liederbach et al. (2007) found that 40% of the citizen

complaints filed from 2000-2003 in an unidentified Midwestern police department were for verbal rudeness and improper use of force.

Another area of review that several researchers have conducted research on involves the relative infrequency of sustained complaints, particularly with respect to use of force and verbal rudeness complaints (Kaminsky et al., 2015). Roughly all studies to date have depended on internal mechanisms (i.e., IA units) to assess complaint dispositions (Schaible et al., 2012). Dugan and Breda (1991) reported a 25% sustained percentage for all complaints received, 11.6% for force complaints, and 28.2% for verbal discourtesy complaints. Results from a national survey conducted by the Police Foundation involving 830 police agencies across the United States in the early 1990s showed that the percentage of use of force complaints sustained for local police departments was 10.1% (Pate & Fridell, 1993). Lersch and Mieczkowski (1996) found that 11.1% of all complaints were sustained in their study. Hickman (2006), drawing on Law Enforcement Management and Administrative Statistics data, reported an overall sustained percentage of just 8% for use of force complaints. He also discovered that departments with Civilian Complaint Review Boards were less likely to have sustained complaints (6%) versus those without a Civilian Complaint Review Board (11%). Finally, the Christopher Commission (1991) in Los Angeles Police Department found just 2% of force complaints were sustained, while Liederbach et al. (2007) did not find a single sustained force complaint in their study.

Citizen Complaint Types and Outcomes

There are numerous reasons why citizens file complaints against police officers. The most common found throughout the literature appear to be complaints relating to

patrol incidents, physical and verbal abuse, excessive use of force, conduct and behavior, performance and mostly recently, racial profiling (Cao, Deng, & Barton. 2000; Greene, 1999; Hickman, Piquero, & Greene, 2000; Lersch, 1998; Lersch & Mieczkowski, 2000; McCluskey & Terrill, 2005; Terrill & McCluskey, 2002; Walker, Archbold, & Hurst, 2002; Worrall, 2002). However, complaints are defined differently among agencies. For instance, Cao, Deng, and Barton (2000, pg. 357) indicated that excessive use of force is defined as "any accusation by a citizen regarding unnecessary and unjustified physical force by police officers."

Outcomes may also vary among agencies. Hickman (2006) found that there were four main dispositions resulting from citizen complaints: not sustained, unfounded, exonerated, and sustained. There are policies, practices, and procedures that police departments can implement to handle citizen complaints against police officers. A review of the literature revealed that there were three common procedures utilized by police departments: mediation, internal review, and external review (Bartels & Silverman, 2005; de Guzman & Frank, 2004; Lersch & Mieczkowski, 2000; Prenzler & Ronken. 2001; Walker, Archbold, & Herbst, 2002; Worrall, 2002).

The officer–citizen encounter represents a special case of humans engaging in social interaction (McCluskey & Terrill, 2005). The potential for conflict in this encounter is naturally heightened when individuals battle for a differential outcome (McCluskey & Terrill, 2005). This is not to say that overt conflict arises whenever this is the case. As a matter of fact, most social interaction occurs without overt conflict (McCluskey & Terrill, 2005). As Goffman (1959) states, in most social interactions, a working consensus develops because participants are adequately accustomed to one

another so that open contradictions will not occur. Typically, this type of peaceful scenario plays out even in the case of highly adversarial situations such as officer– citizen interactions (Bayley & Garofalo, 1989).

Most officer–citizen encounters occur without conflict because of the “willingness of the actors to agree on the definition of the situation and to permit each actor to play out the role he has chosen for himself” (Hudson, 1970, p. 180). Nevertheless, as a result of the often adversarial nature of the officer–citizen encounters, situations arise in which avoidance of conflict is not an option. Not every citizen willingly accepts an officer’s definition of a situation and instead, he or she may choose to rebel against or challenge the authority of the police officer. Van Maanen (1978) noted that this type of citizen, termed the “asshole” by police, was likely to receive street justice in the form of a “thumping.” Although Van Maanen’s (1978) fieldwork took place three decades ago, police continue to confront citizens they label as “assholes” who challenge their authority (Mastrofski, Reisig, & McCluskey, 1999).

However, use of force against such suspects is now receiving more careful scrutiny due to the legal and financial implications (Terrill & McCluskey, 2002). More specifically, “thumping” an “asshole” has accumulated an increasing amount of both departmental and public attention (Skolnick & Fyfe, 1993). When force is applied in conflict situations, the process or management of conflict becomes the focal concern (Mastrofski, 1999). It is one thing for an officer to use force, but another if such force is not delivered appropriately or legally (Klockars, 1995; Terrill, 2001; Toch, 1995). The legitimacy of the police institution is threatened when officers are unable or unwilling to resolve conflict situations in an appropriate manner (Kerstetter, 1995; Tyler, 1990). For

example, a citizen may bring a lawsuit against an officer or the police department alleging wrongdoing, letting the courts settle the issue, but this is expensive, time consuming, and realistically available only in cases where severe physical or monetary damage has resulted (Terrill & McCluskey, 2002).

Another option is to file a complaint with the police department itself.

Complaints indicate that citizens perceive something as “wrong”, and they have a gripe requiring resolution (Terrill & McCluskey, 2002). These complaints can range from some offensive officer behavior such as a racial slur aimed at the complainant, or it could be that the officer was perceived as rude or condescending, or it could be that the officer was alleged to have used excessive force. Irrespective of the underlying source, a citizen complaint represents citizen frustration arising from an incident involving the assigned officer (Kaminsky et al., 2015). Therefore, if we know how many complaints officers have, what exactly does this information tell us?

There are at least three different perspectives on the significance of citizen complaints (Terrill & McCluskey, 2005). One perspective is that citizen complaints tell us little to nothing because they are unreliable or invalid indicators of officer behavior. Two arguments can be made to support this view. First, a citizen complaint is just the citizen’s view or perception that the officer acted illegally or improperly, which is unlikely to be informed by rules and procedures endorsed by police departments for establishing uniform operating guidelines (Terrill & McCluskey, 2005). Next, a complaint is solely an allegation of wrongdoing and may have less to do with improper police behavior and more to do with the fact the citizen was the subject of an officer behavior, such as an arrest or search, which the citizen simply does not like, thereby

provoking a complaint on his or her behalf. These two points weaken the reliability of a non-investigated complaint as a performance measure.

A second perspective on the significance of citizen complaints (Schaible et al., 2012) is that complaints help to identify potential problem officers. Toch (1995) notes that complaints are subject to interpretation, but they may be a rough indicator of an officer's tendency for misconduct. Hence, officers with a high complaint rate should be identifiable through disparity in some behaviors when compared to non-problem coworkers (Toch, 1995).

A third perspective is that citizen complaints may actually be an indicator of officer productivity. It has been debated (Lersch & Mieczkowski, 1996; Wagner & Decker, 1997) that officers who receive repeated complaints may not actually be so-called problem officers, but rather productive officers. The surest way not to receive a complaint is to do little or no police work or to avoid probing or dealing with situations where conflict is likely, such as chasing drug dealers or stopping traffic violators (Muir, 1977; Willing, 1999). It is difficult to support or deny the basis of these arguments since all are rooted in conceivable assumptions. Each perspective calls into question the essential meaning of a complaint or what complaints actually represent (Terrill & McCluskey, 2005).

These varying perspectives, and the fact police departments are increasingly relying on citizen complaints as a performance measure, illustrate the need to analyze if department policies have an influence on the number of citizen complaints. Ensuring that police use their authority in a just and reasonable manner is a persistent concern. Failure of police to act justly threatens the very core of democratic principles, and calls into

question the legitimacy of policing, thereby weakening public support and the authority with which police exercise social control (Liederbach, Taylor, & Kawucha, 2007; Sunshine & Tyler, 2003; Tyler, 2003).

Police Investigatory Methods for Citizen Complaints

Traditionally, U.S. police agencies primarily investigated citizen complaints of police misconduct through internal administrative means such as through command level supervisors or IA units (Walker, 2001). More recently, cities have begun to integrate civilian oversight, which is defined “as a procedure for providing input into the complaint process by individuals who are not sworn officers” (Walker, 2001, pg. 5). The main reason civilian oversight agencies began to take hold across the United States was the belief that the police were unable to effectively investigate themselves (Walker, 2001). Civilian oversight of the police initially began in the 1920s in a few select cities, but by the year 2000 had become firmly engrained in most mid-to-large sized cities (Walker, 2001). However, the extent to which civilian oversight is any more effective at rooting out police misconduct has received little empirical inquiry (Walker, 2001).

As noted above, one of the most common complaints levied against police by citizens is the use of inappropriate or excessive force. Hence, the use of physical force by police has been a matter of great debate and controversy for decades. From Westley’s (1953) initial characterization of police use of force as violence to Bittner’s (1985) observation that the core of the police role in society is the non-negotiable use of coercive force, the conceptualization and study of police use of force is often a central component of criminal justice research. Over the years, successful attempts at reducing police use of force and the resulting harms associated with it have included changes in laws,

legislation, policies, training, and practice (Fyfe, 1988). And most recently, law enforcement officials have turned to the use of less-lethal technologies (e.g. CEDs and pepper spray) as weapons of choice to reduce citizen and officer injuries when force must be used to control resistant criminal suspects (MacDonald et al., 2009; Taylor, Alpert, Kubu, Woods, & Dunham, 2011).

Police Use of Force

The use of force by police officers is a privilege that can only be used in limited circumstances. Once officers are justified to use force they must apply it prudently by utilizing a use of force continuum. The primary tool for providing guidance to officers in the use of force is called the continuum of force or the force continuum (Brown, 1994). Police officers are taught to use the minimum amount of force necessary to control a situation, which usually translates in practice as force behavior one level above that displayed by the citizen (Adams & Jennison, 2007). Hence, a use of force continuum is a representation of various force options designed to develop an understanding of appropriate levels of force, in particular lower levels of force, including verbal commands, physical controls, non-lethal weapons, and deadly force (Walker, 2005). Furthermore, according to Thornton and Shireman (1993), a use of force continuum is a model by which an officer can choose verbal and physical reactions to a subject's behavior from a range of options to adequately stop the subject's aggressive behavior and establish control of the subject. The main goal is to control the individual and the situation without overreacting and using excessive force.

Officers are held accountable for their use of force and could be judged by their departments, the public, or by the courts for any type of force they use. Normally, the

higher the level of force used by an officer, the more scrutiny that incident will receive (Nowicki, 1994). Police officers are held to a higher standard and are accountable for everything they do, so they must be prepared to justify their conduct. Geller and Scott (1992) describe the continuum of force as a scale of control tactics that range from officer's presence to verbal communications to open/empty hands control to physical force to intermediate weapon and finally to deadly force. Remsberg (1986) states that a trained officer facing a critical situation that might call for the use of force must mentally review the continuum of force options and come up with the proper reaction in order to control the situation.

Most use of force continuum models are similar and use the concept of a pyramid, matrix, wheel, or ladder (Thornton & Shireman, 1993). At the bottom of the use of force continuum model are the least forceful and most reversible techniques with lower risk of injury to the officer and subject while at the top are the most forceful and the least reversible with a high risk of injury to the officer and subject (Dorriety, 1994). The starting point or beginning in the use of force continuum is the officer's presence while at the highest level is lethal or deadly force, which is usually established by the use of a firearm. Dorriety (1994) gives an example of a conventional law enforcement continuum of force, beginning with the least force option and ending with the highest level of force which consists of the following: officer presence, verbal direction, open-empty hand control, intermediate weapons, and deadly force.

The use of force by an officer can be viewed as a matrix of force options used in response to a subject's actions and behavior (Adams & Jennison, 2007). If after an officer's command presence is utilized and the subject is still non-compliant, then force

increases to body language and then to verbal commands. These are appropriate when suspects offer low-level resistance and present minimal danger to the officer (Adams & Jennison, 2007). In conventional law enforcement models, the next level of force is usually control techniques and physical defense tactics followed by the use of an intermediate weapon as the threat to the officer becomes more serious (Brown, 1994). Some examples of intermediate weapons are the ASP baton, oleoresin capsicum (OC) pepper spray, and TASER (conductive energy device). The last level on the use of force continuum is deadly or lethal force. Normally, we think of firearms when deadly force is discussed; however, deadly force could also involve any available weapon such as a baseball bat, knife, vase, or a vehicle. The following sections will expand on each level of force on the use of force continuum.

Officer's Presence

An officer's presence is the first level of force on the use of force continuum. Although it is not commonly construed as force, the mere presence of an officer does represent authority and control (Ouellette, 1993). This type of force is normally proper if the subject is compliant without any additional direction from the officer. Non-verbal behavior and body language are also part of the concept of presence. Additionally, how an officer presents himself to the suspect is just as important as what the officer says. Furthermore, Ouellette (1993) states that during inter-personal communication, 10 percent of what is conveyed is actually communicated verbally while the remaining 90 percent is communicated non-verbally. Officers must be aware of what his or her body language communicates and should also be able to read the suspect's body language. This ability can help the officer identify when an attack is imminent, allow the officer

more response time, and provide the officer justification for the use of force.

Physical danger gestures revealed by the suspect's body language can provide a more accurate warning of the suspect's intentions than what the suspect actually says. As Ouellette (1993, p. 22) points out, "It is easier for people to lie with words than with their body language. Body language is much harder to control than words." Ouellette (1993, p. 27) further advises that "when verbal and non-verbal communications conflict, we should rely on the non-verbal signals." Ouellette (1993) identifies three categories of non-verbal signs: 1) space, 2) eye contact, and 3) gestures and posture.

Also, how an officer stands is important as the interview stance provides the officer maximum protection for most encounters. In the interview stance, the officer steps back with the strong-side foot to a 45-degree angle. This posture provides more stability than having the feet next to each other (i.e., the open stance). In addition, if the officer is armed, this stance places the officer's weapon further away from the person the officer is interviewing and allows the officer to move quickly (Brown, 1994). The officer should attempt to place his or her hands and arms at a raised level to provide more protection and separation from the individual and to allow the officer more time to react if he or she needs to avoid or block a punch. There are numerous hand and arm positions that officers can utilize for protection that appear natural rather than threatening.

Generally, the officer should stand 3 to 5 feet away from the suspect in order to give the officer time to react if he or she is attacked. This technique is known as the "reactionary distance" (Ouellette, 1993). Through training and practice, officers can assume the interview stance naturally in a non-threatening manner. However, the defensive stance comes into play if the contact between the officer and the individual

becomes threatening. The defensive stance is when the officer adopts a stronger stance and raises his or her arms to attain a more defensive position (Brown, 1994). This is a typical combat position for when an attack is imminent.

Verbal Communication

The next level of force on the use of force continuum is an officer's verbal communication. The mind is the officer's most powerful weapon, and verbal skills are one way in which the officer uses the mind to prevent or de-escalate a situation (Williams, 1994). The officer uses verbal communication when the suspect is initially resistant but becomes cooperative in response to verbal direction from the officer. Once the officer gets the suspect's cooperation there is no further force required. Williams (1994) states during this stage of contact, the officer typically goes through a process of questioning and evaluation to determine the status of the offender (e.g., hostile, friendly, cooperative, or suspicious).

As this questioning and evaluation continue, the officer may escalate to light control commands if the suspect resists the officer's orders or instructions (Ouellette, 1993). For instance, if the officer tells the suspect to quit causing a disturbance but the suspect reacts aggressively to the officer's instructions rather than cooperatively, the officer then uses verbal communication skills to de-escalate the situation before it becomes critical. Verbal communication skills typically include using loud, heavy control commands or warnings such as "Stop! Do not come any closer" (Brown, 1994). If the individual displays more resistance and hostility, then the officer should consider going up a level on the use of force continuum.

Open/Empty Hand Control

The next level of force on the use of force continuum would be open empty-hand techniques. Officers should use open-empty hand techniques to defend themselves from the suspect's punches or strikes by utilizing wrist locks, blocks, and takedowns (Whetstone, 1993). As with intermediate weapons, open-empty hand control techniques are used when the suspect's actions are aggressive and may cause physical injury to the officer. If the officer is proficient in defensive tactics and can easily control an aggressive offender, then using open-empty hand techniques would be a better option than resorting to the next level of force, which would be utilizing an intermediate weapon (Williams, 1994). Nevertheless, it is important to remember that once touched, an initially calm suspect may become extremely agitated or resistant to the control technique.

There are many situations where suspects, who do not want to be arrested or detained, are not overtly fighting the officer but rather using passive resistance to prevent the officer from handcuffing them. This type of resistance may require four or five officers to subdue and control them. With that being said, it is important for officers to practice defensive tactics regularly in order to be able to use them without having to think about their mechanics and application. Whetstone (1993) mentions that without regular practice, significant physical skills can be lost in as little as 3 months after intensive training. Open-empty hand techniques may have to be used by an officer who is unable to draw his or her intermediate weapon when it would otherwise be justified to use one.

For this reason it makes sense for an officer to be proficient in numerous open-empty hand control techniques such as controlling, blocking, throwing, and take down methods (Brown, 1994).

