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Police handgun qualification: practical measure or aimless activity?

Gregory B. Morrison
Western Oregon University, Monmouth, Oregon, USA, and
Bryan J. Vila
University of Wyoming, Laramie, Wyoming, USA

American police officers began carrying revolvers in the mid-nineteenth century. There were few efforts at developing handgun proficiency until the 1920s; however, thereafter they often ascribed gunfighting successes to their new-found skills. The evidence the police relied upon was highly selective and subjective, but it likely helped spread an interest in firearms training. Being qualified with the police handgun was a status that followed relatively quickly and, since the 1960s, state certification requirements generally have included handgun qualification for police, first as recruits and then periodically throughout their employment. The universal acceptance of both the process and product of handgun qualification today strongly implies that officers exceeding prescribed minimum performance levels are proficient. Although police handgun doctrine and techniques, together with the training and qualification courses which flow from them, suggest somewhat of a consensus among police firearms trainers, empirical evidence raises doubts about whether these substantially enhance officer or community safety.

After briefly considering officer safety over the past quarter century, police handgun training and qualification are examined, as well as the evidence which indicates that no clear predictive link exists between training and gunfighting performance. We conclude that there are serious reasons to question the validity of police recruit and in-service handgun training activities which supposedly enable the police to fire accurately during armed confrontations and thereby incapacitate their opponents-though not necessarily kill them – or, at the least, cause sufficient physiologic disruption to degrade their opponents' abilities to carry out harmful actions.

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Overview

Officer safety lies at the core of the handgun carrying tradition of American police, a practice which developed casually in the nineteenth century to become customary by the outset of the twentieth century. Police concern over physical survival in the performance of their duties in the 1960s soon led to a variety of profession-based efforts aimed at providing information to heighten officer awareness about risks in the field; and training to increase skills for handling both physical and armed confrontations. These efforts included unarmed defense, non-lethal armaments such as batons, as well as firearms training. Some agencies appear to have responded by increasing the amount of conventional training made available to their officers, others altered content to reflect their views on needed improvements, and a few seem to have relied upon some combination of the two. Tactics also received attention since improving these field procedures held the promise of reducing potential assailants' opportunities to injure officers.

Officer safety has dramatically improved over the past two decades when measured by felonious killings. After rising alarmingly during the 1960s to peak at 134 slain officers in 1973, the trend turned downward and, after 20 years, reached bottom at 63 in 1992 after dropping by over 50 per cent (LEOKA, annual; Maguire and Pastore, 1995). This post-1973 pattern would have been encouraging even had the police population remained constant, but since its numbers increased steeply, the reduction in raw numbers is even more remarkable (see Figure 1). Indeed, rate-based figures reveal a 70 per cent drop in the felonious killing of police from 1971 to 1990. For the ten-year period 1984-1993, annual figures ranged between 63 and 78 (LEOKA, 1993).

Reduced felonious killings of police officers came despite widely fluctuating firearm assault rates which, from 1977 to 1994, were distinctly U-shaped, having peaks in 1981 and 1992 (see Figure 2) (Maguire and Pastore, 1995). The drop in firearms assault rates from 1981 to 1984 did generally parallel the pattern for felonious killings, yet when firearms assault rates began climbing in 1985, both the frequency and rate of felonious killings held relatively steady. Additionally, reductions in the rate of annual felonious killings from the late 1970s through the early 1990s ran counter to the percentage of firearms assaults resulting in injuries (see Figure 1). Therefore, even though more police were being injured during firearms assault incidents, fewer were dying.

The welcome reductions in officer deaths in the face of aggravating factors – such as increased frequency of firearms assaults, percentage being injured and perhaps a larger volume of opposing fire – which might easily have brought opposite results could be attributable to better police marksmanship as a component of gunfighting acumen. As discussed further below, we think that this might be a minor contributing factor, but that two others had the major roles. First, wearing soft body armour beneath outer clothing during routine activities has become a much more popular practice since its introduction in the 1970s, and the vests have stopped many assailants' bullets from causing penetrating wounds of the torso (e.g. see Bailey, 1996; FBI, 1992; Fridell and