Intermediate Weapons

The next level of force on the use of force continuum is intermediate weapons. On most use of force continuum models, intermediate weapons fall between open empty-hand techniques and lethal force. Intermediate weapons consist of many types of pepper sprays such as OC spray, Mace, and tear gas. It also consists of batons, stun guns, and conducted energy devices (CEDs) such as TASERS. For example, the Nova Scotia Department of Justice lists the following types of “less-than-lethal” intermediate weapon categories:

- 1) Blunt Trauma Devices: Projectile devices used mainly in crowd-control situations (include bean bags, sock rounds, and ring airfoil projectiles). Used to deter individual(s) from a course of action.
- 2) Chemical Devices: Used to assist in subduing and arresting dangerous, combative, violent or uncooperative subjects (include OC (oleoresin capsicum or pepper spray), PAVA (pelargonic acid vanillylamide), CS (o-chlorobenzylidene malononitrile, and malodorants (stink bombs)).
- 3) Conducted Energy Devices: Induces pain and/or involuntary muscle contractions, causing the subject to be temporarily incapacitated; deters an individual from a course of action. Includes traditional stun guns and projectile weapons sold under the names TASER and Stinger Handheld Projectile Stun Guns.

- 4) Distraction Devices: Temporarily incapacitate subjects' perception and deter them with minimal harm (includes multiwave laser dazzler, bright lights, and noise).
- 5) Barrier Devices: Impede or defeat subject's progress (includes nets, stick foams, and barriers).

(Nova Scotia Department of Justice, 2008, pg. 15)

The use of intermediate weapons is appropriate when the actions of the offender are physically aggressive and may cause bodily injury to the officer or another third party. In particular, intermediate weapons such as TASERS, OC spray, or batons should be used when an officer is facing bodily injury. The use of intermediate weapons would be justified, for example, if a suspect shifts his behavior from being verbally belligerent to making threats to harm the officer and then moves towards the officer with his arms raised up (Brown, 1994). In such a case the officer should order the suspect to stop and threaten to use an intermediate weapon if the suspect does not immediately stop his or her violent behavior.

Conducted energy devices (CEDs) came into play after continuum of force models were established, and their fit into existing departmental policies has been problematic. Although some use of force continuum models place devices such as OC spray, Mace, conducted energy devices (CEDs), and tear gas after open-empty hand techniques, the Federal Probation and Pretrial Services System puts these weapons before physical force in its force model. They do this because Federal Probation and Pretrial Services officers do not typically learn defensive tactics (Brown, 1989). Thus, using defensive tactics is simply not an option for these officers. Also, since there is no

training on the use of intermediate weapons, it is more likely that officers would be injured when using them or offenders could receive more serious injuries.

Deadly Force

The highest level of applied force on the use of force continuum is deadly or lethal force (Brown, 1994). Lethal or deadly force is justified when the actions of the suspect will likely cause death or serious bodily injury to the officer or another third party. Generally, many believe that lethal force and firearms go hand in hand, but this is not necessarily the case. There are numerous objects that can be used as weapons to inflict deadly force. For example, a motor vehicle is considered a potential lethal force device. If a suspect is driving a vehicle towards the officer or another third party and the officer or the third party cannot escape the pathway of the vehicle, the officer is justified in using deadly force to stop the threat and protect himself or herself or the life of another (Albert, 1993).

Another example of when to apply deadly force would be if a suspect attempts to push the officer or another third party over a steep, high elevated cliff. The injury that one could sustain by falling could be severe or fatal. Thus, an officer would be justified in using deadly force to stop this threat. However, before using deadly force, an officer should try to retreat from the situation if the officer can do so safely without further endangering himself or herself or the life of a third party. On the other hand, in situations where the assailant has a cutting instrument and is closing in on the officer, threatening to kill the officer, an officer would not be expected to retreat from this situation before applying deadly force.

The use of deadly force is something that no officer ever wants to face but should

be prepared for by the nature of the job (Brown, 1994). It is important for officers to know when deadly force is justified on the continuum of force and to be prepared both mentally and physically to react with deadly force. One overlooked fact is that there are some officers who are simply not prepared to take another person's life, even in a clear case of self-defense. In light of this, officers must be mentally prepared to use deadly force in those situations that call for deadly force by rehearsing possible “what if” scenarios.

On another note, there are several misinterpretations about using the continuum of force matrix (Williams, 1994). First, the officer determines the amount of force to use in a critical incident. This is an inaccurate statement because the officer only responds to the force or resistance that the subject initiates. Once the subject stops being aggressive, the officer must stop or de-escalate the use of force. Due to the configuration of most use of force continuum models, the misunderstanding exists because many think the officer is required to start with the least force and move through each of the levels to arrive at the maximum force (Albert, 1993). This is not true. The officer responds with the amount of force necessary to maintain his or her safety and the safety of others as well as to bring the conflict to a peaceful resolution. What might begin with a minor verbal command could immediately jump to the use of deadly force, if the suspect draws a knife and comes toward the officer, placing the officer in fear of his or her life (Brown, 1994).

Williams (1994) offers an ingenious concept that dismisses the erroneous belief that an officer has to escalate through the continuum to reach the proper level of force. Rather than thinking of the use of force continuum as a pyramid or ladder going from the lowest level of force to the highest or most severe, Williams (1994) uses the concept of a

wheel with the officer in the center, facing the assailant. The wheel spins both ways but instead of escalation or de-escalation of force, there is only "reasonable force."

Moreover, the choices in Williams' wheel are the following: command presence, voice commands, controlling force, physical force, and lethal force. Williams (1994) gives the following example of how his wheel works:

For instance, the officer receives information on a subject who has been involved in a disturbance. The officer confronts this individual and, at the moment, the officer observes no weapons on this person. Thus, Williams' (1994) wheel of force would spin to a phase at Command Presence and Voice Commands so the officer would identify himself and give the suspect commands to stop his behavior. However, what if as the officer is speaking to this individual, the subject simultaneously reaches in his waistband and attempts to draw a handgun. The officer can see the weapon so the wheel of force now spins to deadly force. The officer draws his weapon and points it at the suspect but as the suspect reaches for his handgun, it drops from his waistband onto the floor. The officer observes this action just before he has to pull his firearm trigger now moving from deadly force on the wheel to controlling force. In addition, the suspect is given voice commands at gunpoint and is then safely taken into custody. In summary, the wheel of force will move in any direction based on the officer's reasonable perception of the suspect's apparent threat at any given moment (Williams, 1994).

There are no hard and fast rules in the use of force continuum (Rossi, 1993). It is a flexible and practicable model that is supposed to serve as a guide or reference for officers when applying force (Rossi, 1993). This flexibility is vital; yet, the criterion

which might justify force by one officer may not necessarily justify force by another officer. For example, in handling an aggressive, unarmed individual, a small, out-of-shape officer who has no defensive tactics training might be justified in using a higher level of force than a much larger, stronger officer who has an extensive amount of martial arts training (Brown, 1994). Moreover, the officer's response may be partially influenced by the officer's knowledge of the suspect's temperament, background of aggression and violence toward authority figures, tendency to carry and use weapons, and martial arts skills. Brown (1993) states the usefulness of such knowledge is one good reason for being familiar with the backgrounds of the persons you supervise. A history of violence is usually considered to be the most reliable predictor of future use of violence (Brown, 1993).

If an officer must resort to using force, a use of force continuum that is well designed and carefully thought out will give the officer the necessary guidance and assistance for both the officer and the agency should a lawsuit result from the use of force (Stewart & Hart, 1993). In contrast, if the officer exceeds the proper use of force, then the use of force continuum can provide documentation that the officer used a higher level of force than prescribed by the department, which can be used against the officer in disciplinary or criminal proceedings (Remsberg, 1986). According to Dorriety (1994), *Johnson v. Glick* (1973) is a major case in establishing guidance to law enforcement on the use of force continuum. In this lawsuit, the United States Court of Appeals 2nd Circuit examined a civil rights action brought by a prisoner on the use of excessive force. The court offered the following ruling:

“In determining whether the constitutional line has been crossed, a court must look to such factors as the need for the application of force, the relationship between the need and the amount of force that was used, the extent of injury inflicted, and whether force was applied in a good faith effort to maintain or restore discipline or maliciously and sadistically for the very purpose of causing harm.” (Smith et al., 2007, pg. 405)

In short, the use of force continuum is a critical element of officer survival training because it can improve an officer's reaction time under combat stress (Reinsberg, 1986). The two main viewpoints or philosophies in use of force training are to provide a large number of options and to minimize the choices. Siddle (1994) prefers the second option: The second theory maintains a more basic approach of keeping the response options to a minimum. The supporters of this method focus on a small number of techniques that officers can learn quickly and easily while developing their proficiencies and confidence (Reinsberg, 1986).

Even though there are strong arguments for both viewpoints, the effects of stress and reaction time on decision making processes suggest that keeping the response options to a minimum are ideal. Siddle (1994) explored several studies of reaction time in relation to the number of response techniques. He concluded that research confirmed that a smaller number of techniques are likely to increase officer survival (Siddle, 1994). If this finding is valid, then departments should focus on teaching officers as few techniques as possible so the officers can master and retain them rather than have to deal with a large number of complicated techniques that can slow down their response time.

Intermediate Weapons: Less-Than-Lethal Technology

While the details of use of force policies across the nation vary considerably, they all have in common the idea that the force officers utilize against individuals, in any given circumstance, must be equivalent to the resistance displayed by the individual (Morrison & Garner, 2011). As mentioned earlier, this concept is often represented by utilizing a use of force continuum. At the low end of the force continuum, for example, officers are allowed to use verbal judo or open/empty hand control techniques to grab a citizen who passively refuses to comply with an officer's lawful order. And at the high end, officers are permitted to use deadly force against individuals whose resistance threatens the life of an officer or another innocent person (Bishopp et al., 2015). Nevertheless, often lying between the parameters in the use of force continuum are CEDs and other less-than-lethal technologies (e.g., batons, oleoresin capsicum (OC) spray) which are available to officers to use to stop the varying levels of resistance they encounter during arrest situations (Bishopp et al., 2015).

Moreover, Wrobeleski and Hess (2003) found during the past several decades that advances in technology have led departments to develop a variety of other less-than-lethal alternatives, including oleoresin capsicum (OC) spray, impact weapons, foams, ballistic rounds, and nets. These weapons were intended to provide officers with more alternatives when a situation requires the application of force but has not escalated to the point where lethal force is necessary, thus adding response options to the use-of-force continuum (Wrobeleski & Hess, 2003). Kornblum and Reddy (1991) state that less-than-lethal weapons have been a vital tool for law enforcement to utilize when facing dangerous, aggressive individuals in the field. Throughout the years, there have been

numerous less-than-lethal devices used by law enforcement officers (Vilke & Chan, 2007). These devices include impact projectile weapons and irritant sprays (Smith & Greaves, 2002).

Impact Projectiles

Some examples of impact or blunt projectiles are bean bags and rubber bullets. These weapons have been found to be less lethal than firearms and allow a safe distance between the officer and subject (Grange, Kozak & Gonzalez, 2002). Irritant sprays and riot control agents, such as tear gas, mace, and oleoresin capsicum (OC), have also been utilized by law enforcement to assist in the compliance and temporary immobilization of violent individuals or crowds (Thomas, Smith, Rascona, Louthan & Gumpert, 2002). Steele, McBride, Kelly, Dearden, and Rocke (1999) affirm that impact projectiles are used as an alternative to standard firearm rounds when attempting to disband a crowd from a distance or restrain aggressive individuals without the use of deadly force. Current impact projectile weapons, which are made of wood, were first utilized during the Hong Kong Riots of the 1950's and 1960's (Steele et al., 1999). In the 1970's and 1980's, similar weapons were used during conflicts in Northern Ireland, Israel, and Palestine (Suyama, Panagos, Sztajnkrzyer, FitzGerald & Barnes, 2003). Vilke and Chan (2007) claim that these original devices integrated solid rubber missile-shaped projectiles that were hard to guide, thus producing head, facial and chest injuries.

These projectiles have developed into PVC-type bullets, modern-day blunt rubber bullets, and bean bag type rounds, which are currently in use by law enforcement agencies (Steele et al., 1999). The purpose of the impact projectile is to cause pain, inflammation, and minimal injury to the suspect without causing any life-threatening

injuries (Millar, Rutherford, Jonston & Malhotra, 2005). Millar et al. (2005) further state as a general rule that all involve a blunt type impact that can transmit force at 100-200 Joules, depending on the type of ammo and the firing distance. The physiological effects of these projectiles can cause blunt force trauma to the individual.

The bulk of medical literature on impact projectiles is based on case reports and reviews (Vilke & Chan, 2007). Injuries and deaths have both been reported with impact projectiles that have caused injury by straight penetration into the body (Ritchie & Gibbons, 1990). Wawro and Hardy (2002) claim that a 56-year-old man survived bean bag rounds fired from a 12-gauge shell at a short distance. Suyama et al. (2003) found 25 patients that had been evaluated for injuries linked to the use of less-than-lethal weapons during a period of civil disorder in Cincinnati, Ohio. There were no associated deaths, but three patients required admission, including one with a pulmonary contusion, one with a liver laceration, and one with an Achilles tendon rupture (Suyama et al., 2003). Similarly, De Brito et al. (2001) retrospectively re-examined five years of bean bag injuries in Los Angeles County Hospital and discovered 40 patients, including one death from a direct chest penetration of the projectile.

Furthermore, impact projectiles have also been found to cause significant injury from blunt trauma. Chute and Smialak (1998) detail a case involving a 61-year-old woman who was shot in the chest with a plastic bullet and subsequently died. The autopsy results showed she had suffered multiple rib fractures to her chest and heart lacerations, which led to substantial bleeding into the chest cavity. The cause of death was documented as a blunt force injury to the chest caused by a plastic bullet wound (Chute & Smialak, 1998). Overall, impact projectiles have been extensively and

effectively used as less-than-lethal weapons. From a medical standpoint, injuries and deaths have been directly related to the blunt traumatic force delivered by the projectile onto the individual (Vilke & Chan, 2007). “While efforts continue to focus on reducing this risk, it is unlikely that such injuries can be completely eliminated given that these devices are designed to deliver pain and irritation through blunt force” (Vilke & Chan, 2007, pg. 343).

Irritant Sprays

Irritant sprays are also examples of less-than-lethal technology and consist of chemical agents such as CN, CS, and OC (pepper spray). These agents can be used to break up large gatherings or to momentarily incapacitate individuals (Watson, Stremel & Westdorp, 1996). Toprak, Ersoy and Clevestig (2014) claim chemical agents known as Riot Control Agents (RCAs), including harassing agents, lacrimatory agents, and tear gases used by civil authorities, government agencies, and military forces are used when dealing with civil disturbances that range from large crowds to single individuals. Their use is for two main reasons: (1) To temporarily render or incapacitate those involved in any type of disturbances; and (2) To ensure minimal physical interference and conflict between law enforcement personnel and civilians. Toprak et al. (2014) state that Riot Control Agents should have three main characteristics: (1) rapid time of onset of effects, (2) relatively brief duration of effects once the victim has escaped the contaminated atmosphere and has been decontaminated, and (3) a high safety ratio.

Vilke and Chan (2007) assert that these chemical agents are commonly dispersed as gases, smoke, or sprays, and therefore, may affect users as well as subjects. CN was first manufactured in 1871 (Vilke & Chan, 2007). It was used in World War I and served

as the first tear gas used by law enforcement and the military up until the 1950s (Hellreich, Goldman, Bottiglieri & Weimer, 1967). It is a colorless crystalline substance that can be dispersed in a smoke form from an explosive device, such as a grenade, or propelled as a liquid or powder. It functions as an irritant when in contact with skin or mucous membrane tissues such as the eyes, nasal passages, lips, and airway (Bestwick, Holland & Kemp, 1972). Symptoms of exposure consist of sneezing, coughing, and increased airway excretions, in addition to burning sensations of the nasal passages and airways. Oral cavity and gastrointestinal exposure can result in the sensation of burning in the mouth, increased salivation, choking, nausea, and vomiting (Blain, 2003).

CS is an irritant agent first produced in 1928 and because of its perceived effectiveness, it replaced CN as the customary riot control irritant agent used by most law enforcement agencies in the USA by the late 1950s (Danto, 1987). Danto (1987) asserts that CS is typically dispersed via dissemination of the solution powder by way of explosion, spray, or smoke. The decontamination of this irritant agent after exposure can be challenging, due to its complex nature (Blaine, 2003). The intricate effects that may be seen with CS are similar to those of CN, which result in irritation and inflammation of the skin, airways, and mucous membrane tissues on exposure (Blaine, 2003). The grade of symptoms tends to worsen based on concentration and duration of exposure. Some examples of CS irritant agents are oleoresin capsicum (OC) spray and other types of pepper sprays. “OC or pepper sprays originated from the natural oily extract of pepper plants in the genus capsicum” (Vilke & Chan, 2007, pg. 348).

Oleoresin capsicum is a complex mixture of a variety of split and undiluted “alkyl vanillylamides” with capsaicin being the main ingredient (Barceloux, 2009). According

to Barceloux (2009), there are over 100 compounds in the mixture, which is removed from the dried, ripe fruit of chili peppers. The real formulation depends on the environmental conditions, spice, maturity of the fruit, and the extraction process (Barceloux, 2009). The use of OC spray by law enforcement agencies increased in the 1980s while the use of CS was on the decline, and by the 1990s, the majority of states had legalized OC spray used by the public (Smith & Greaves, 2002). The strength of OC spray may range from 1 to 15 percent, with the commercially available OC typically being about 1 percent in intensity (Vilke & Chan, 2007). Industrial pepper sprays with oleoresin capsicum contain an assortment of natural and artificial “capsaicinoid compounds” depending on the formulation and source (Hass, Whipple & Grant, 1997). The types of pepper spray intended for sale to the general public contain less than 1% oleoresin capsicum while law enforcement products typically contain 5-10% oleoresin capsicum (Hass et al., 1997).

OC spray can be delivered by liquid stream spray, aerosol spray, and powder dispensed as a projectile (Watson et al., 1996). OC spray can cause direct irritation to the eyes, skin, and mucous membranes. The onset of symptoms is immediate, causing burning and tearing of the eyes, along with eye spasms ranging from involuntary blinking to prolonged shutting of the eyelids (Steffee et al., 1995). The contact with the airway and respiratory tract to aerosolized OC causes burning, coughing, choking, and shortness of breath, in addition to a temporary laryngeal paralysis and a brief inability to speak (Steffee et al., 1995). OC spray is regularly used by many law enforcement agencies. Controversies surrounding the use of OC spray included its use against passive resisters, disproportionate use against minorities, and potential health risks (Kaminski et al., 1999).

Furthermore, Kaminski et al. (1999) found that the effectiveness of OC spray was mitigated by suspect age, weight, distance, and drug use.

A small number of cases involving severe allergic reactions to OC have been reported, especially after a previous exposure (Smith & Greaves, 2002). Injuries and deaths have also occurred following the use of such less-than-lethal weapons. Danto (1987) found the use of OC has caused eye injuries in subjects, especially when it was discharged at close range. Amnesty International (2005) claims that over 90 persons have died after exposure to pepper/OC spray in the United States since the early 1990s. Granfield et al. (1994) found 30 cases of in-custody death following OC exposure, in which drugs and underlying natural diseases were a significant factor in a majority of these cases. O'Halloran and Frank (2000) found 21 cases of restraint in-custody death by use of OC spray while Pollanen et al. (1998) reported 21 in-custody restraint deaths, of which four had been sprayed with OC.

Occasionally, according to Strote et al. (2005), the injuries or deaths have been directly associated with the use of these less-than-lethal devices; however, this relationship remains controversial. Nevertheless, a significant relationship between OC exposure and death remains debatable. Moreover, there is no decisive evidence that OC spray is inherently deadly (Vilke & Chan, 2007). In nearly all cases of reported deaths linked to OC, with the exception of one, the OC spray was not the cause of death (Vilke & Chan, 2007). As a matter of fact, that one exception according to Steffee et al. (1995) had a history of asthma and was sprayed with OC 10-15 times repeatedly, causing a sudden cardio-respiratory arrest.

Conducted Energy Devices

Officers' use of less-than-lethal techniques has not been without controversy. For example, when oleoresin capsicum (OC spray) came into widespread use in the 1990s, it came under withering criticism (Alpert & Dunham, 2010). However, conducted energy devices (CEDs) have been the most controversial of them all (Bishopp et al., 2015). The controversy over CEDs has always been about its impact on death and injuries, in addition to the propensity to be abused or overly used by officers (Adams & Jennison, 2007). In addition to the public concern about unnecessary force, opponents of CEDs have argued that police officers are liable to put them to use to torture individuals, as electricity is a popular form of cruelty in some governments (Amnesty International, 2008). Given that CEDs combine the public's worry about police abusing their powers with the images of electrical torture devices, it is not surprising that some have serious concerns about the utilization of these devices by police (Bishopp et al., 2015).

History and Development

The original U.S. designs for conducted energy devices (CEDs) appeared in the 1950's and early 1960's, including the "Electrified Stick for Postmen" and related devices (Angelosanto, 2003). These devices were adopted by some police departments to control prisoners or prevent riots. During the early 1970s, another type of conducted energy device was created called the TASER. The first modern TASERs went untested in the 1970s (Angelosanto, 2003). These devices contained a small battery operating with a high voltage and low amperage, which was the key to the TASER's non-fatal effects (DeLone & Thompson, 2009).

White and Ready (2010) state that the 1960's civil rights movement and riots led

police departments nationwide to re-evaluate the force options available to police officers when responding to various levels of suspect resistance. The phrase “TASER” is actually an abbreviation for Thomas A. Swift Electric Rifle, which NASA researcher Jack Cover remembered from one of Tom Swift’s fictional children’s books he read as a child (Angelosanto, 2003). TASERs were created by Jack Cover in the 1960s in reaction to a government report that called for advanced technology to subdue and control violent suspects with non-lethal means (Angelosanto, 2003). His “TASER Public Defender” used cordite to thrust the electric barbs towards the assailant, thus leading to its legitimate classification as a firearm in 1976 (Seals, 2007). Afterwards, a modern version with a different thrust mechanism was re-classified as a non-firearm TASER electronic control device.

White and Ready (2010) further state that the President’s Commission on Law Enforcement and the Administration of Justice (1967) brought the issue to the forefront of policing. In 1965, the President’s Commission of Law Enforcement and the Administration of Justice made a number of criminal justice policy recommendations, including the advancement of non-lethal weapons as an alternative to deadly force for line officers. This led to the emergence of Chemical Mace, which was eventually replaced by pepper spray. As researchers were developing other forms of chemical spray, a California-based company began experimenting with the use of electric pulses as a less lethal alternative for police officers (DeLone & Thompson, 2009).

By the end of the 1970s, similar devices were being marketed to consumers as self-defense products that could be used against robbers or other assailants (Seals, 2007). Currently, many different styles of conducted energy devices are available for purchase

by law enforcement agencies, such as the Stinger stun gun and the remote activated custody control (RACC) belt. There are other electronic belts, shields, and a multitude of hand-held contact stun guns accessible to law enforcement (Suyama et al., 2003). In the last decade, such devices have increased in popularity, as individuals look for non-lethal methods of self-protection that can be carried in a purse or vehicle (DeLone & Thompson, 2009). The design of CEDs is still developing today. Current models can generate up to 1.2 million volts, and feature a more easy to use design.

During the previous decade, the TASER has become the most popular incapacitating neuromuscular device on the market, with an estimated 10 percent of all police officers in this country currently carrying the device (Hamilton, 2005). The latest TASER model, produced by TASER International, is shaped like a handgun (TASER, 2008). This device, which is called the M-Series, was designed for those who are not used to the technology. The M26 Advanced TASER and TASER X26 are the two most common conducted energy devices currently used by police departments nationwide (White & Ready, 2007). The two devices discharge two darts to a distance of 21 feet, delivering 50,000 volts during a 5-second cycle. The force output of the mechanism is 26 watts total, 1.76 joules per pulse, at 1.62 milliamps, and 50,000 volts (Stracbucker, Roeder & Nerheim, 2003).

The device is not only a pain compliance weapon but is also a method of incapacitating the suspect through muscle contractions induced by the weapon. The CED effects vary depending on the particular weapon used, distance between the probes, and the state of the individual (Kornblum & Reddy, 1991). For instance, the probes spread apart over a larger distance on the individual's body will have a greater effect because it

allows for the electrical discharge to affect a larger portion of the body (Fish & Geddes, 2001). The effects of these devices have been reported to increase with the length of application such that delayed exposures may result in some sensation of fatigue and weakness even after the discharge is discontinued (Robinson, Brooks & Renshaw, 1990). In contrast, CEDs may fail to have their intended effect if the probes do not make sufficient contact with the body, the probe spread is not wide enough thus only affecting local muscle groups, or if the device fails to discharge properly (Mehl, 1992).

The device's electrical charge overrides the central nervous system, resulting in the loss of neuromuscular control, which gives the officer time to gain control of the suspect and apply handcuffs (White & Ready, 2007). Individuals report painful shock-like sensations and the feeling that all of their muscles are contracting at once. During the discharge of the CED, individuals are unable to voluntarily perform motor tasks, but this effect terminates as soon as the discharge is stopped (Vilke & Chan, 2007). Moreover, these individuals remain conscious with full memory recollection. Although they are based on a simple electric current, changing technology allows CEDs to deliver a more powerful, but non-lethal, jolt of electricity (TASER, 2008).

Vilke and Chan (2007) assert that there are no known lasting effects of CEDs on the muscular system apart from any injuries that may occur from an associated fall. Additionally, there are numerous police trainees who have been tasered as part of their training (Vilke & Chan, 2007). The majority of trainees reported that their experience was unpleasant and they refused to be re-tasered (Koscove, 1985). A few subjects even described a tingling sensation in the area under the probe sites lasting a few minutes after being tasered (Koscove, 1985). Furthermore, Koscove (1985) mentions there have been

statements made that some residual muscle soreness was reported by those who had been tasered.

According to TASER International (2006), TASERs have been purchased by over 9,000 police departments in the USA and abroad. DeLone and Thompson (2009) mention about 7,000 of the nation's 18,000 law enforcement agencies have employed the use of TASERs. Some of these devices are also available to the general public. The company maintains that the device helps officers avoid the use of deadly force while lowering the risk of injury to users. It has been discovered that the device has been used on over 150,000 volunteers during training sessions and over 100,000 individuals by law enforcement officers in actual field confrontations, although the actual number of uses is unidentified (TASER International, 2006).

White and Ready (2007) mention that the Bureau of Alcohol, Tobacco, Firearms and Explosives does not categorize the TASER as a firearm because the propellant comes from condensed nitrogen gas rather than gunpowder. Therefore, there are no federal regulations or restrictions for using a conducted energy device. Today, stun guns and TASERs are used by law enforcement agencies and private citizens around the world as a self-defense mechanism or as a way to subdue individuals (Ready & White, 2011).

Ready and White (2011) assert these weapons are designed to disable attackers momentarily, but are not meant to cause permanent injury.

TASERs on the Use of Force Continuum

TASERs, as stated previously, are more commonly categorized in the intermediate weapons level of force because of their status as CEDs. However, some law enforcement agencies have placed TASERs higher on the use of force continuum and

they have placed greater restrictions on the types of circumstances under which officers are authorized to use these devices (Terrill & Paoline, 2012). Moreover, many law enforcement agencies and some federal court decisions place TASERs on the same level in the use of force continuum as OC pepper spray and other less than lethal weapons (*Lewis v. Downey*, 2009). Therefore, Ferdik, Kaminski, Cooney and Sevigny (2014) assert this makes it difficult to create a standardized measure of TASER placement on the use of force continuum relative to other types of force.

Alpert and Dunham (2010) found that in 2005, 26% of law enforcement agencies placed TASERs relatively low on the use of force continuum while 64% placed them at a midlevel and 10% placed them at a high level. Thomas et al. (2010) surveyed agencies and asked them to rank the placement of TASERs on a scale of 1 to 10, and these agencies all tended to place them at a midlevel range. Nationally, law enforcement agencies appear to place TASERs just about everywhere on the federal use of force continuum (Adams & Jennison, 2007). According to Adams and Jennison (2007), there is clearly a lack of operational consistency with regard to TASERs, which may result from conceptual vagueness or lack of clarity in the current federal use of force continuum. Categorical inconsistencies across non-federal agency systems suggest that there will be differences in TASER rankings among use of force options (Adams & Jennison, 2007). If these categorical inconsistencies reflect underlying conceptual differences, it may prove difficult to resolve the differences even with state or national level standardization (GAO, 2005).

TASER placement on the use of force continuum has implications for training and extent of use in the field (Force Science News, 2004). TASERs need to be incorporated

into use of force training but it is not enough to assign it to a use of force level and instruct officers in its technical operation (Adams & Jennison, 2007). TASERs introduce a new element into the police arsenal that redefines the range of officer response (GAO, 2005). This change requires a new understanding on the part of officers, for example, how to choose among the various available options by considering them in relation to each other (Adams & Jennison, 2007). The lower TASERs are placed on the use of force continuum, the greater the number of situations in which TASERs could potentially be deployed (Colarossi et al., 2006). According to Adams and Jennison (2007), greater latitude in deployment demands more significant officer judgment. That demand in turn requires training for any immediate decision making where multiple factors have to be identified, processed and analyzed within seconds, which is far more complex than the minimal training given officers for practical application and policy.

Given this circumstance, conceptual inconsistencies and ambiguities within a use of force continuum become barriers to sound policy and police practice development (Adams & Jennison, 2007). Improved operational transparency is required with respect to the scales used to assess both the level of force used by the officer and the suspect's level of force against police officers (GAO, 2005). For example, placing TASERs at the same level as pepper spray does not imply that the two are functionally equivalent and operationally interchangeable, although some might make this assumption (Adam & Jennison, 2007). Furthermore, if TASERs are authorized for passive resistance situations, it must be clear how much and what type of resistance needs to be demonstrated over how long a period, or else, in the words of one police chief, we might face situations in which officers taser citizens "just because a person says no." (Colarossi

et al., 2006). The contradictory assessments of a suspect's behavior will result in varying levels of force response by officers despite their understanding of the police use of force levels (Adams & Jennison, 2007).

The United States Court of Appeals for the Ninth Circuit recently held that TASERs constitute an "intermediate, significant level of force that must be justified by a strong government interest that compels the employment of such force" (*Bryan v. McPherson*, 2009). The IACP and PERF suggest that TASERs only be used against those who are actively resisting, not against children or the elderly except in emergency situations, and that each deployment is closely supervised and documented (White & Ready, 2010). For example, the Phoenix and San Jose Police Departments reported allowing use of the TASER when a suspect actively resists arrest, but they did not require that the suspect assault the officer. The Orange County California Sheriff's Department reported permitting use of the device when a suspect passively resists the commands of an officer (Ready et al., 2007). The Las Vegas Metropolitan Police Department changed its policy and currently allows officers to use the weapon when they encounter resistance while making an arrest and also as a form of self-defense in response to aggressive or potentially lethal resistance (Sousa et al., 2007).

Research on CEDs and Injuries

One of the most consistently documented and researched behavior in policing is the use of force (Sarver, 2007). Despite the series of studies that have been conducted over the years to measure the types, frequency, and correlates of police coercion, there has been little consensus derived across academics and practitioners regarding many of the most fundamental issues surrounding the use of force by police (Kaminski et al.,

2015). However, in contrast to this larger body of literature, recent findings regarding the use of one type of weapon, conducted energy weapons (CEDs), have generated relatively consistent findings (Kaminski et al., 2015).

The majority of current studies over the use of CEDs by police have shown that they substantially reduce the number and severity of injuries to citizens compared to other types of force and have similar effects on injuries to officers (Lin & Jones, 2010; MacDonald, Kaminski, & Smith, 2009; Smith, Kaminski, Rojek, Alpert, & Mathis, 2007; Taylor & Woods, 2010). However, these findings have recently been called into question. Terrill and Paoline (2011) examined CED usage in seven mid-to large-size US police agencies. Using different methods and measures, they reported significant increases in citizen injuries involving the use of CEDs compared to other types of force across a majority of their statistical models (Terrill & Paoline, 2011).

Terrill and Paoline (2011) emphasized the importance of their findings by noting that their study “is the first to report a fairly consistent increased risk between the use of CEDs and citizen injury,” leading them to suggest that “recent policy recommendations made by a number of researchers (MacDonald et al., 2009; PERF, 2005; Smith et al., 2007; Taylor & Woods, 2010) as to how or when to use CEDs, are premature” (Terrill & Paoline, 2011, p. 24). However, contrary to prior studies, Terrill and Paoline’s (2011) measure of citizen injury included normal minor CED punctures. They hypothesized that the differences in their findings when compared to other studies of similar size, scope, and design may be due to the inclusion of minor dart punctures as injuries and further articulated several reasons why they departed from previous approaches regarding the measurement of citizen injury associated with CEDs (Terrill & Paoline, 2011). Terrill

and Paoline (2011) concluded by recommending that the research community mutually decide how to better operationalize CED-related injuries.

Officer Injuries

No matter what type of force officers use on the use of force continuum, there is always a possibility of injury or death. In fact, when officers use force on individuals, whether for the purpose of arresting, detaining, or searching them, there is always potential for injury or death to occur to the officer and/or the suspect (Paoline, Terrill & Ingram, 2012). This is most definitely indicative of situations where a CED or any other intermediate weapon has been deployed. But in specifically dealing with CEDs, there is a vast amount of research on the effects of CEDs on officer injuries that are based on data from individual police departments collected by CED manufacturers (TASER International, 2009). Most of these reports illustrate the percentage of officer injuries after the agency implemented CEDs (Paoline et. al, 2012).

In general, these findings reveal that when departments introduce CEDs, there is ordinarily a reduction in officer injuries (Paoline et al., 2012). According to Adams and Jenner (2007), while the results appear impressive, the science behind the work has been questioned. They conclude the following: “Unfortunately, most of these statistics derive from weak research designs that reduce confidence in the validity of the results” (Adams & Jenner, 2007, pg. 461). These assertions have helped produce a handful of independent experimental inquiries that were designed to present a clearer picture of the impact of CEDs on officer injuries (Smith, Kaminski, Rojek, Alpert & Mathis, 2007).