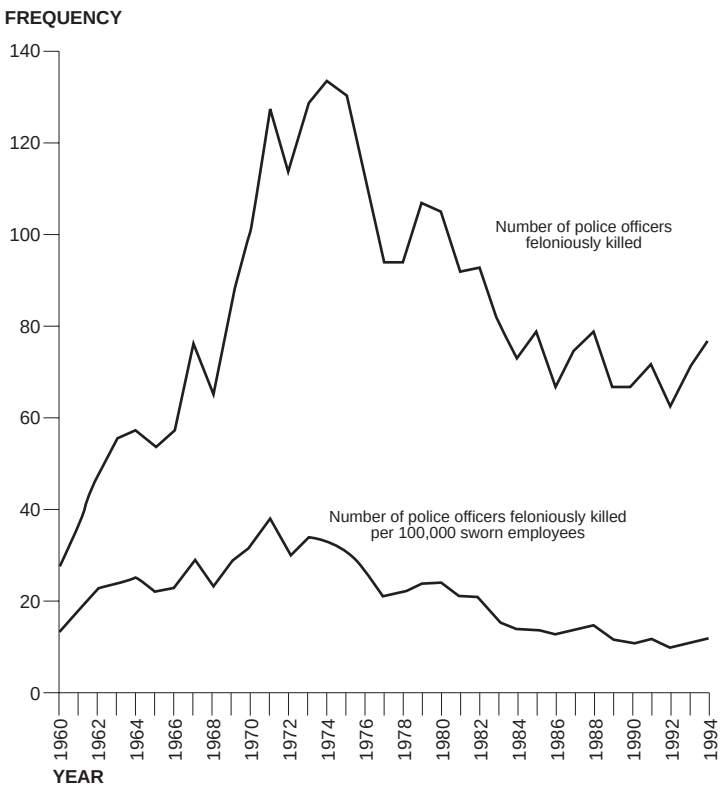

Figure 1.
Felonious killings of police, 1960-94

Pate, 1992; Geller and Scott, 1992; LEOKA, 1994; *The Police Marksman*, 1995). Given the volume of firearms assaults, however, it is unlikely that soft body armour alone can account for the reduction in felonious killings. The second major factor, improved operational procedures or field tactics, also is vitally important. Officers have been formally taught for some time to stay aware of their surroundings as well as to beware the lethality sometimes tragically associated with complacency. Handgun retention skills have been a featured component of "officer survival" training since the 1970s, as have maximizing the use cover and increasing separation distance between officers and firearm-wielding assailants. Procedures have been developed for high-risk encounters, cautiously approaching dangerous persons, as well as waiting for assisting officers to arrive before conducting building or area searches (e.g. Adams *et al.*, 1980; Brooks, 1975; Remsberg, 1995).

Improved field procedures can discourage assaults by reducing officer vulnerability and thus opponent opportunity, and combining modestly increased separation with the use of cover can greatly reduce officer exposure to gunfire since a smaller, more distant target is far more difficult to hit by non-trained persons. Even when tactical advantages such as these do not accrue to

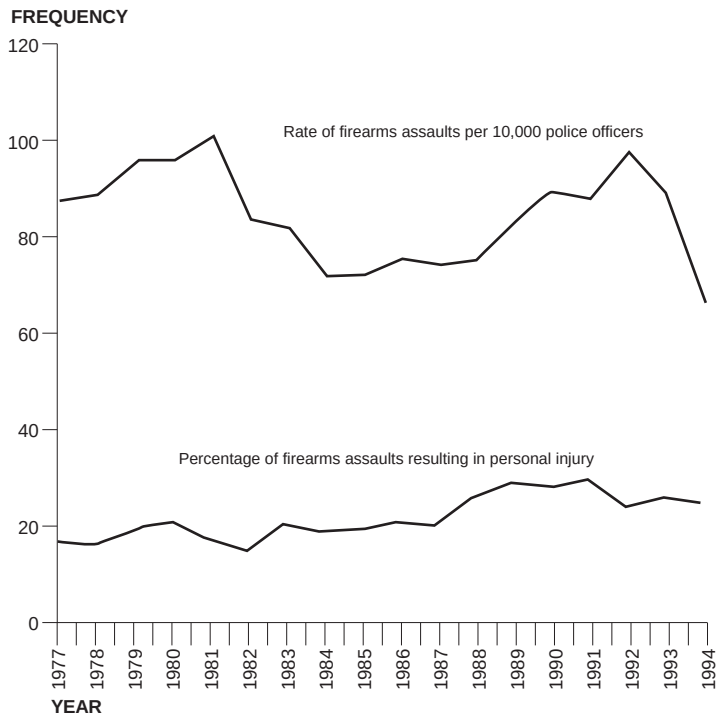

Figure 2.
Firearm assaults on state and local police officers, 1977-94

officers, soft body armour provides valuable protection to the torso's vital organs and vessels. Next we examine the matter of police handgun shooting accuracy and this component's possible contributions to officer safety.