One of the current experimental additions to understanding the relationship between CEDs and officer injuries focuses on statistically modeling injuries during

standardized time periods before and after the implementation of CEDs (Smith et al., 2007). This effort goes beyond simply observing injury occurrences from one year to the next in departments that utilize CEDs, thus allowing for a more systematic evaluation of implementation effects. Using data collected from the Orlando Police Department and the Austin Police Department, MacDonald, Kaminski and Smith (2009) examined the average monthly incidence of officer injuries during pre- and post-CED implementation. MacDonald et al. (2009) found over a 108 month period in Orlando and a 60 month period in Austin, that officer injury averages decreased by 62% (in OPD) and 25% (in APD) following CED implementation.

Lin and Jones (2010), relying on use of force incidents over a 5 year period from the Washington State Patrol (WSP), also examined changes in officer injuries following the implementation of CEDs. Lin and Jones (2010) compared the number of worker compensation claims between sworn and non-sworn personnel following CED implementation. Based on the findings, Lin and Jones (2010) found non-sworn personnel rates of injuries remained constant, while sworn personnel claims for all injuries reduced following CED implementation. The researchers reported that overall, CEDs reduced officer workplace injuries (Lin & Jones, 2010). Taylor and Woods (2010), in a similar study, compared seven agencies with CEDs to six that did not use them to examine the impact of CED implementation on officer injuries. Taylor and Woods (2010) found that agencies that were issued CEDs had fewer officer injuries in the post-period than agencies that did not carry CEDs.

The Police Executive Research Forum (PERF, 2009) conducted a series of multivariate analyses designed to assess the relationship between CEDs and officer

injuries based on a 13-agency sample. In their preliminary examination of the seven departments that were issued CEDs, five categories of force were examined with only three suspect based controls (Paoline et al., 2012). The findings revealed that agencies with CEDs had a reduced probability of officers being injured and needing medical attention than those that did not issue CEDs. These results were similar to what Taylor and Woods (2010) had found. Finally, Smith et al. (2007) examined use of force data from the Richland County Sheriff's Department (RCSD) and the Miami-Dade Police Department (MDPD), with separate investigative models for each agency. Smith et al. (2007) found that in terms of the relationship between CEDs and officer injuries, there was no statistical relationship in RCSD, whereas in MDPD there was a negative relationship as CEDs were associated with a reduced probability of officer injury.

In one of the more rigorous independent studies in this area, Smith, Kaminski, Rojek, Alpert and Mathis (2007) analyzed the relationship between CEDs and officer and suspect injuries from two law enforcement agencies while simultaneously controlling for the effects of other types of force used by officers as well as suspect resistance and other factors (Taylor & Woods, 2010). Smith et al. (2007) found that the use of CEDs was associated with reduced odds of officer and suspect injury and severity of suspect injury in one of the agencies. In the other agency, CED use was unrelated to the likelihood of injury; however, the use of pepper spray was associated with reduced odds of suspect injury (Smith et al., 2007).

Overall, this line of research finds that when police departments issue CEDs across various time periods, officer injuries are reduced (Paoline et al., 2012). While these conclusions can be drawn from prior research, the research still paints an

incomplete picture (Bozeman, Hauda, Heck, Graham, Martin & Winslow, 2009). In other words, these studies do not allow for total comparisons to other types of force or control for additional related contributory factors of officer injuries (Paoline et al., 2012). Moreover, the prior research has not effectively and consistently controlled for other theoretically relevant causal factors of injuries, such as citizen resistance and other citizen and officer-based measures (Bozeman et al., 2009).

Suspect Injuries

Next, when it comes to suspects' injury and CED deployments the research findings have differed. As a matter of fact, in a study of 708 use-of-force incidents from the Washington State Patrol, Lin and Jones (2010) found that the impact of CEDs on suspect injury was mixed. In particular, Lin and Jones (2010) found that in one year of evaluations of CED deployments, CED use was inversely related to suspect injuries, whereas in the following year, they were positively related. Smith et al. (2007) examined 1,080 use-of-force incidents in the Miami-Dade Police Department (MDPD) and Richland County Sheriff's Department (RCSD). They discovered that CEDs were associated with reductions in injury and severity of injury to suspects in the MDPD, but they had no significant effects in the RCSD. Hence, the implementation of CEDs neither increased nor decreased injuries among officers and suspects (Smith et al., 2007).

Smith et al. (2007) reasoned that the differences in findings may be due to policy or procedural differences between law enforcement agencies. Furthermore, the way departments and agencies define "injury" may also play a factor in this difference (Smith et al., 2007). For example, some agencies may define "injury" as any situation where a CED punctures the suspect's skin even if the suspect is not injured. Moreover, agencies

may define “injury” as any situation where EMS is called to the scene to treat the suspect even though the suspect is not injured or taken to the hospital and is cleared at the booking facility or jail by medical personnel (Smith et al., 2007). Some agencies may require their officers to notify EMS to make the scene every time a CED is deployed while other agencies do not require this of their officers. In addition, some agencies may also require their officers to check the “injured” box on their use of force reports anytime EMS is called to the scene of a CED deployment or anytime the skin of the suspect is punctured by the CED (Smith et al., 2007).

These types of factors will impact the findings in these studies because the researchers were unable to effectively define and track “injury” across the board in all agencies. The inconsistency in defining and tracking “injury” properly across all agencies has led to the difficulty to determine whether or not CEDs have lowered suspect injuries. On another note, MacDonald et al. (2009) obtained data on more than 24,000 use-of-force incidents from 12 different law enforcement agencies. MacDonald et al. (2009) found that the CEDs were associated with significant and substantial decreases in the probability of suspect injury.

Taylor and Woods (2010) conducted a quasi-experiment by comparing four years of data from seven law enforcement agencies that deployed CEDs with six matched agencies that did not. Taylor and Woods (2010) examined a variety of injury outcomes and they found that CED implementation was significantly associated with lower rates of officer injuries, the severity of suspect injuries, and injuries to suspects and officers requiring medical attention. Terrill and Paoline (2012) examined almost 14,000 use-of-force incidents from seven agencies to measure the influence of CEDs on suspect

injuries. Calculating a variety of cross-section regression models, Terrill and Paoline (2012) found an increased risk between suspect injury and CED use. This finding was contrary to the majority of prior studies on this issue (Kaminski et al., 2013).

Nevertheless, Kaminski et al. (2013) conducted a study using data from an agency that allowed for the inclusion and exclusion of routine dart punctures as injuries. “Based on a series of regression models, the researchers were able to demonstrate empirically that CEDs were associated with reductions in injuries to suspects when routine punctures were excluded and that they were associated with increases in suspect injuries when they were included” (Ferdik, Kaminski, Cooney & Sevigny, 2014, pg. 333).

Suspect Fatalities

Last, the debate about CED deployments and suspect deaths has been highly controversial and the findings have been mixed as well. Amnesty International (2005) claims that more than 70 individuals have died after CED deployments by law enforcement. However, there is incomplete research on the accurate physiological effects of CEDs and whether there is a direct causal connection between CEDs and deaths (Strote et al., 2005). Kornblum and Reddy (1991) investigated 16 deaths that were linked with CED use over a five-year period. All of these incidents involved young men with a track record of drug abuse who were acting in a strange or unusual fashion, drawing police attention (Kornblum & Reddy, 1991). The eventual cause of death was found to be drug overdose in the majority of cases. The authors imply that most of the individuals died after being in a hyper, frantic, belligerent state, known as excited delirium (Kornblum & Reddy, 1991).

Kornblum and Reddy (1991) found the CED was not the contributing factor for fatalities; instead drug intoxication itself caused or influenced the individuals to have a greater chance of death.

Strote et al. (2005) researched deaths associated with CED use via a search of Lexus-Nexus and Google. They discovered 71 deaths linked to CED use, with 28 (39 percent) having autopsy reports available (Strote et al., 2005). The average age was 34.8 years, all were male, and 39 percent were White, 46 percent were Black and 14 percent were Hispanic (Strote et al., 2005). Stracbucker et al. (2003) claims no deaths were found to directly occur because of CED use, but 21 percent reported a possible causative factor. The reasons for death were felt to be directly related to drugs in 57 percent of cases, with 68 percent of the cases having cocaine or methamphetamine usage (Stracbucker et al., 2003). Excited delirium was either directly or indirectly to blame in 57 percent of cases and 46 percent of cases had substantial pre-existing cardiac disease reported (Strote et al., 2005).

Since 2001, the prevalence of nearly 500 suspect deaths following exposure to a CED has raised significant concern regarding their contributory or causative role in these fatal outcomes (Ferdik et al., 2014). The infrequency of deaths following CED exposure, however, makes analyses of these events difficult and expensive and, as a result, there have been few related studies (Kaminski, 2009). Bozeman et al. (2009) conducted medical screenings and record reviews of 1,201 exposed suspects. Bozeman et al. (2009) found two CED-proximate fatalities that were reported, but on autopsy, it was concluded that the deaths were unrelated to CED exposure. In a similar study, Eastman, Dawes and Ho (2007) examined 426 exposed subjects and reported one death. However, this

individual had an interior body temperature of 107.4 degrees Fahrenheit and was high on cocaine (Eastman et al., 2007). The remaining individuals in the abovementioned studies suffered either no injuries or only minor injuries (Ferdik et al., 2014).

Furthermore, other medical researchers have conducted death reviews by examining hundreds of autopsy and toxicology reports of suspects who died following exposure to a CED (Eastman et al., 2007). Many individuals were either under the influence of drugs, endured cardiovascular disease, or were in a highly agitated state at the time of CED exposure (Ferdik et al., 2014). Overall, these researchers concluded that CEDs were not a common cause or contributor to sudden in-custody deaths (Kornblum & Reddy, 1991; Strote & Hutson, 2006; Ferdik et al., 2014). However, Zipes (2012) reviewed eight cases of CED-proximate deaths and concluded that CEDs can cause “cardiac dysrhythmias and sudden death”; however, their study was critiqued on a number of methodological disagreements (Vilke, Chan, and Karch, 2013).

Lee, Vittinghoff, Whiteman, Park, Lau and Tseng (2009) designed a study to test the effect of CED deployments on rates of sudden in-custody deaths in the absence of lethal force. Lee et al. (2009) obtained data across five years both before and after CED implementation from 50 (40%) of 126 agencies surveyed. While controlling for arrest rates, Lee et al. (2009) found that the rate of sudden in-custody deaths increased more than six times in the first full year after deployment compared with the five year pre-deployment average. The researchers hypothesized that high initial rates of CED use contributed to the increase in sudden deaths by escalating some confrontations to the point that officers needed to resort to the use of deadly force (Lee et al., 2009). Finally, using a different methodology, White and Ready (2009) conducted a national search of

media reports of deadly and non-deadly CED incidents to identify potential associations of CED-proximate deaths. Their examination revealed that the number of CED discharges was unrelated to death, but alcohol intoxication was inversely related and both drug impairment and mental illness were positively related to fatal outcomes (White & Ready, 2009).

Ho (2005) claims that most of the discussion and debate regarding in-custody deaths and CEDs seek to assign a single cause rather than to consider a collection of symptoms and behaviors. According to Farnham and Kennedy (1997), legal reasoning supports single direct causes rather than convoluted medical conditions, and the mainstream media favor controversy and accusation rather than balance and rationalization. Williams (2013) discovered in numerous sudden in-custody deaths that the deceased had no previous history of disease or significant underlying medical conditions. Such sudden and unanticipated in-custody deaths often occurred during the arrest process or very soon after confrontation with law enforcement officers, which led to the belief that police tactics and/or weapons were somehow to blame (Williams, 2013).

It is imperative to note that the collection of factors related to sudden in-custody death syndrome can affect an individual before, during, and after police interaction (Williams, 2013). Williams (2013) observes that the complex chain of events leading to death frequently begins long before law enforcement involvement. In fact, according to Ho (2005), the most current event in that sequence or some highly notable event in that sequence, such as police intervention and the use of force, is not necessarily the cause of or a significant contributing factor to the death. For instance, Williams (2013) asserts that a grand jury in Miami-Dade, Florida, after investigating a series of arrest-related

deaths, reported that the causes of death listed in autopsy reports for individuals who died after being shocked with a CED were comparable to one another. Furthermore, the causes of death listed for people who died after being shocked with a CED were similar to the causes of death listed on the autopsy reports of non-CED arrest-related deaths (Recinos, Miller, Hutchinson, Llanes, Acosta, Alayon, Armesto, Campbell-Dumeus, Diblin, Edgington, Fajardo, Geroges, Laurenceau, Llama, Lopez, Pruss, Ramos, Robinette, Santos, and Thomas, 2005).

Legal Cases

Research on CED training has also identified numerous legal cases that have either supported or opposed the use of CEDs by officers. According to Smith et al. (2007), most courts are explicit in permitting the use of CEDs to control actively resistant or assaultive suspects. Nevertheless, a few courts have allowed excessive force cases to go to trial on the use of CEDs against verbally resistant or non-compliant individuals (*Green v. Fewell*, 2006). Such case law allows the use of the CED under these circumstances especially if the officer can articulate a reasonable fear of injury to himself, the suspect, or a third party (*Stanley v. City of Baytown*, 2005). Ultimately, the use of the CED, like any other application of force by the police, will be judged by courts and juries under a reasonableness standard (*Graham v. Connor*, 1989).

In *Tennessee v. Garner* (1985), the need for less-than-lethal substitutes for deadly force was placed into law in 1985, when the fatal shooting of an unarmed juvenile suspect fleeing a burglary scene prompted the U.S. Supreme Court to interpret the Fourth Amendment as permitting deadly force only against suspects who pose clear and immediate danger to an officer or third party. In *Graham v. Connor* (1989),

approximately four years after the *Garner* decision, the court added more detail to the law surrounding the Fourth Amendment's restrictions on all forms of force, deadly and otherwise. The court held that any amount of force that exceeds what is necessary to subdue a combative suspect is by definition "excessive" and a violation of the Fourth Amendment's reasonableness requirement (Gau, Mosher & Pratt, 2009).

The definition of reasonable and unreasonable force has been the subject of much debate for guiding and assessing the balance between the amount of suspect resistance and the officer's countering force (Alpert & Smith, 1994); however, the use of force continuum was created to help clarify this ambiguity (Terrill, Alpert, Dunham, & Smith, 2003). The legal cases presented first in this section involve court rulings that went against officers for using the CED. The motions for summary judgment ruled that the officers used CEDs against non-resistant suspects in violation of the Constitution. Some of these legal cases are: *Autin v. City of Baytown*, 2005; *Batiste v. City of Beaumont*, 2006; *Castaneda v. Douglas County Sheriff's Investigator Rory Planeta*, 2007; *DeSalvo v. City of Collinsville*, 2005; *Franklin v. Montgomery County, MD*, 2006; *Holzman v. City of South Bend*, 2006; *Hudson v. City of San Jose*, 2006; and *Muro v. Simpson*, 2006.

In *Autin* and *DeSalvo*, the use of CEDs against persons who were not physically resisting arrest was found to be in violation of the Constitution (Smith, Petrocelli & Scheer, 2007). In *DeSalvo*, an Illinois police officer arrested a suspect for obstruction of justice. The suspect, after he was handcuffed, protested his innocence and asked why he was being arrested, which led to the arresting officer using his CED on the suspect's neck (Smith et al., 2007). According to the ruling in *Batiste v. City of Beaumont* (2006), Texas police officers allegedly used unnecessary physical force when they used a CED against a

compliant woman they had taken into custody on a mental detention order. In *Hudson v. City of San Jose* (2006), a motorist stopped for a minor traffic infraction attempted to place a matchbook in his mouth and was subsequently tasered. The key factual discrepancy in these cases revolved around the alleged use of a CED against a compliant citizen, which was found to be in violation of the Constitution (Smith et al., 2007). As a result, the courts ruled that CEDs should not be used against suspects who are under physical control but who offer verbal obscenities only or who try the patience of the arresting officer.

The cases discussed next involve situations where the courts granted summary judgment to officers because no genuine issues of material fact remained in dispute and no Constitutional rights were found to be violated when the officer used their CED on the individual. Smith et al. (2007) found these cases provided the most useful guidance on policy and training issues because they present facts and circumstances involving CED use that courts have explicitly or implicitly approved of in dismissing lawsuits against the police.

In *McBride v. Clark* (2006), the plaintiff was arrested on a drug charge and detained in the Christian County jail. On the second day of his imprisonment, the plaintiff became extremely disruptive in the jail, yelling obscenities at the deputies, banging his head on a shower door, and threatening suicide. At the request of a jail nurse, deputies put the plaintiff in a chair restraint where he was immobilized so that his vital signs could be evaluated and an IV started. The plaintiff began struggling in the chair and removed the IV. Moreover, he spit at and tried to bite the deputies and nurse that were attempting to care for him (Smith et al., 2007). In light of this, one deputy

tasered the plaintiff in the neck because she feared for her safety and the safety of others. The court ruled that the deputy's actions in using a CED on the plaintiff were fairly reasonable under the circumstances, and summary judgment was granted to the deputy (*McBride v. Clark*, 2006). This finding was based on the Fourth Amendment's reasonableness standard rather than the 14th Amendment's due process standard (*McBride v. Clark*, 2006).

In *Draper v. Reynolds* (2004), the plaintiff was stopped by a sheriff's deputy for a minor traffic violation and could be seen on the patrol car video yelling at the deputy and complaining that he had done nothing wrong. After the deputy's fifth request for the plaintiff's license and registration and the continued failure by the driver to comply, the deputy fired his CED at the driver and took him into custody after he fell to the ground (*Draper v. Reynolds*, 2004). The district court and court of appeals held that the deputy's actions were not unconstitutional when he used his CED on the driver. Moreover, the court held that under the tense and uncertain circumstances of the event, the deputy was not required to give a verbal arrest command to the driver prior to using the CED and noted that such a command might well have caused the situation to escalate even further (*Draper v. Reynolds*, 2004).

In *Dargan v. Hernandez-Vega* (2006), deputies responded to a trespassing complaint and found an intoxicated man passed out in the complainant's bedroom. The deputies awakened the suspect and had to order him to leave the apartment twice. The court went on to state that the amount of force used was minimal and that the plaintiff's unsubstantiated list of injuries did not demonstrate a constitutional violation (*Dargan v. Hernandez-Vega*, 2006). In *Magee v. City of Daphne* (2006), officers deployed a CED

on the plaintiff while he was standing in the doorway of his home. He had been told that he was under arrest for domestic violence but he refused the officer's directives to come outside. The court granted summary judgment to the officers citing that the use of the CED was a better option than physically subduing a drunk and hostile suspect (*Magee v. City of Daphne*, 2006).

Stanley v. City of Baytown (2005) also depicts an actively resistant individual and reveals a court willing to approve of the application of the CED without first requiring the use of empty hand control techniques. In *Stanley*, a Baytown police officer was called to assist EMT paramedics in controlling a large, muscular man suffering from seizures. The officer attempted to calm the man down by talking to him but he kept kicking the EMT's as they were strapping him down onto a stretcher so they could transport him to the hospital. After several unsuccessful attempts to gain compliance from the subject, the officer warned him that he would be tasered if he did not calm down (*Stanley v. City of Baytown*, 2005). The man then attempted to stand up so the officer tasered him on the back and brought the subject under control. The *Stanley* case recognized the value of a less-than-lethal force option, a CED, in preventing the need for a physical struggle and the high probability of injury that such a struggle may yield (*Stanley v. City of Baytown*, 2005).

Finally, *Schumacher v. Halverson* (2006) presents another variation of suspect resistance where a court has approved the use of the CED and granted summary judgment to the officer. In the *Schumacher* court case, a Minnesota police officer tried to stop and question an intoxicated man who was seen driving his motorcycle to the back of a house. Once the officer contacted the man, he refused the officer's requests to accompany him to

his patrol car. The man then locked his arms around a basketball pole and the officer warned him three times that he would be tasered if he did not comply with the officer's commands (*Schumacher v. Halverson*, 2006). After the third warning, the officer used the CED to remove the suspect from the pole. Although the plaintiff attempted to describe his resistance as passive, the court had no trouble holding that the use of the CED under the circumstances was constitutionally acceptable (Smith et al., 2007).

TASER Training and Policy Implications

Training officers in how to use any type of less-than-lethal weapon, whether a TASER, irritant spray, or impact projectile, is a vital part of policing in this century. We live in a society where the media is always airing stories involving police and use of force, especially when that force appears to be unnecessary or extreme. Departments are also held liable for any injuries or deaths that occur to individuals when officers use unreasonable or unnecessary force. Seeing that a police officer's job today is full of responsibility and accountability, the technology and training given must be designed to work well in the patrol car as well as on the officer's service belt. The training and recertification must be quick and easy to understand and utilize (Bunker, 2009).

However, Galvan (2007) states that training law enforcement officers on new technology is a double-sided conundrum. On one side, the newest technology now offered in equipment and software can help officers respond to calls for service more efficiently, or it can significantly enhance the way certain duties are performed (Galvan, 2007). On the other hand, it takes time to grasp any new technology, and with shrinking manpower and budgets, time is in short supply (Galvan, 2007).

Consequently, Nowicki (1993) asserts that police departments nationwide must

not only purchase the right kinds of technological devices, but their worth and value should be immediately noticeable. He further contends that getting all officers trained on new technology as soon as it is available within a police department is critical (Nowicki, 1993). Nowicki (1993) contends that technology changes so often, and meanwhile it can take months to get trained on a new weapon or tool given the extensive purchasing process that is typical for most police departments. Furthermore, by the time police departments have learned a new form of training or technology, this technology has already become obsolete due to the enhancements in technology.

For any training to be truly successful, Galvan (2007) cites some challenging questions that need to be asked by departmental managers such as: (1) Does the department need this new technology? (2) Will it make work easier for officers and cause them to be more productive? (3) Can officers learn this new training/technology quickly? (4) Will officers use this training and technology regularly so that it becomes part of their toolbox? The answers to these questions hinge on how proactive a police department is about providing training. Because TASERs have been known to inflict pain and cause injuries to individuals, the training required takes center stage as an essential activity for ensuring the safety of both police officers and citizens (White & Ready, 2009).

Appropriate TASER training is essential, and it is usually high-energy, fast-paced, and intense. At Scottsdale, Arizona-based TASER International Inc., such training has become an art rather than science (Galvan, 2007). The company has a remarkable train-the-trainer program at its high-tech, 100,000 square-foot institute. According to Galvan (2007), officers at the institute are taken through a demanding 2-day session of TASER rules and phases, packed into a 277-slide PowerPoint presentation.

TASER International ensures that training given to officers is by master instructors who must recertify every two years and who are active law enforcement officers (TASER International, 2006). Subsequently, after the classroom instruction, officers must fire under stress during the actual practice of TASER deployment (TASER International, 2006).

A current article by the US Government Accountability Office (GAO) provides some information on training in seven designated law-enforcement agencies. All of the tested agencies provided training programs varying from four to eight hours in duration. All required a physical aptitude test at the conclusion of training, while only three demanded an additional written test (GAO, 2005). The written test usually offered “10 true or false questions related to the application of use-of-force policy, proper use of weapon, and appropriate safety measures” (GAO, 2005, pg. 11). Regarding the training subject matter, the report states that training programs highlighted the following issues: (1) how to properly handle the weapon, (2) locate the shot, (3) safeguard the TASER, (4) conduct proper function tests, (5) overcome system malfunctions in a timely manner, and (6) perform post-TASER deployment actions.

All but one of the departments required yearly re-certification in TASER use. The GAO (2005) report implies that the amount of TASER training provided to officers is minimal and a considerable amount of variation was found to exist in the length of training. In addition, training focused primarily on technical issues of weapon use, while appropriate policy issues concerning proper application of the device were seldom addressed.

Furthermore, the GAO (2005) study involved a small number of agencies that were not randomly selected and thus were not statistically representative of the population.

The IACP stresses that policies should not only identify when TASERs can be used, but they “also should be explicit as to when use is inappropriate” (ICAP, 2005, pg. 12). IACP also emphasizes that adequate training should be given and written into policies and procedures before TASERs are utilized in the field (Adams & Jennison, 2007). According to Adams and Jennison (2007), the GAO, IACP, and PERF all identified a number of situations that should be addressed in TASER policy, including the following: fleeing subjects, mentally challenged persons, persons with known or visible impairments that indicate compromised health, vulnerable populations such as children, elderly, and pregnant women, handcuffed prisoners, flammable liquids, and bystanders.

In addition, Adams and Jennison (2007) affirm the degree to which the results precisely describe the set of circumstances in police agencies across the nation is not known. They cite numerous questions that may arise: (1) Are there any agencies that do not provide TASER training? (2) Are officers re-certified in training after TASERs are issued to them? (3) How many standard hours of training are required? (4) Is the use of TASERs integrated into firearms training? (5) How typical is it for officers to be subjected to the TASER as part of their training? (6) Are officers specifically trained about the use of TASERs on special populations, such as the elderly, mentally ill, children, potentially suicidal citizens, and citizens under the influence of drugs, alcohol and other chemical substances?

(7) Are officers specifically trained about the use of TASERs in special settings, such as schools and hospitals, or in special situations, such as large crowds or public events?

(8) What changes in training procedures have been made over time? (Adams & Jennison, 2007)

Recognizing the existing set of circumstances, as outlined by the questions above, is critical if we are to make knowledgeable policy decisions regarding police TASER training (Bunker, 2009). According to Bunker (2009), these important policy issues focus on minimum training lengths, ensuring that the mandatory content of training is given and that the training staff has met the necessary qualifications to teach. In order to properly address these issues, one must know what police departments are currently doing across the country to focus on these areas. Should training criteria be a local matter, dealt with differently by individual departments, or should statewide requirements be established in the form of minimum standards that departments have to meet? (Garner & Maxwell, 1999)

Once more, one cannot effectively address this issue until we have a better picture of what departments are doing and how they measure up against each other (Chasnoff, 2008). For example, Chasnoff (2008) found the San Antonio Police Department, in November 2008, approved such a TASER-use policy when it banned using the device against suspects known to be under the influence of drugs. Officers derived this knowledge from observing the non-compliant individual using drugs prior to the confrontation (Chasnoff, 2008).

However, placing the identification burden directly on the shoulders of officers may cause ambiguity and more stressful situations for them on the street. When faced

with an uncooperative and confrontational individual, TASER-carrying officers will be required, in addition to following normal procedures, to search for signs of drug use and mental illness (Kornblum & Reddy, 1991). “This determination will have to be made in the “fog and friction” of the moment with the officer having to separate and analyze the signs of public drunkenness, situational mental impairment stemming from rage and other extreme emotions, low cognitive abilities, and overt antisocial and defiant behaviors from the vulnerable states of concern” (Bunker, 2009, pg. 894).

Furthermore, White and Ready (2009) found that unruly individuals stunned by TASERs in police-citizen encounters are less likely to be healthy. This most likely means that such individuals may also be burdened by one or more adverse physical conditions, such as smoker’s cough, hypertension, or asthma, which could become more noticeable because of their struggles and could conceal underlying drug use or mental illness conditions (White & Ready, 2007). The failure of officers to make an immediate and accurate assessment of any drug use or mental illness condition that the non-compliant individual has could leave them open to departmental discipline, civil liability, and criminal charges if the encounter turns deadly (Monahan, 1992).

Rose (2007) claims officers confronted with such identification requirements and contacts have only three basic response choices at their disposal. The first choice is simply not to use the TASER device but other less-than-lethal technologies such as pepper spray, batons, or physical force (Rose, 2007). The second choice is for officers to deploy their TASER one time against an unruly individual and then discontinue the use of their weapon (Rose, 2007). The last option, according to Rose (2007), is for officers to approach all confrontations with non-compliant individuals as if they exist in one of the

vulnerable states of concern (such as drug abuse or mental illness problems). The International Association of Chiefs of Police (IACP) (2005) recommends police departments that seek to use TASERS perform the following: establish a leadership team, place the weapon on the department's use of force continuum, assess the costs and benefits, determine the staff roles and responsibilities, engage in community outreach, policy and procedure adoption, training, deploying the weapon in phases, and evaluation and officer compliance. Therefore, the IACP would endorse individual departments to create their own specific training and policies governing the use of TASERS against non-compliant individuals in vulnerable states (Bunker, 2009). However, this endorsement does not identify what the policies should be but instead provides police departments with the program template that can be used to create TASER policies and training.

In addition, the Police Executive Research Forum (PERF) (2005) also tends to focus on items such as safety, training, and operational use of TASERS. PERF (2005) has come up with 52 guidelines for conducted energy devices such as TASERS. This basically results in a check-off-list approach to regulating policy to ensure that police departments will follow these guidelines when using TASERS. These guidelines were not written exclusively for persons with substance abuse or mental illness problems, but they do tend to contain safety and community perceptions of this group (PERF, 2005). In addition, some guidelines could be used to help deal with any tactical issues from a training standpoint. Some examples of these guidelines include multiple IACP Training Keys which have been written on TASERS with the most relevant one written in 2005 (IACP, 2005).

Moreover, a current IACP TASER Model Policy (IACP, 2005) exists along with a TASER concepts and issues paper for further training. However, much of the text is repeated in these documents as they were all created in 2005.

Additionally, the GAO (2005) study of seven police agencies discovered that none of the sampled agencies had any separate policies related to TASER use. To compensate for this, all departments added TASERs into their current use of force policy. Although each agency identified where TASERs should fall on the use of force continuum there was no adequate policy development created (IACP, 2005). Furthermore, both the International Association of Chiefs of Police (IACP) and the Police Executive Research Forum (PERF) (2005) had developed model policies for TASER use; however, the extent to which these model policies have been adopted in whole or in part is unmeasured.

Moreover, policies and training should center on TASER compliance such as when multiple discharges are allowed and when direct stun is acceptable (IACP, 2005). The extent to which departments have policies that explicitly address all or some of the above issues is partly unknown (Bunker, 2009). Adams and Jennison (2007) assert that police departments, traditionally, have a propensity to review policies and training on a case by case basis as a type of quality control to ensure that the rules are being followed. There have been numerous situations in the past where police departments failed to pay attention to larger scope policy review functions and ignored feedback from the community (Adams and Jennison, 2007).

If the officer perceives a reasonable threat, the department's policy and training should emphasize the use of verbal warnings or commands prior to the use of the TASER

(PERF, 2005). The circumstances of each encounter are unique and will dictate whether or not this is practical. However, in an era where police behavior is under more scrutiny and videotaped either visibly by a patrol car camera or covertly by a citizen, it is in the best interest of the officer and the department for the officer to clearly articulate why he used his TASER on an individual (Smith et al., 2007). This is done for legal and public relations purposes as well as for accountability. In light of this, periodic reviews of departmental policy must be conducted regularly.

In order for police administrators to set logical and rational policy they need appropriate data to guide their decisions (Kane, 2007). Given this situation, it is worth mentioning that the GAO (2005) report indicated that four out of the seven departments reviewed did not have a distinctive incident report for TASER deployment. It is widely known that many police departments often fail to utilize research data that is available to them because they lack the personnel qualified to analyze this data (Kane, 2007). For instance, in Orlando, Florida the local newspaper asked both the city police department and the county Sheriff's office for arrest charge and disposition data on people who were exposed to TASERS (Colarossi, Leusner & Moore, 2006). Colarossi et al. (2006) found that the Sheriff's office was unable to provide any valid data and the city police department could only provide data on a small sample of defendants.

Research data normally collected by other branches of the criminal justice system are sometimes of little to no value to law enforcement agencies because they lack the ability to evaluate the data in productive ways (Kane, 2007). "Although data-driven policy decisions tend not to be the norm in policing, changes in use of force weapon policies can have a large impact on how often and under what circumstances police

officers use TASERS” (Adams & Jennison, 2007, pg. 458). For example, Colarossi et al. (2006) mentions the Orlando Police Department originally allowed TASERS to be used against individuals who verbally refused a police officer’s commands. In the subsequent year, the policy and training were changed so that the suspect had to pose a physical threat or attempt to flee. This change was employed on the heels of lawsuits filed against officers and the extensive media attention covering the arrest of another officer (Colarossi et al., 2006). Moreover, Colarossi et al. (2006) found the use of TASERS by Orlando police officers declined by nearly one-third following this policy change.

It is vital that officers fully understand how the TASER works on the body and what steps should be taken after a suspect is brought under control by the TASER (PERF, 2005). While some departments require their officers to be tasered in order to fully appreciate the effect of the weapon, it is more critical that training include a comprehensive discussion of how and why the TASER works physiologically (Smith et al., 2007). In addition, officers must be prepared to quickly identify extreme or uncommon reactions to the TASER and to take appropriate remedial steps if necessary, including having EMS or medical personnel remove TASER barbs that are embedded in the skin (Scholsberg, 2005). Furthermore, training should emphasize that the TASER is not a cure-all solution and that officers should be prepared to transition to other use of force options if the TASER is ineffective (Smith et al., 2007). Also, it is important that police agencies understand that the media is quick to seize upon any incident involving TASER use and report this use of force as potentially damaging headline news.

Moreover, department policies and training guidelines are beginning to emerge based on court decisions involving TASER use by police (Scholsberg, 2005). Smith et

al. (2007) mentions as police departments move toward formulating and refining their policies and training guidelines for TASER use, they can rely on numerous court rulings that provide valuable lessons that should be considered and incorporated by agencies seeking to limit their exposure to civil liability while continuing to use force effectively and humanely when necessary.

III. RESEARCH METHODS

The purpose of the present study is to investigate if citizen complaints are lower in jurisdictions that have more restrictive CED policies and greater CED training requirements. It is expected that departments with more restrictive policies will be associated with a lower number of citizen complaints. Additionally, departments with higher CED training requirements are also expected to be associated with a lower number of citizen complaints.

National Use of Force Survey

Currently, the only known prior research that examined the factors associated with less-lethal weapons involving CED use came from state patrol agencies only (Lin & Jones, 2010). Although there are advantages to using state patrol agency data, the generalizability of their findings to other types of police agencies is questionable (Crow & Adrion, 2011). State patrol agencies only handle calls for service, throughout the state, on major highways. This means that the calls that state police agencies handle are more routine than calls handled by local or municipal police agencies.