Police handgun accuracy in field shootings

Although many police officers choose not to fire under circumstances where they justifiably could do so (Fyfe, 1982; Scharf and Binder, 1983), several hundred persons are shot and killed each year and likely more than a thousand are wounded (e.g. Geller and Scott, 1992). Yet, when the police resort to their handguns, research suggests that they are quite limited in their ability to shoot accurately and that these levels are far similar to that of their opponents than one might at first surmise, this despite lacking the police officer's extensive training in marksmanship and gunhandling.

Several studies on the police use of deadly force point to low levels of field shooting accuracy (Fyfe, 1978a; Geller and Karales, 1981; Geller and Scott, 1992; Meyer, 1980; Milton *et al.*, 1977; McManus *et al.*, 1970; Scharf and Binder, 1983). To what might inaccurate field marksmanship be attributed? Milton *et al.* (1977) suggest that in some cases the type of training left officers ill prepared, while they and other researchers also pointed toward the assignment of new officers to patrol duties prior to benefiting from training (also see McManus *et al.*, 1970).

Scharf and Binder (1983) note that the stark differences between range training and street confrontations ostensibly might have led to handgun qualified officers missing their opponents during gunfights.

Nevertheless, police field shooting accuracy seems disappointingly low given the extensive initial training received by recruits and in-service officers' continuing training. Vila and Morrison (1994) have challenged the validity of contemporary police combat handgun doctrine, noting only modest improvement in field shooting performance since the nineteenth century despite that era's generally inferior firearms technology, less reliable ammunition, often nonexistent maintenance practices and, critically, the complete absence of handgun training. Discussing the physiological limits of human performance, Vila and Morrison (1994) also point out that contemporary police doctrine and techniques might be ill-suited for preparing officers for gunfighting.

To further explore police gunfighting ability, we first trace the history of police handgun training in the USA and then provide two comparisons for contemporary police field shooting performance; that of some of their nineteenth century counterparts as well as some contemporary opponents. Although the comparisons are based on limited data, we believe that they provide a reasonable basis for discussion. We then offer some recommendations for research aimed at validating and thus improving police handgun training.

History of police handgun training

The revolver emerged as a common weapon in the mid-nineteenth century just as cities began experimenting with the new form of law enforcement and peace-keeping embodied in municipal policing. The lack of firearms training for these "new police" was not surprising given the inefficient, disorganized, and often corrupt nature of early departments as well as their high rates of turn-over (e.g. Fosdick, 1921; Fuld, 1971; Lane, 1967; Miller, 1973; Smith, 1940; Walker, 1977). These and other factors stalled efforts to "professionalize" the police, and this naturally affected firearms training.

Nineteenth century American police officers acquired and carried handguns as often as not as a matter of personal choice. The administrative tone was casual, with executives and supervisors frequently turning blind eyes to their patrolmen carrying firearms. Few policies and procedural guidelines existed, not even with regard to matters as basic as handgun and cartridge selection or safety and familiarization training – e.g. loading, reloading, gripping, aiming and firing the handgun. Furthermore, the early police seem never to have usefully explored the characteristics of armed confrontations or their particular challenges to human performance.

Revolver proficiency had to await the progressive Theodore Roosevelt who, as a New York City Police Commissioner in 1895, introduced his officers to handgun instruction (Roosevelt, 1897). Convinced by his inquiry into accidents and miserable gunfighting performances that regular training was needed, he stipulated semi-annual trips to the revolver range where officers warmed up

with non-firing "dry-fire" practice and then fired approximately ten cartridges each at bull's-eye targets (Berman, 1987). Clearly this could not have advanced gunfighting skills to an appreciable degree. Roosevelt's brief stint and modest firearms programme during 1895-97 was followed by retrogression, though introductory revolver practice survived in some form (New York City Board of Aldermen, 1971; Kahrs, 1915).

Regardless of this and a handful of similar developments in the early twentieth century, the vast bulk of the nation's municipal police officers never engaged in departmentally organized and mandated handgun training prior to the mid-1920s. For example, a 1919 National Rifle Association (NRA) survey of municipal departments serving cities with populations over 25,000 found that around a dozen, though perhaps as few as three, had formal firearms training (Sandler and Keysor, 1995). As we point out below, even those few officers who were afforded a bit of practice could not have gained practical benefit from their exercises.

Developmental influences

The general military model

From the beginning the American police leaned upon the military model to prop up their infant organizational structures and administrations. Despite shared similarities – operational chain-of-command, officer ranks, general rules and regulations, and uniform attire – the military hardly was in a position to provide guidance to the police on their use of deadly force in a civilian setting. Nevertheless, when the need for revolver instruction finally was heeded, it was the military to whom the police turned. Perilously ignored for a half century, handgun proficiency then endured an intellectual and organizational neglect which nonetheless enjoyed the status of significant progress.

Though one may question the wisdom of embracing army cavalry handgun doctrine and techniques without either considering their appropriateness or utility for the police, the supporting documentation was impressive for the times (e.g. War Department, 1918). Thus, military expectations about handgun marksmanship and handling provided a convenient way for the police to begin training large numbers of officers to a standard. Nevertheless, this misguided adoption lulled the police into a false sense of security and allowed them to:

- delay enquiring into the nature and performance demands of police-citizen armed confrontations;
- assume that police-specific doctrine and techniques offered no advantage; and
- side-step the challenge posed by establishing and defending their own practical standards.

We feel that these factors seriously compromised subsequent police handgun training developments.

The National Rifle Association and the Federal Bureau of Investigation

The NRA dominated police firearms training between the World Wars, partly because it enjoyed immense status as the main repository of firearms expertise outside the military and partly because it was motivated, for a number of reasons, to assist the police (Morrison, 1995). Importantly, the association saw its role as more than merely introducing the police to gunhandling safety or generating interest in its competition programmes; indeed, it viewed the police officer's revolver as a crime-fighting tool (Reckord, 1926).

Though generally more demanding than the army's bull's-eye based "dismounted" cavalry courses, NRA's early instruction, practice courses and matches taught similar lessons. A limited number of pseudo-combat matches were introduced, modified and combined specifically for police competitors over the years at NRA's annual national matches, but most were little more than thinly veiled applications of bull's-eye shooting applied to hastily arranged challenges including a larger, more forgiving target with a humanoid outline (Morrison, 1995). For logistical and construction reasons, these "combat" courses seem not to have been widely used at the state or local levels.

The NRA created a Police School in 1925 which operated in conjunction with its national matches (Himmelwright, 1933). Emphasizing handgun proficiency and stressing instructor preparation, it also dealt to varying degrees with other firearms, hand-to-hand fighting and riot control (Hathaway, 1927; Scofield, 1927). This period of NRA-police collaboration lasted until US entry into World War II brought the temporary withdrawal of federal funding for the national matches and, along with them, the training schools. With NRA's influence at least temporarily fettered, it is important to note that the association had been trimming its police-only, pseudo-combat match programme for several years. At war's end the national matches reappeared, but not the police-only programme. The Police School would not be reinstituted for another decade, with a formal police firearms instructor certification programme set in place in 1960.

The NRA's attention was drawn elsewhere. As further evidence, consider that the association remained without a combat-oriented match programme from the early 1940s to 1962 when it accepted responsibility for the National Combat Competitions first established at Indiana University's Bloomington campus in 1959. This match, one previously sponsored by Colt Firearms and the University's Center for Police Training, was derived from a course developed by the Federal Bureau of Investigation (FBI) which, during the post-war years, had aggressively moved to fill the training void created by the NRA's absence (Sandler and Keysor, 1995; Weston, 1973).