Local or municipal police agencies handle calls for service in any area or location within the jurisdiction of the city it serves and protects. This area could consist of major highways, neighborhoods, malls, shopping centers, buildings, and vacant properties, which can generate a greater diversity in the calls that they handle. Thus, the analysis of use of force data from a wide range of law enforcement agencies would offer several contributions to the literature. First, as mentioned previously, the nature of incidents and calls encountered by municipal police officers are likely to differ considerably from state patrol troopers (Stevens, 2009). Next, most research on police in general and on police

use of force particularly is based on data from large agencies, which are often in major municipal areas (Terrill, Leinfelt, & Kwak, 2008).

In the present study, secondary data from the National Use of Force Survey obtained from the Interagency Consortium for Political Science Research (ICPSR) was utilized. Although there were a total of 7 parts to the National Use of Force Survey, only Part 1 will be used for this study¹ in order to provide a snapshot of how less-lethal force technologies, training, and policies are being used by state and local police departments. In Part 1, the research team (Alpert, Smith, & Fridell, 2011) conducted a nationwide survey of a stratified random sample of United States law enforcement agencies regarding the deployment, policies, and training with less-lethal weapons.

At the start of this study, three focus groups consisting of law enforcement specialists were assembled. The participants at the first focus group formulated a list of issues relating to weapons deployment, policies, use of force continua, and use of force models, training, reporting, and review (Alpert et al., 2011). The participants in the second focus group were asked to critique and provide feedback on the draft survey. The third focus group consisted of law enforcement agency employees and centered on a general discussion concerning who should fill out the survey within the target agencies and the participants' general thoughts about the survey (Alpert et al., 2011).

Following the third focus group, the finalized surveys were mailed in July 2006 to 950 law enforcement organizations utilizing a stratified random sample of United States law enforcement agencies employing policies and training with less lethal technologies. A follow-up letter was mailed three weeks later to respondents that did not complete and

¹ Parts 2-7 of the dataset focus on officer and suspect demographics as well as officer and suspect injuries in 12 specific locations.

return the survey. Last, a set of reminder letters was sent after six weeks to the organizations that had not replied to either of the previous mailings. A total of 518 law enforcement organizations (response rate = 54.5%) provided information on less-lethal force, including the organizations' deployment and policies regarding conducted energy devices (CEDs).

The survey contained a total of 292 variables and included items about less-lethal weapon deployments, use of force policies, training, use of force reporting and review, use of force incidents and outcomes, and CEDs. The researchers obtained use of force survey data from large departments representing different types of law enforcement agencies ranging from city to county to state departments across the U.S., and they combined the use of force data from these multiple agencies into a single dataset (Alpert et al., 2011).

Description of Sample

Alpert et al. (2011) report that they used the assistance of Tailored Statistical Solutions, LLC (TSS) to draw a nationwide illustrative sample of law enforcement organizations using the 2005 National Directory of Law Enforcement Agencies (NDLEA) database. The TSS stratified the organizations by law enforcement agency type, county, and the size of the population served. Law enforcement organizations were classified as state police, local police, or sheriff offices.

The national survey categories were used to select four regions: Northeast, Midwest, South, and West. The researchers also established seven classifications of agencies symbolizing populations served: Under 10,000 people, 10,000 to 49,999 people, 50,000 to 99,999 people, 100,000 to 499,999 people, 500,000 to 749,999 people,

750,000 to 999,999 people, and 1,000,000 or more people (Alpert et al., 2011). The goal, according to Alpert et al. (2011), was to select 1,000 agencies from the stratified target population to receive surveys.

The sample consisted of approximately 50 state police agencies as well as 141 law enforcement agencies serving a population of 500,000 or more. There were also six sheriff's offices included in the sample from the Northeast region serving populations of less than 10,000. The remaining 803 law enforcement organizations were chosen from the organizations within the 35 other stratified clusters, producing a total of 1,000 law enforcement organizations (Alpert et al., 2011).

But the research team determined, prior to survey dissemination, that 50 of those departments were either replicas of others in the sample, were no longer in existence, or were not suitable to participate in this survey. Those 50 agencies were removed from the sample, producing a final sample size of 950 law enforcement organizations, of which 518 (55%) completed the survey (Alpert et. al., 2011). Furthermore, because the present study is focused on policies and training related specifically to CED use, only the departments specifying that their officers were issued CEDs were included in the analysis. The effect of this is a reduction in the number of usable cases (departments) from 518 to 311.

Measures of Variables

Descriptive statistics on all the variables in the analysis are presented in Table 1. Frequency distributions on nominal level variables are provided in Appendices A – H.

Dependent Variable

The dependent variable was the *Number of Citizen Complaints*. The latest full

year available in the data set is 2005, so citizen-generated complaints for that year (CGCOMP05) were utilized. It must be noted that among the 311 departments utilizing CEDs, there were 17.6 percent² that did not report the number of citizen complaints they received in 2005. The effect of this is a further reduction in the number of usable cases (departments) from 311 to 245.

² This percentage of non-reporting among the CED-using departments is nearly equivalent to the percentage of all departments that failed to report this variable. This means that the level of non-reporting does not appear to be affected by whether the department had issued CEDs.

Table 1. Descriptive Statistics: Variables Used in Analysis

Variable	Description	Code or Min-Max	N or Mean	% or SD
<u>Dependent Variable</u>				
CGCOMP05	No. of citizen complaints in 2005	0-689	0-689	53.32
<u>Policy Restrictiveness Variables</u>				
CEDFIT	CEDs on Use of Force Continuum	0-8	2.42	1.30
PRBREST	Restrictions CED use in probe mode	0-15	8.98	4.24
CEDREV	Level of administrative review	0=No review 1=1 st review 2=Command 3=Chief	2 61 108 73	1 25 44 30
<u>Training Variables</u>				
TRHOUR	Minimum no. of training hours	1-40	7.16	4.37
CEDEFF	Officer required to experience CED	0=No 1=Yes	134 110	55 45
RETRAIN	Departments require CED training	1=Every year 1.2=Every 1.2 years 2=Every 2 years 3=Every 3 years	166 41 35 2	68 16.8 14.3 .8
CEDINSPR	Departments provide in-service	0=No 1=Yes	11 233	5 95
<u>Control Variables</u>				
FULLDEP	Percent of officers that carry CEDs	0=<50% 1=>50%	78 166	32 68
NOCED	No. of CED uses in 2005	0-550	36	72.18
TOTDTH05	Total deaths caused by any force	0-18	.88	2.58
NUMOFF	Number of officers	0-501	178.2	172.7

Note: Total number of departments = 244.

Of these 245, 88 departments reported receiving no complaints, the most frequently reported value, and one department out of the 245 reported receiving 689 complaints, the most of any department and representing more than 12 standard deviations above the mean. Evidence also suggests that this is an outlier because of the fact that when the number of complaints is divided by this department's size (number of officers), each of their officers would have received almost 7 citizen-generated complaints for excessive, undue, unnecessary force in 2005.³ With the outlier removed, the final sample for this study was 244 cases. The average number of complaints for each department was 14.73 (mean), with a median of 1.00 and a mode of 0. The variation within this variable was ($SD = 53.32$).

Independent Variables

There were two categories of independent variables used to measure departmental policies on CEDs. The first category consisted of four different measures of the Policy Restrictiveness and the second category included four measures of Training on CED use.

Policy Restrictiveness Variables

The first Policy Restrictiveness measure, *CED Fit*, is based on a question that asked respondents to rank order several types of department-authorized force, with "1" indicating the lowest level of force and the highest number indicating the most elevated level of force. Because use of force continua vary widely from department to department, and following measurement techniques used by Ferdik et al. (2014), the measure of *CED Fit* was calculated as the distance between the rank given to CED use

³ It is not likely that an American police department receiving 6.92 citizen complaints per officer would remain viable for very long. This outlier might also be the result of a mistake in the number of officers reported by the department. Either way it is reasonable to conclude that this outlier is a mistake. In the absence of any way to validate the accuracy of this potential outlier and to make the dependent variable a bit more normally distributed, this case was eliminated from the analysis.

and the rank given to firearms use on the department's use of force continuum. Lower values on this variable indicate higher placement on the continuum, assuming that firearms are ranked highest. As a general rule police departments tend to pay more attention to force incidents as the level of force increases (Ferdik et al., 2014). For example, following the discharge of a firearm many departments will place an officer on administrative leave or duty until an investigation can be completed. On the other hand, an officer's use of a verbal command may not even result in any type of documentation.

Restrictiveness in the use of various force options may be indicated by the relative position of force options on a department's use of force continuum. Force options existing at or near the top of the continuum of force likely receive the most detailed and comprehensive attention once deployed. Force options existing at or near the bottom of the continuum of force likely receive the least attention once deployed. As a result, the difference between where CED use is placed on the use of force continuum with respect to firearm use (which is likely the highest level of force) may indicate the level of restrictiveness that the department assigns to CED deployment. In this study, CEDs occupied a rank that was on average 2.42 ranks away from firearms use on the department's use of force continuum, with a standard deviation of 1.30 (see Table 1). It is anticipated that the smaller the distance between CED use and firearms use on the use of force continuum, the lower the number of citizen complaints.

The next Restrictiveness measure, *CED Restrictions (PRBREST)*, indicates whether the department's policy, procedures, and/or training on CED use in probe mode: (1) prohibit CED use in all circumstances; (2) restrict use except when necessary and/or when special circumstances exist, or (3) have no restriction.

These situations include whether CEDs in Probe mode may be used on:

1. The driver of a moving vehicle
2. A person in an elevated position
3. A young person
4. A small person
5. An elderly person
6. A handcuffed suspect
7. A person near flammable substances
8. A person in or around water
9. A subject threatening to use deadly force
10. A person fleeing on foot
11. A known or apparent cardiac condition
12. An apparently pregnant woman
13. An apparently physically disabled person
14. A person who seems in excited delirium
15. An emotionally disturbed person

Collectively, these are considered non-routine or special circumstances. They represent situations where CED use might have more of an effect on a victim than usual. For example, CED use on a person that is driving a motor vehicle or jumping from rooftop to rooftop might result in the incapacitation of the individual, and in turn, result in more serious injury to the individual. The responses were recoded as 0=not restricted at all and 1=restricted either in all circumstances or in special circumstances and were then summed to create a variable measuring the number of situations where CEDs were restricted. Values on this variable ranged from 0 to 15 with higher values indicate greater restrictiveness. In this sample, the mean number of situations in which restrictions on CED use were reported was 8.98, with a standard deviation of 4.24 (see Table 1). It is expected that the greater the number of restrictions placed on CED use, the lower the number of citizen complaints.

The third Restrictiveness measure, *CED Review (CEDREV)*, indicated the highest level of review for non-injury CED use. There were four responses, which were coded

as: 0=not reviewed, 1= reviewed by 1st line supervisor (sergeant), 2= reviewed by command level (lieutenant or captain), or 3= reviewed by the Chief/Sheriff of the department. Higher values on this variable indicate higher restrictiveness. In this sample, there were two departments that reported no review for non-injury CED use, whereas 25 percent reported first-line supervisor review, 44 percent reported command level review, and 30 percent reported review by the top executive of the agency (see Table 1). It is expected that the higher the level of administrative review, the lower the number of citizen complaints.

Training Variables

In addition to the Policy Restrictiveness variables, the analysis also includes four measures of Training-Related Policies (see Table 1). Training variables included *CED Training (TRHOUR)*, a measure of the minimum number of CED training hours required. The higher the value on this variable the more training provided. Responses ranged from 0 to 40 hours of training, with a mean of 7.16 and a standard deviation of 4.37. It is anticipated that the higher the number of training hours required, the lower the number of citizen complaints.

For the second Training variable, *CED Effects (CEDEFF)*, departments indicated if they required officers to experience the effects of a CED before they were authorized to carry it. Some departments expose their officers to CEDs in order to experience the effect and to be able to properly testify in court if asked about the effects of the CED (Smith et al., 2007). The responses were coded as: 0=no 1=yes, with a higher value indicating more training. Of the departments in the study, 45 percent indicated that they required their officers to experience the effects of a CED.

It is expected that departments that require officers to experience the effects of the CED will report lower numbers of citizen complaints.

The third Training variable, *CED Retraining (RETRAIN)*, measured how often the department requires CED retraining for their officers. Survey respondents were asked how often officers who carry CEDs are required to undergo retraining following their initial training. The responses ranged from never (N=31 or 12.7 percent) to every three years (N=2 or .8 percent). Most departments (N=166 or 68 percent) require annual training. There were 41 missing cases for this variable, so imputation was utilized to determine the missing values. The missing values were determined by using the mean (1.22) of all cases with values. It is anticipated that departments requiring more frequent retraining will experience a lower number of citizen complaints for excessive force.

The fourth Training variable, *CED In-Service Training (CEDINSPR)*, refers to training provided to active-duty, certified officers on CED usage. This variable was dummy coded as 0 = not provided and 1 = provided. Over 95 percent of the departments in the study provided in-service training on CED use to their officers. It is expected that departments that provide in-service training will report lower numbers of citizen complaints.

Control Variables

In addition to these independent variables, four control variables were used that may also account for citizen complaints. These include:

(1) *CED Carry (FULLDEP)*: the percentage of sworn officers that carry CEDs, either on their persons or in their vehicles, where 0=less than 50% and 1=50% or more. Roughly two-thirds of the departments had more than 50% of their officers carrying CEDs.

(2) *CED Deployments (NOCED)*: the number of CED deployments in 2005. Among the departments in the survey, the mean number of deployments per agency was 36, but variability between departments was quite high, with a standard deviation of 72.18. Due to the number of missing cases for this variable (36) there was an imputation of values in order to minimize the amount of missing cases. The missing values were determined by the mean (36) of all cases that had values.

(3) *Fatalities (TOTDTH05)*: this variable counts the number of deaths after any use of force incident in 2005. The number of fatalities experienced by these departments ranged from 0 to 18 with a mean of slightly less than one per department (mean=0.88)

(4) *Number of officers (NUMOFF)*: the number of sworn officers in the department in 2005. The number of officers ranged from 0 to 501, with a mean of 178.24 and a standard deviation of 172.77.

Analytical Strategy

Regression is the statistical technique of modeling the mean of a dependent variable as a function of one or more independent variables (Jennings, 2014). It is a statistical process for assessing the relationships among variables and for examining the nature of those relationships (Freedman, 2005). A regression analysis contains many methods for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. In limited circumstances, it can be used to infer causal relationships between the independent and dependent variables. Additionally, regression analysis is used when one is interested in predicting a continuous dependent variable from a number of independent variables (Freedman, 2005).

There were three research questions identified in this study: (1) what features of policies designed to govern the use of CEDs appear to affect the number of citizen complaints relating to the use of force?; (2) what features of training programs designed to teach officers how and when to deploy CEDs appear to affect the number of citizen complaints relating to the use of force?; (3) what combination of policy and training features relevant to the use of CEDs appear to affect the number of citizen complaints related to the use of force while controlling for other possible predictors of citizen complaints?

Before conducting the regression there were two major issues of concern. The first concern was the numerous cases (81) of missing data. Although missing data arise in nearly all statistical analyses, things become much more difficult when predictors have missing values. Thus, rather than removing variables or observations with missing data, another approach is to fill in or “impute” missing values. Imputation keeps the full sample size intact, which can be advantageous for precision but can yield certain bias if not used wisely (Kenward, 2013). There are numerous imputation approaches that can be used that range from extremely simple to rather complex. The type of missing-data imputation used for the study was mean imputation. Mean imputation is a method by which the missing value on a certain variable is replaced by the mean of the available cases. This method maintains the sample size and is easy to use, but the variability in the data is reduced, so the standard deviations and the variance estimates may be underestimated (Kenward, 2013).

There were two independent variables in the study (*Number of CED uses and Frequency of retraining*) that had a high number of missing values. To adjust for this, the

missing values were replaced by the mean of all the cases with values (mean imputation). This appeared to be effective for *Frequency of retraining* because the values on the variable after imputation were found to be normally distributed. However, imputation was a little problematic with *Number of CED uses*. There was a slight difference in the means of *Number of CED uses (NOCED)* between departments with 50 percent or more issued CEDs (mean = 3.69) and departments with less than 50 percent issued CEDs (mean = 5.36). But this difference was not statistically significant so the missing values for this variable were replaced with the mean of cases that had entered this value. Incorporating mean imputation for both variables lowered the number of excluded cases from its original number of 81 to 15 cases (or 6%), which was a marked improvement.