The "war on crime" during the 1930s was the catalyst for hesitant Congress's decision finally to authorize special agents to routinely carry handguns (HR 9476, 73rd Congress, Public Law No. 402). Prior to June 1934, special agents had needed the permission of their respective special agents-in-charge (FBI, 1982). In this year the Bureau entered the still largely undeveloped

police firearms training field to become in little more than a decade the most widely recognized post-World War II authority. J. Edgar Hoover advocated his agents' training to the nation's police through the Bureau's Washington, DC-based Police Training School and the "zone" schools which operated out of FBI field offices around the country. Designed to augment state and local police training efforts, the academy and zone school programmes were destined to influence thousands of trainees and, more importantly, trainers (FBI, 1935b; South, 1958; Turner, 1993; Ungar, 1976). Handgun training was among the earliest of subjects included in the curriculum of what today is the FBI's National Academy (Hoover, 1945, p. 10). As with the NRA, the FBI's goal was to prepare trainers to instruct; as it turns out, handgun training was one of the three most frequently requested zone school courses (Turner, 1993). The Bureau's most lasting contribution, its practical pistol course (PPC), was in use by the early 1940s and promoted as the basis for competitive matches beginning later that decade (Weston, 1973).

NRA vs. FBI doctrine and shooting techniques

Early assumptions about the connections between training, qualification and field shooting performance by the NRA and the FBI led to unrealistic expectations of police performance potential. As we discuss below in more detail, pre-1945 NRA marksmanship training appears to have had little to do with police gunfighting. The FBI's comparatively novel efforts also suffered from serious flaws. For example, consider that:

- neither NRA-based bull's-eye courses or the FBI's PPC provided a reasonable facsimile of the environmental or physiological demands common to police field shooting incidents;
- qualification expectations were derived from martial or competition activities;
- performance thresholds were arbitrary and thus of dubious value; and
- no attempts were made to test the validity of these training approaches by comparing officers' range performances to gunfighting.

Nevertheless, there are important differences between NRA bull's-eye and FBI PPC-based training.

Bull's-eye shooting was an exclusively daytime undertaking, and while perhaps understandable or even necessary for recreational and competitive purposes, it was an impractical basis for training police officers who patrolled around the clock and regularly entered darkened buildings. Conventional target shooting never sought to duplicate field characteristics such as physical exertion, darkness and other reduced lighting, or dynamic, close-range multiple targets. Weapon malfunctions also were treated unrealistically, with "alibis" entitling shooters to re-fire affected strings-of-fire. An armed adversary would not likely be so accommodating (Morrison, 1995; ROTC, 1938).

Military-derived handgun techniques – such as the target shooter's stance, one-handed target grip and cocking the revolver's hammer with the firing-hand thumb – were perpetuated through the NRA's programmes and thereby became accepted police practice. Thumb-cocking retained favour long after manufacturers introduced trigger-cocking mechanisms in the form of "double-action" revolvers, ones which, in addition to being thumb-cocked, could be fired simply by pressing the trigger through a longer, more heavily sprung arc of movement (Kahrs, 1915). Thumb-cocking remained a routine police range practice into the late 1960s (McManus *et al.*, 1970), and there is some evidence of police officers relying on this cumbersome technique during close range confrontations capable of evolving into gunfights (e.g. Adams *et al.*, 1980).

The FBI, though taking a relatively radical step with its PPC, suffered from its previous saturation by military small-arms training. Following legislative approval of the routine carry of handguns, special agents at first received the army's cavalry-based handgun instruction (FBI, 1935a; Purvis, 1936). This was supplemented in the late 1930s with such things as shooting after quickly drawing the handgun, at disappearing and moving targets, while "running" and from moving automobiles, and perhaps even under reduced lighting (McGivern, 1984). When the PPC was introduced, it ushered in a new era of police firearms training's developments, one rooted, however, to past bull's-eye shooting practices. The long-customary five-shot string, for example, remained in spite of the police being easily able to acquire six-shot revolvers, which by the mid-1930s safely allowed for filling every chamber with a cartridge.

Training distances also continued to be atypical considering the nature of gunfights; 50 per cent of the PPC's shots were taken from the 50 and 60 yard lines, and fully 80 per cent were fired from 25 yards or further (Hoover, 1945). As mentioned above, thumb-cocking persisted at the longer ranges, though trigger-cocking seems to have been stipulated at the 25 and seven-yard lines (Cooper, 1961). The use of a single target prevailed, too, and the PPC used the much too generously proportioned Colt police silhouette target. Practices and techniques that so obviously were at odds with field conditions would not have survived even a modest inquiry into municipal police-involved shootings.

The PPC did at least offer some advantages over bull's-eye shooting. Neither military nor NRA shooting had ever tested reloading skills, yet the PPC had officers ejecting spent cases, reloading with cartridges and resuming firing. While bull's-eye shooters stood erect and flat-footed, the PPC to some degree spurned these artificial requirements by including modified military rifle firing positions such as prone and sitting, as well as the use of simulated cover.

The PPC's greatest asset, however, was its seven-yard element, one least like anything officers previously would have experienced at the police firing range. It clearly bore the closest resemblance to distances commonly encountered in field shootings. Consisting of ten shots fired in 25 seconds, officers drew their

revolvers, fired five shots at their single targets, immediately reloaded with five additional cartridges and then fired again at the same targets. A crouched position, aiming without the use of the sights, and trigger-cocking were stipulated, techniques antithetical to bull's-eye shooting doctrine. Although this seven-yard element probably did improve the relevance of the PPC, establishing one's competence on it or bull's-eye courses was an artifact of convention rather than an objective measurement of the ability to perform well in gunfights.

Post-World War II developments

Though unsuccessfully sued in the 1950s for not having provided "sufficient and proper training in the use small arms", New York City nevertheless examined its programme of bull's-eye training and qualification and subsequently included "combat training" along PPC lines (McManus, 1970; *Meistinsky* v. *City of New York* 128 NYS2d 483). Around this same time on the other side of the country, the Seattle Police Department was rethinking its dependence on bull's-eye shooting, shifting instead to "moving and surprise targets, and dwelling targets with emphasis upon accurate and rapid fire upon comparatively larger [silhouette] targets than are usually used in formal target competitions" (Seattle Police Department, 1953).

Generally speaking, however, bull's-eye based training continued to enjoy a sizable following long after the PPC's introduction (e.g. McManus *et al*., 1970). A selective national survey by Skillen and Williams (1977) indicates that two-thirds of the responding agencies used bull's-eye courses in their recruit training programmes, and about one-third also used them for in-service training. While only 11 per cent relied on bull's-eye courses as their "primary course … for firearms training", nearly two-thirds used either the FBI's "standard", though not necessarily original, PPC course, its "close range combat" course fired at seven yards or its tactical revolver course (Skillen and Williams, 1977).

Matulia (1982), whose International Association of Chiefs of Police (IACP) survey focused on the police use of deadly force in cities with 250,000 or more population, did not enquire about bull's-eye course use, but he did find that PPC-derived courses were the dominant training format (Table K-20). Additionally, police officers can be seen firing at the likeness of a Colt police silhouette target from close range, using one-hand and crouching, in a picture contained in a mid-1970s issue of the FBI's *Law Enforcement Bulletin* (FBI, 1975). While many departments had by this time taken up "exertion" or "close combat" as identified by McManus *et al*. ten years earlier, non-validated NRA bull's-eye and FBI PPC handgun training continued to guide the bulk of police departments' training and qualification regimens. Departments modified the original PPC as it pleased them, in the process reshaping it to conform to their local ideas about appropriate course design (McManus, 1970). Generally speaking, adaptations eased the course's administration and its challenges to include: shortened maximum distance, a new intermediate distance of 15 yards, decreased

emphasis on supported positions, reduced time limits to reflect the availability of speedy reloading devices for revolvers and the widening use of magazine-fed semi-automatic pistols in the 1980s, as well as firing sequences shortened from six shots per signal to perhaps two to three. The differences were more cosmetic than substantive.

The PPC's longevity is amply illustrated by way of the Federal Law Enforcement Training Center's (FLETC) modified course implemented in 1993. The FLETC PPC consumes 60 cartridges and, when contrasted with the original, emphasizes closer target distances of 3, 7, 15 and 25 yards, one- to three-shot sequences instead five or six, and frequent firing from drawn ready positions. Nevertheless, it retains features such as drawing, one- and two-handed firing, using only the "weak" hand for some elements, sighted as well as eye-level "point" aiming, reloading, relatively liberal time limits, simulated cover and supported firing positions (Smotzer, 1993). FLETC's new course generally may be seen as including a greater emphasis on close range firing by reducing the number of shots fired at the 25-yard line, while at the same time requiring that all 25- and 15-yard line firing be performed from behind simulated cover. Standing out in the "open" at the longer distances to shoot or reload is thereby prevented or at least discouraged, and this has far more in common with the FBI's original PPC than one should casually dismiss.