Second, there was concern with the skewness of the dependent variable (*Number of Citizen Complaints*). The mass distribution of the dependent variable was found to be positively skewed or skewed to the right. Skewness in the dependent variable can cause significant problems for certain types of regression models (e.g., OLS), which depend on certain assumptions being met. Skewness is also highly problematic for linearity. Freedman (2005) states for regression to be useful the following assumptions must be met:

1. Linear relationship
2. Multivariate normality
3. No or little multicollinearity
4. No auto-correlation
5. Homoscedasticity (all variables have same variance)

When these assumptions are violated, the results of the regression may be

inaccurate. Multivariate normality means that regression requires all variables to be normally distributed, so by having skewed data we violate the assumption of normality (Freedman, 2005). These violations can impact regression in other ways too, such as displaying confidence intervals that are either too wide or too narrow or exhibiting observations that will exert a disproportionate effect on the parameter estimates (Chambers & Skinner, 2003). Hence, in order to make inferences about the model and estimate whether a given prediction error will exceed a threshold or not, the assumptions must be met. To ensure that the assumptions are met there are certain regression models that are specifically designed to take skewness into account and will perform much better. One type of regression model that takes both of these two initial concerns into consideration and is good for modeling over-dispersed count outcome variables is negative binomial regression (NBR) (Freedman, 2005). This is why NBR was used to conduct the analysis for the study.

The NBR model regressed *Number of Complaints* on the three *Restrictiveness* variables, four *Training* variables, and four *Control* variables to determine whether any of these variables offered any unique influence on citizen complaints and to estimate the relative effects of each variable on *Number of Complaints*. Moreover, employing a regression analysis allows the researcher to identify the individual effects of each policy and training feature that appear to affect the number of citizen complaints after controlling for other predictive factors.

IV. FINDINGS

The negative binomial regression (NBR) model regressed Number of Complaints on the three Restrictiveness variables, the four Training variables, and the four Control variables to determine whether any of these variables offered any unique influence on citizen complaints and to estimate the relative effects of each variable on Number of Complaints. Employing NBR for this analysis allows the researcher to identify the individual effects of each policy and training feature that appear to affect the number of citizen complaints.

Bivariate Relationships

Bivariate correlation is a measure of the relationship between two variables. It measures the strength of their relationship, which can range from the absolute value of 1 to 0 (Field, 2006). The stronger the relationship, the closer the value is to 1. The relationship can be positive or negative. In a positive relationship, as the values of one variable increase, the values of another variable increase with it, or as the values of one variable decrease, the values of another variable decrease with it. In a negative relationship, as the values of one variable increase, the values of another variable decrease. Bivariate correlation involves the analysis of two variables (often denoted as X , Y), for the purpose of determining the empirical relationship between them (Field, 2006). Table 2 provides bivariate correlations between the dependent variable and all of the independent and control variables. It is important to note that all of the *Control* variables are strongly associated with the dependent variable.

Table 2. Bivariate Correlations: Citizen Complaints, Restrictiveness, Training, and Control Variables

	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
Y CGCOMP05	1	-.152*	.343**	.548**	.367**	-.032	.046	-.082	.040	-.021	-.047	.013
X1 FULLDEP	-.152*	1	.081	-.107	-.199**	.089	-.093	.006	-.106	.056	-.078	.105
X2 NOCED	.343**	.081	1	.551**	.482**	-.040	.117	-.100	.011	-.119	.015	.016
X3 TOTDTH05	.548**	-.107	.551**	1	.537**	-.087	.132*	-.112	.094	-.156*	-.058	-.056
X4 NUMOFF	.367**	-.199**	.482**	.537**	1	-.074	.178**	-.061	.121	-.312**	-.007	.021
X5 CEDFIT	-.032	.089	-.040	-.087	-.074	1	.053	-.043	.033	-.017	-.046	.086
X6 PRBREST	.046	-.093	.117	.132*	.178**	.053	1	.026	.167**	-.018	-.067	.070
X7 CEDREV	-.082	.006	-.100	-.112	-.061	-.043	.026	1	-.058	-.017	-.017	.009
X8 TRHOUR	.040	-.106	.011	.094	.121	.033	.167**	-.058	1	.107	-.034	-.033
X9 CEDEFF	-.021	.056	-.119	-.156*	-.312**	-.017	-.018	-.017	.107	1	.069	-.121
X10 RETRAIN	-.047	-.078	.015	-.058	-.007	-.046	-.067	-.017	-.034	.069	1	.004
X11 CEDINSPR	.013	.105	.016	-.056	.021	.086	.070	.009	-.033	-.121	.004	1

Note: *p< .05. **p<.01 (two-tailed test).

In other words, the number of citizen complaints is highly correlated with the number of CED uses in 2005, total deaths caused by use of force, and number of officers ($p < .05$) in the expected direction. The percentage of officers that carry CEDs, however, is negatively associated with number of citizen complaints, contrary to expectations. Departments with more than half of their officers carrying CEDs have lower numbers of citizen complaints than departments with less than half carrying CEDs. It appears that having more officers carry CEDs lowers complaints but this might be due to the training that officers receive or the restrictions placed on their use.

In contrast, none of the Restrictiveness and none of the Training variables were found to be significantly correlated with the number of citizen complaints ($p < .05$) at the bivariate level of analysis. Nevertheless, it is important to determine if these bivariate effects remain after controlling for other variables in the model (Agresti & Finlay, 1997). As mentioned earlier, a multivariate analysis using negative binomial regression (NBR) was performed to assess the simultaneous effects of Restrictiveness and Training variables on Number of Citizen Complaints while controlling for other factors that may affect citizen-generated complaints. The findings of the NBR are presented in Table 3.

Negative Binomial Regression Model

A negative binomial regression model (NBR) was used to analyze the data because of the positive (right) skewness associated with the dependent variable. As mentioned earlier, this skewness can violate the assumptions of normality if the wrong statistical analysis is conducted. Furthermore, the results could be misinterpreted or invalidated without performing the proper statistical test. The negative binomial

Table 3. Negative Binomial Regression Model: Number of Citizen Complaints

Predictor Variables	<i>b</i>	SE	Exp (B)	95% Wald CI for Exp (B)	Sig.
(Intercept)	.723	.5582	2.060	.690 - 6.150	.195
X1 FULLDEP	.374	.1753	1.454	1.031 - 2.050	.033*
X2 NOCED	.007	.0018	1.007	1.004 - 1.010	.000*
X3 TOTDTH05	.016	.0358	1.016	.947 - 1.090	.657
X4 NUMOFF	.007	.0007	1.007	1.006 - 1.008	.000*
X5 CEDFIT	.158	.0595	1.171	1.042 - 1.316	.008*
X6 PRBREST	-.004	.0191	.996	.959 - 1.034	.818
X7 CEDREV	-.389	.1121	.678	.544 - .844	.001*
X8 TRHOUR	.048	.0252	1.049	.998 - 1.102	.058
X9 CEDEFF	-.196	.1755	.822	.583 - 1.160	.264
X10 RETRAIN	-.211	.2349	.810	.511 - 1.284	.370
X11 CEDINSPR	-.122	.3830	.885	.418 - 1.874	.749
Likelihood Ratio $X^2 = 496.129$, $df = 11$, $Sig. = .000$					

Note: * $p < .05$.

regression model conducted use the dependent variable, number of citizen complaints, the restrictiveness variables, training variables, and control variables discussed previously.

Table 3 presents the negative binomial regression results for the dependent variable number of citizen complaints ($n = 244$). Negative binomial regression is interpreted in a similar fashion to logistic regression with the use of odds ratios with 95% confidence intervals (Freedman, 2005).

Just like with other forms of regression, the assumptions of linearity, homoscedasticity, and normality have to be met for negative binomial regression (Hilbe, 2011).

To assess the overall significance of the model, the p -value for the Likelihood Ratio Chi-Square must be less than .05 (Hilbe, 2011). The p -value for the model is .000, which indicates a statistically significant model. To assess the effects of each independent variable, the researcher must examine the Exp (B) coefficients, which represent Incidence Rate Ratios (IRRs). Significance tests revealed that two of the restrictiveness variables, relative placement of CEDs within the use of force continuum (*CEDFIT*) (IRR = 1.171, SE = .0595, $p < .05$), and level of administrative review (*CEDREV*) (IRR = .678, SE = .1121, $p < .05$), as well as three of the control variables, percentage of officers that carry CEDs (*FULLDEP*) (IRR = 1.454, SE = .1753, $p < .05$), number of CED uses (*NOCED*) (IRR = 1.007, SE = .0018, $p < .05$), and number of officers (*NUMOFF*) (IRR = 1.007, SE = .0007, $p < .05$) were significantly related to the number of citizen complaints. Consistent with the bivariate analysis, the training variables remained statistically non-significant in the multivariate model.

The IRR for the relative placement of CEDs within the use of force continuum (*CEDFIT*) indicated that for every one-unit increase in the relative placement of CEDs within the use of force continuum, the number of citizen complaints increased by a factor of .158 or 15.8%, controlling for all other variables in the model. Therefore, citizen complaints increased the greater the distance between CED and firearm use on the use of force continuum. The IRR for the level of administrative review (*CEDREV*) indicated that for every one-unit increase in the level of administrative review for non-injury CED deployments the number of citizen complaints decreased by a factor of .678 or 32.2%,

controlling for all other variables in the model. Thus, citizen complaints decreased the higher the level of administrative review for non-injury CED deployments.

Moving next to the significant control variables, the IRR for percentage of officers that carry CEDs (*FULLDEP*) indicated that when 50 percent or more of a department's officers are issued CEDs, the number of citizen complaints increased by a factor of .374 or 37.4%, holding all other variables in the model constant. The effects of the *NOCED* and *NUMOFF* control variables on citizen complaints were statistically significant, but extremely small. The IRR for number of CED uses (*NOCED*) indicated that for every one-unit increase in the number of CED uses, the number of citizen complaints increased by a factor of .007 or 0.7%, holding all other variables constant. Likewise, the IRR for number of officers (*NUMOFF*) was identical to that for *NOCED*, indicating that for every one-unit increase in the number of officers, the number of citizen complaints increased by a factor of .007 or 0.7%, holding all other variables in the model constant.

As noted, none of the training variables, minimum number of CED training hours (*TRHOUR*), officers experience CED effects (*CEDEFF*), frequency of retraining (*RETRAIN*), and in-service training provided (*CEDINSPR*) were significantly related to the number of citizen complaints while holding all other variables constant. Thus, the results from the *Training* variables did not support the original hypothesis that the more CED training that officers receive will indirectly lower citizen complaints. The original thought was that it would because officers may feel that the CED training will hold them more accountable for their actions since they are educated on the functionality of the CED.

An essential component to estimating whether a predictor variable could influence a dependent variable is the study of whether their bivariate relationship changes once researchers remove the effects of other variables on this relationship (Agresti & Finlay, 1997). For example, in a multivariate analysis a variable is said to be controlled when its effect on the other variables is eliminated (Agresti & Finlay, 1997). Researchers control a variable by holding its value constant (Agresti & Finlay, 1997). In holding the control variable constant, researchers eliminate the part of the association between the predictor variable and the dependent variable that is caused by its variation (Agresti & Finlay, 1997).

In general, all four control variables (number of CED uses in 2005 (*NOCED*), total deaths caused by use of force (*TOTDTH05*), number of officers (*NUMOFF*), and percentage of officers that carry CEDs (*FULLDEP*) were significant in the bivariate analysis, yet only three out of the four control variables remained significant in the multivariate analysis. The percentage of officers that carry CEDs (*FULLDEP*) was negatively associated with the dependent variable, number of citizen complaints, in the bivariate analysis (contrary to the hypothesis) but was positively associated as expected in the multivariate analysis. Total deaths caused by use of force (*TOTDTH05*) was positively and significantly correlated with complaints in the bivariate analysis as expected, but its effect on the number of citizen complaints disappeared when restrictiveness and training variables were controlled. This means the effect of total deaths caused by use of force on citizen complaints was probably or at least possibly spurious. Agresti & Finlay (1997) state a spurious association between predictor and dependent variables occurs when both are dependent on a third variable and their

association disappears when it is controlled. “Such an association is an effect of the relationship of those variables to the control variable, rather than indicating a causal connection” (Agresti & Finlay, 1997, pg. 362). Furthermore, this finding suggests that greater policy restrictiveness on CED use may have influenced inversely both the number of deaths and the number of citizen complaints, making it seem as though the total deaths variable influenced citizen complaints when in reality it did not.

Another interesting outcome of the multivariate analysis is that none of the restrictiveness variables were significant in the bivariate analysis, but two out of the three restrictiveness variables (relative placement of CEDs within the use of force continuum (*CEDFIT*) and level of administrative review (*CEDREV*) became significant when the other variables were controlled. This demonstrates evidence of a suppressor effect. Suppressor effects typically happen when one predictor variable affects the dependent variable in one direction but affects another predictor variable in the model in the opposite direction (Agresti & Finlay, 1997). In Table 2, notice that percentage of officers that carry CEDs (*FULLDEP*) is negatively correlated with number of citizen complaints (*CGCOMP05*) but it is positively correlated with each of the two restrictiveness variables that became significant in Table 3. Consider also that number of CED uses (*NOCED*) and number of officers (*NUMOFF*) are positively correlated with number of citizen complaints (*CGCOMP05*) but negatively correlated with relative placement of CEDs within the use of force continuum (*CEDFIT*) and level of administrative review (*CEDREV*). The control variables have suppressed the effects of the restriction variables until they (the control variables) were held constant in the multivariate model.

Overall, the findings suggest that there is a relationship between the number of citizen complaints and the restrictiveness variables (relative placement of CEDs within the use of force continuum and level of administrative review), even after controlling for percentage of officers that carry CEDs, number of CED uses, and number of officers. However, none of the training variables were significantly related to the dependent variable (number of citizen complaints). The significance of the restrictiveness variables in the multivariate model, controlling for training and other variables, supports the hypothesis that restrictions on policies regarding CED use does lower the number of citizen complaints, net of all other predictors in the model. Training variables, however, remain non-significant in both bivariate and multivariate analyses. Training on CED use (as measured in this study) neither increases nor decreases citizen complaints. The next chapter will provide a discussion of these findings and their implications for law enforcement agencies. Furthermore, the limitations and future direction of this research will be presented.

V. DISCUSSION

The use of physical force by police has been a subject of great debate and controversy for decades (Alpert & MacDonald, 2001). From Westley's (1953) original classification of police use of force as violence to Bittner's (1985) statement that the core of the police role in society is the non-negotiable use of coercive force, the conceptualization and investigation of police use of force is often a fundamental component of criminal justice research (Fyfe, 1988). Over the years, effective attempts at reducing police use of force and the resulting harms associated with it have included changes in laws, legislation, policies, training, and practice (Fyfe, 1988).

The purpose of the present study was to look at law enforcement policies and training in the use of CEDs and how it affects citizen complaints. Generally speaking, citizen complaints should be lower in jurisdictions that have more restrictive CED policies and greater CED training requirements. The expectation is that departments with more restrictive policies would be associated with a lower number of CED deployments, which would in turn generate a lower number of citizen complaints. Additionally, departments with higher CED training requirements would be associated with a lower number of citizen complaints. Therefore, police department policies governing the use of CEDs should have an influence on citizen complaints because the policies will dictate whether or not officers utilize the device and how they use the device. If policies are too lenient and training on CEDs is minimal, then officers may choose to use this device more regularly, and sooner rather than later.

Officers may be less inclined to use verbal skills to de-escalate the situation and jump to utilizing the CED as a way to gain control of the situation.

On the other hand, departments with more restrictive policies and more training on CEDs may demonstrate fewer inappropriate CED deployments by officers, which may result in a decrease in citizen complaints. The rationale here is that these restrictive policies have more paperwork and forms that the officer is required to fill out, which may discourage the officer from reckless use of the CED. Also, officers that receive more CED training may be discouraged from using the CED because they may feel that this training will hold them more accountable for their actions. Officers who are trained in using their weapons will have a hard time claiming ignorance if they use the weapon and it causes a horrendous outcome. This belief may cause officers to use their verbal skills more or try some other way of resolving the issue without going to the CED because of the fear of being sued, disciplined, criminally charged, or fired. Moreover, officers who receive more CED training may also be exposed to the CED during training, which could change some officers' points of view on using the device. The officer may feel sympathetic because of the pain that was associated with the CED, thus lowering the likelihood of using it on an individual.

The current study expanded on a study conducted by Ferdik et al. (2014), which examined the effects of CED restrictions and training on the number of fatal police shootings. Like Ferdik et al. (2014), this study utilized data from a nationally representative sample of United States law enforcement agencies, but investigated the impact of training and restriction policies on the number of citizen complaints. Research on the effectiveness of use of force policies in controlling officers' actions is rare and

limited to mandates aimed at the high end of the force continuum (White & Ready, 2010). Research on the efficiency of deadly force policies in controlling police firearms usage began in the late 1970s with Fyfe's (1979) landmark research, which demonstrated that a move to a more restrictive shooting policy in New York City led to prominent reductions in police shootings (Bishopp et al., 2015). Furthermore, research has shown that police department policies have increased the deployment of CEDs and decreased suspect fatalities (Ferdik et al., 2014), but it has not yet been determined whether CED policies have had an impact on citizen complaints.

The way law enforcement agencies regulate their officers' use of force, to include the types of force officers use, technologies utilized to deliver that force, and under what circumstances various types of force can be used, are among the most critical decisions that a law enforcement administrator will have to make (Taylor & Woods, 2010). In American police work, law enforcement executives implement use of force policies to guide officers' application of physical force against citizens. While the specifics of use of force policies across every nation vary considerably, they all have in common the notion that the force officers utilize against citizens in any given instance must be proportional to the resistance displayed by the citizen (Bishopp et al., 2015).