Handgun qualification criteria

Police handgun training was common by 1950, but the degree of its contribution to police gunfighting outcomes is open to question. Neither doctrinal, technical nor tactical developments were driven by research or programme evaluation, but, rather, by trainers' various notions about good sense as constrained by resources. This has allowed departments throughout the twentieth century to offer a variety of approaches without usefully investigating their outcomes. Trainers' beliefs rest heavily on criteria rooted in their personal experiences as street officers, irregularly gathered anecdotal evidence and what they come to view as effective at the training range.

Consider that handgunners earlier in this century who operated in diverse settings – e.g. the World War I-era soldier, NRA competition bull's-eye shooter, many state and local police officers as well as the FBI special agent after 1934 – often demonstrated their proficiency in order to be "qualified" within their respective organizations by firing similar courses of fire (Purvis, 1936; Reckord, 1926; War Department, 1918). Soldiers, it should be noted, essentially were trained to qualify, as were competition bull's-eye shooters who wished to clear the qualification hurdle (War Department, 1918). This widely accepted practice understandably led federal, state and local police agencies to develop similar notions about firearms training and competency. The FBI, for example, at first settled on the military and NRA bull's-eye based performance threshold of 60 per cent for its then new PPC despite considerable differences, including a relatively huge target by comparison.

This threshold was raised to 85 per cent by 1943, but it does point to the disconnect which has often existed between the training provided to police officers, the formal qualification criterion and expectations of officers in gunfights (Cochran, 1966; FBI, 1940; Hoover, 1945; Purvis, 1936). As qualifying came into widened use with the police, departments remained free to ignore officers' failing scores and send them back on patrol without benefit of additional training (e.g. San Francisco Police Department, 1967). In 1970 not all departments yet required their officers to qualify and even those which did diverged on course content, length, and amount of actual shooting practice, as well as qualification frequency, its particulars elements and threshold scores (McManus *et al.*, 1970).

Some departments have experienced dramatic fluctuations in the annual frequency of training and qualification sessions during periods of fiscal frugality or reduced personnel, and several rather hollow justifications have propped up qualification standards – statutory provisions, formal policies, mere precedence, or the sanctioning clout of organizations like the NRA or agencies like the FBI (McManus *et al.*, 1970). Although New York City had not abandoned bull's-eye shooting by the late 1960s, officers there were firing a 50-shot PPC-style course annually for qualification, which relied on a hit or miss scoring system (McManus *et al.*, 1970). As strange as it might sound, the 75 per cent threshold for this course permitted an officer to miss the target completely with as many as 12 bullets under the range's relatively serene conditions, nevertheless qualifying to carry a handgun into harm's way. According to McManus *et al.* (1970, p. 127), only "good reason" supported this standard – and other departments' too, no doubt – so it should not be surprising that early researchers were documenting low levels of field shooting accuracy in New York City and elsewhere beginning in the 1970s (Fyfe, 1978a; Geller and Karales, 1981; Meyer, 1980).

Trained vs untrained combat handgun shooting performance

As stated above, we question contemporary police handgun training because it has not been properly validated. The preceding historical sketch provides a strong basis for our concerns about contemporary practices, yet it might be possible that firing range proficiency operationalized as qualification is a reasonably good indicator of field performance and that the folk wisdom behind conventional beliefs about what levels of performance on the range provide an adequate indicator of field competence is correct. One way to test for this possibility is to compare the performance of trained police officers with that of untrained officers and other persons. Although limited data prevent definitive conclusions, a clear indication that trained officers perform far better than either officers without training or their untrained opponents would lend support to notions about the validity of current handgun training and certification. Toward this end we now compare and discuss the gunfighting performance of three groups:

(1) untrained nineteenth century police officers;

(2) opponents of contemporary police officers assumed to have had no formal handgun training; and

(3) contemporary police officers with extensive, formal handgun training (see Appendix).