This notion is often represented with the term *force continuum*, which defines the level of force that officers are permitted to use based on the level of resistance citizens exert against the police (Mastrofski, 2004). For instance, at the low end of the force continuum officers are allowed to grab a citizen who passively refuses to comply with an officer's lawful order while at the high end, officers are permitted to shoot citizens whose resistance threatens the life of an officer or another innocent party (Mastrofski, 2004).

Many times lying in between the borders of the force continuum are CEDs and other less lethal devices that are available to officers to fight the varying levels of resistance they encounter during arrest situations (Bishopp et al., 2015).

Additionally, law enforcement executives have been overwhelmed with questions about the effectiveness and safety of CEDs; the lack of available information and absence of a full understanding about the effects of CEDs has hampered police executives' ability to make informed policy decisions about these devices (Taylor & Woods, 2010).

Considering the recent flood of media attention to controversial uses of the device and concerns about the potential link to serious injury or death, it is critical to examine how police agencies are deploying and monitoring these less lethal weapons (White & Ready, 2010).

This study is one of the first to investigate the impact of CED policies and training on citizen complaints. The results from the descriptive statistics indicate that in 2005, about 60% of a nationally representative sample of law enforcement agencies issued CEDs to at least some of their officers, and almost 70% of these departments issued CEDs to more than half of the officers in the department. The number of citizen complaints in these departments varied considerably, although the mean number was about 15 complaints per year.

It was expected that citizen complaints might be impacted by the number of officers, the number of police use of force fatalities, the number of times CEDs were deployed by the department, and the proportion of the department's officers that had been issued a CED. Larger departments would logically be vulnerable to more complaints than departments that employed a much smaller number of officers. In this sample, the

average number of officers was less than 200. Deaths caused by officers after any use of force may play a role in the number of citizen generated complaints. It is a common belief that an increase in the total number of deaths following a use of force incident will result in an increase of citizen generated complaints relating to the use of force. The vast majority of the departments included in this study reported no deaths associated with the use of force, however. Additionally, departments that issue CEDs to the majority of their officers and the number of CED deployments may play a role in the public perception of CEDs. More frequent CED deployments may increase public scrutiny as well as public dissatisfaction. CED deployments varied widely across departments, with a mean of 36 deployments per department.

Generally, police departments will pay more attention to use of force incidents as the level of force increases. Restrictiveness in the use of various force options may be indicated by the relative position of force options on a department's use of force continuum. Force options existing at or near the top of the force continuum will likely receive the most complete attention from law enforcement administrators (e.g. deadly force, firearms). Force options existing at or near the bottom of the continuum of force likely receive the least attention once deployed (e.g. verbal skills, officer presence). From a restrictiveness perspective, the higher the level of administrative review for CED deployments represents a higher degree of policy restrictiveness. For instance, following the discharge of a firearm many departments will temporarily remove an officer from their regular tour of duty and place them on administrative leave until an investigation can be completed. On the other hand, an officer's use of a verbal command may not even result in documentation. Firearms, generally, are located at the top of the force

continuum due to their lethality. In this study, CEDs occupied a rank that was on average 2.42 ranks away from firearms use on the department's use of force continuum. The descriptive statistics show that most CED use was reviewed at the lieutenant and captain (command) level.

From a training perspective, the descriptive statistics illustrate that most departments required four to eight hours of training before allowing an officer to carry a CED. The belief here is that an increase in the minimum number of training hours may result in a more sensible use of CEDs, which in turn, will reduce the number of citizen generated complaints. Also, it is a common assumption that officers who are required to experience the effects of a CED are less likely to use the CED carelessly because this experience will 'sensitize' the officers to the pain associated with CEDs. However, findings from the descriptive analysis suggest a few more than half of the departments do not require their officers to experience the effects of a CED prior to being authorized to carry them. Additionally, the survey asked how often officers who carry CEDs are required to undergo retraining following their initial training and most departments required annual training. The descriptive analysis showed an overwhelming majority of departments provide CED training to their officers before they are permitted to carry a CED which would lower the number of citizen generated complaints.

Next, the findings from the bivariate correlations suggest that all of the control variables were strongly associated with the dependent variable. The number of citizen complaints was highly correlated with the percentage of officers that carry CEDs, the number of CED uses in 2005, total deaths caused by use of force, and number of officers. There was a positive relationship between number of CED uses and citizen complaints.

As the number of CED uses increased so did the number of citizen complaints. Moreover, there was a positive relationship between total deaths and citizen complaints. As the total deaths associated with use of force increased so did the number of citizen complaints. Furthermore, there was a positive relationship between number of officers and citizen complaints. As the number of officers increased so did the number of citizen complaints. These correlation findings can be attributed to the common assumption that the more CED deployments that officers are generating will eventually lead to a bad experience between the officer and the citizen, causing the citizen to complain. Contrary to expectations, a negative relationship was found between the percentage of officers that carry CEDs and citizen complaints. As the percentage of officers that carry CEDs increased, the number of citizen complaints decreased. It appears that having more officers carry CEDs lowers complaints but this is probably due to the training that officers receive and the commitment that departments make to train their officers when a majority of them carry CEDs and not just the mere fact that they carry a CED.

When analyzing the Restrictiveness variables, bivariate correlations revealed no association with the dependent variable. The level of administrative review, restrictions on CED use, or the placement of CEDs on the use of force continuum was not correlated with the number of citizen complaints. Furthermore, none of the Training variables were correlated with the number of citizen complaints, which suggests that it is probably not the actual training or retraining or even the number of training hours officers receive that affects citizen complaints but rather, it might possibly be the type of training that officers receive which can predict citizen complaints.

Third, the findings produced by the negative binomial regression analysis suggest

that two out of the three Restrictiveness variables (relative placement of CED within the use of force continuum, and level of administrative review) were found to be significant predictors of number of citizen complaints, even after controlling for other possible predictors. Citizen complaints increased the lower CEDs were placed on the use of force continuum. As stated previously, the difference between where CED use is placed on the use of force continuum, with respect to firearm use (which is likely the highest level of force), may indicate the level of restrictiveness that the department assigns to CED deployment. Higher values indicate that CEDs are farther away from firearms (i.e., lower) on the continuum, which would indicate that the policy governing CED use is less restrictive. Therefore, the finding that citizen complaints increased the lower CEDs were placed on the use of force continuum supports the hypothesis that less restrictive policies will actually increase citizen complaints. The belief is that (with less restrictive policies) officers may choose to use this device more regularly, or in unsuitable circumstances sooner rather than later which would almost certainly end in a citizen complaint.

Citizen complaints decreased the higher the level of administrative review for non-injury CED deployments. Generally, the higher the level of administrative review for non-injury CED deployments represents a higher level of policy restrictiveness. The results show that incidents reviewed by high level police administrators (command officers) actually decreased citizen complaints due to the higher level of policy restrictiveness and less likelihood that officers would deploy a CED irresponsibly. Command officers in departments are normally identified as lieutenants, captains, deputy chiefs, and assistant chiefs, and officers typically do not want to be scrutinized by such high ranking officials for fear of punishment for violating departmental policies. This

finding further supports the assumption that restrictive policies will actually lower citizen complaints. Despite the relationship that was found between the dependent variable and Restrictiveness variables, none of the Training variables were found to be significant predictors of citizen complaints.

Additionally, three out of the four control variables (percentage of officers that carry CEDs, number of CED uses, and number of officers) were found to be significant predictors of number of citizen complaints. When 50 percent or more of a department's officers are issued CEDs then citizen complaints were found to increase. The number of citizen generated complaints also increased as the total number of CED deployments related to police use of force increased. Further, the number of officers was found to have an effect on the dependent variable, which suggests that the number of citizen generated complaints increased as the number of officers in the department increase.

As stated earlier, this appears logical since the chances of a citizen complaining about an officer will increase every time an officer uses force and deploys a CED. This finding may be attributed to the fact that there were more officers surveyed from larger departments. Also, having more officers means more officers with CEDs which would lead to more CED deployments which places these departments at risk more for receiving citizen generated complaints of excessive force. It is important to remember that the police-citizen encounter already represents a special case of humans engaging in social interaction and the potential for conflict between these individuals is naturally heightened when they battle for a differential outcome (Lersch & Mieczkowski, 2000).

Traditionally, deaths or serious injuries caused by police use of force are covered by the media and the community shows a heightened sense of interest when hearing of

these special cases. It is extremely common during this time for citizens to voice their displeasure more regularly with police by filing complaints against officers alleging police misconduct (Terrill & McCluskey, 2002). With the mostly negative media attention that departments receive for deadly force encounters, it is not surprising that there are vicarious attitudes about policing practices which could bias the public's perception of complaints. People form an opinion based on what they hear rather than what they actually experience. Hence, complaints are often dependent upon the overall public perception of the police department.

Therefore, from a police administrator's perspective, if one can reduce the total number of CED uses associated with use of force and the percentage of officers that carry CEDs then the number of citizen complaints will more than likely decrease. Also, based on the findings, it appears that ensuring that high ranking officers are reviewing use of force incidents where CEDs have been deployed will likely reduce citizen complaints. High ranking officers (command officers) are typically lieutenants and above in the department's chain of command. Furthermore, police administrators should encourage their departments to place CEDs closer to firearms on their use of force continuum, which would indicate that the policy governing CED use is more restrictive, in order to reduce the number of citizen complaints. Future studies must build on these findings because they may be instrumental in lowering citizen complaints in order to increase citizen satisfaction of the police and preserve the police-community relationship.

Limitations

Although this study expands the literature on use of force, there were several limitations in this study. First, the dependent variable contained a great deal of error

because it contains all complaints relating to the use of force, and not just those resulting from the deployment of a CED. This caused difficulty in examining the true relationship between the dependent variable and the independent variables because the data comprise all use of force complaints which include more than those resulting from CED deployments. Other types of force complaints in the data involved bodily force, firearms, open-empty hand techniques, OC spray, and batons. Because there are other recorded variables and factors in the data, one cannot truly determine the relationship between the variables. Thus, future studies should utilize citizen complaint data that only contains complaints dealing with CEDs.

Second, one can argue that complaints are often dependent upon the overall public perception of the police department. Furthermore, an overall increase in citizen complaints would likely also contain an increase in complaints relating to CED use. Increased media attention often produces vicarious attitudes about policing practices, which could bias the public's perception of complaints. If people have already formed an opinion they are either more or less willing to complain about CED use, which could explain why complaints increased or decreased. Based on the current data, there is no way one can tell if this inference exists or not. Future studies should build on this study and look at the association that public perception and media play on citizen complaints.

Third, another limitation of this study relates to its scope within the broader use of force literature. It is essential to recognize that the type of crime and the method in which the police-citizen encounter is initiated (i.e., traffic stop, call for service, field contact, etc.) are also important background factors that facilitate the relationship between suspect

resistance and use of force (Sousa et al., 2010). Moreover, related to this broader context of use of force decisions is the impact of sensory distortions, communication skills, the presence of other citizens and officers, and organizational culture and policies (Klinger & Bronson, 2009; Smith & Visher, 1981; Skolnick & Fyfe, 1993). This study asks about departmental policies and does not take into account the variability in these background conditions that exist in a natural setting. Established policy may be far removed from officer decision-making in the field, where patrol officers may have to make split second decisions involving whether or not to use force against an individual.

Fourth, the data are now eleven years old and there has been a great deal of progress in policy development and legal challenges (often not reported in the literature) on the use of CEDs. The data used in this study, though important to the understanding of police use of force policies and CED use, is rather outdated and there have been more advances in police technology, training, and policies that these data do not take into consideration. New technologies tend to replace old technologies over time, and they also tend to find new or expanded applications across a broader range of situations (Sousa et al., 2010). For example, law enforcement administrators might attribute the changes in overall rates of use of force to a change in reporting practices whereby the introduction of CEDs required administrators to be clearer regarding which incidents should be reported, which in turn leads officers to be more conscientious about reporting. The changes in reporting practices are a common threat to internal validity when using administrative data and the threat tends to be greater when organizational developments draw attention to reporting activity (Adams & Jennison, 2007).

Future research should build on this study but it is imperative that researchers utilize current data on CED training and policies.

Fifth, the National Use of Force Survey utilized for this study only had a 55% response rate. Although a 55% response rate may be adequate for a mail-in survey, it raises concerns about potential bias if the responding agencies differ systematically from non-responding agencies as well as the fact that some items did not get a response. Although this may not be the case, future survey-based research on police use of force should strive for higher agency response rates.

Last, the survey data are cross-sectional in nature, which limits our ability to make causal inferences. For example, it is possible that agencies experiencing high numbers of lethal police shootings will tend to adopt less restrictive CED policies. On the other hand, those agencies that have a high rate of use of force complaints may tend to adopt more restrictive CED policies. This limitation reveals a significant need for research that takes into account temporal order, such as panel models, interrupted time series, and other quasi-experimental designs to examine how variation in the organization and implementation of use-of-force policies impacts citizen complaints and CED deployments (Ferdik et al., 2014). Future studies should build on these suggestions.

Despite these limitations, the study's findings provided valuable information on the effect of CED policies and training on citizen complaints. First, if police administrators can reduce the number of CED deployments by officers then the number of citizen complaints should decrease. Second, these findings should help encourage police departments to refine their CED training and policies in order to reduce CED deployments, which will lower citizen complaints and improve the relationship between

the community and the police. Third, these results illustrated that citizen complaints increased the lower CEDs were placed, relative to firearms, on the use of force continuum and decreased the higher the level of administrative review for non-injury CED deployments which reinforces the assertion that departments must refine their restrictiveness policies to fit these criteria.

Future Direction of Research

Due to the lack of research on the impact of CED policies and training on citizen complaints more studies should be done in this area. However, future studies covering this topic should take into consideration three things. First, studies should take into account the different policies and training that each department has. There may be certain guidelines or procedures that some departments incorporate in their policies and training that may impact the number of citizen complaints, but since the data used does not break this down more thoroughly, there is no way of identifying this effect. There appears to be a policy or training issue in why these findings occurred. Therefore, the future direction of research on this subject should attempt to identify this issue.

Second, future studies should take into consideration surveys given to citizens who have filed complaints on officers to see why they are dissatisfied with officers. The current study was unable to see the citizen's viewpoint because the surveys were given to police agencies only. It is imperative that researchers incorporate the citizen's perspective in order to identify the cause of citizen complaints against the police.

Last, additional studies should thoroughly explore the value the media plays on the public's perception of officers. It is no secret that there are numerous situations where the public forms their opinions based on what they hear or see from the media.

This is especially the case when it comes to police use of force (White & Ready, 2009). We live in a world where news is broadcast on almost every television channel and can be viewed on numerous electronic devices. Media coverage of police incidents can be viewed on smartphones, tablets, computers, laptops, wristwatches, and even in vehicles equipped with TV technology. With so many gadgets out there, it is not shocking how the media can reach a large audience. There is so much influence the media has on the public's perception of police that additional studies need to look at the impact that the media has on citizen complaints on police use of force.

As the implementation of CEDs by law enforcement agencies and their use by officers increases, it is important for researchers to continue to examine not only the effects and effectiveness of CEDs, but also the policies that can influence their use. CED policies and procedures are constantly being updated by police departments in an effort to address emerging issues associated with this somewhat new technology. Addressing these items would be ideal for examining the relationship between departmental CED policies and training and citizen generated complaints.

APPENDIX SECTION

APPENDIX A

Frequency Table: Percentage of Officers That Carry CEDs

	Frequency	Percent
Less than 50 percent of officers carry	78	32.0
Greater than 50 percent or officers carry	166	68.0
Totals	244	100

APPENDIX B

Frequency Table: Retraining officers

	Frequency	Percent
Every 1 year	166	68.0
Every 1 ½ years	41	16.8
Every 2 years	35	14.3
Every 3 years	2	.8
Totals	244	100

APPENDIX C

Frequency Table: Officers Experience CED Effects

	Frequency	Percent
No	134	54.9
Yes	110	45.1
Totals	244	100

APPENDIX D

Frequency Table: Training Provided to Officers

	Frequency	Percent
Not provided	11	4.5
Provided	233	95.5
Totals	244	100

APPENDIX E

Frequency Table: CED Rank Order

Rank on Continuum of Force ¹	Frequency
1	6
2	58
3	110
4	44
5	17
6	7
7	1
Total	255

¹Lower numbers indicate lower placement on continuum of force for CEDs.

APPENDIX F

Frequency Table: Rank order of Firearms

Rank on Continuum of Force ¹	Frequency
2	1
3	3
4	66
5	70
6	44
7	28
8	16
9	12
10	3
Total	255

¹Lower numbers indicate lower placement on continuum of force for firearms

APPENDIX G

Frequency Table: Relative Difference between CED and Firearm Rank

Relative difference	Frequency
0	4
1	56
2	83
3	59
4	24
5	12
6	2
7	2
8	1
Total	244

APPENDIX H

Frequency Table: Administrative Level for Review

Administrative levels	Frequency
Not reviewed	2
First-line supervisor	61
Command level	108
Chief or Sheriff	73
Total	244

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