A nineteenth century comparison

Roussey's (1984) examination of the police use of deadly force in nineteenth century New Orleans (1863-89) included information on field shooting accuracy. As his subjects were police officers who carried and used firearms without the benefit of training, his insights help us gain some picture of police performance during a period when officers likely were no more skilled in marksmanship than their opponents. Roussey has this to say about New Orleans' experience (1984, p. 57):

> only 42 per cent of the policemen who fired their guns struck their antagonists. No more than 22 per cent of the shots fired found their intended targets, and the figure was probably closer to 15 per cent or even less. The result was that of the people fired upon by these officers, a maximum of only one-third were wounded or killed, and fatalities amounted to just 14 per cent of the civilians involved.

The more valuable of these statistics for present purposes are that no more than one-third of the opponents were hit and, if we select Roussey's mid-range bullet hit rate estimate, only about 15 per cent of police bullets hit their intended targets. While care must be taken to not infer that this single department is representative of late nineteenth century police generally or that the circumstances involved in these shootings are exactly representative of today's, this information about field shooting accuracy in New Orleans remains valuable for reasons which will become clear further below.

Contemporary opponent performance

A century later, consider the firearms proficiency demonstrated by police officers' opponents. Data from the New York City Transit Police Department for 1985-90 show that 12 per cent (4 of 33) of the officers who were fired at were hit by their adversaries' bullets. Roughly comparable 1990 data for the New York City Police Department show that its officers were struck by perpetrators' bullets in 12 per cent of incidents (Cerar, 1990 cited in Geller and Scott, 1992). Philadelphia shootings between 1987-1991 involving mutual gunplay resulted in police officers being struck by adversaries' bullets in 28 per cent of the incidents (Geller and Scott, 1992). These limited figures point to the relative infrequency with which opponents struck officers with gunfire. How determined they were to do so, as well as their potential impairment by alcohol and other drug use, or physical exertion brought on by struggle or flight, is unknown.

The fatality rate – an indirect indicator of accuracy – suffered by New York City police officers hit by opponent's gunfire between 1970 and 1991 was 14 per cent (Geller and Scott, 1992). Chicago's officers died from their wounds at a similar 16 per cent rate from 1974 through 1982. In the late 1980s, however,

Chicago's police fatality rate increased to 22 per cent (Chicago Police Department, cited in Geller and Scott, 1992). Houston officers died as a result of their wounds at a much lower 10 per cent rate during the period from 1980 to 1991 (Geller and Scott, 1992).

Only New York City proves helpful in determining the proportion of bullets fired by opponents which struck police officers. The 11 per cent "perpetrator" bullet hit rate in 1979 appears to be representative of the 1970s, generally (McGee, 1981). In the late 1980s, New York City firearms instructors were informing police recruits about low bullet hit rates on police officers, ones in the neighbourhood of 10 per cent (Rachlin, 1991). Slightly later, opponents of New York City police officers had bullet hit rates of 6.2, 12.2, and 8.2 per cent respectively, for 1990-92 (Cerar, 1990-92). These figures provide an unweighted bullet-based average for "perpetrators' hit potential" similar to that found in 1979, so it seems that opponents were not markedly better or worse across this period of time.

Untrained nineteenth century police officers in New Orleans and contemporary officers' opponents thus performed at similarly low levels (see Table I). The Louisiana officers hit no more than one-third of their opponents and only around 15 per cent of their bullets actually hit their intended targets. Police officers' assailants a century later appear to have fared somewhat worse; few officers were hit, roughly one in seven fatally, and their bullet hit rate hovered around 10 per cent. We now compare this information with that associated with contemporary police who receive lengthy instruction in the use of firearms as recruits and then maintain their proficiency at officially acceptable levels via in-service training and qualification sessions.

Performance indicator	Typical contemporary police ratio	Contemporary percentage range (%)	Nineteenth century New Orleans Police
Incidents (at least one police bullet struck an opponent)	Two-in-five	27-60	N/A
Persons hit	One-in-two	22-56	One-in-three
Fatalities (based upon persons struck by police bullets)	Three-in-ten	23-39	N/A
Fatalities (based upon those persons fired upon by police)	One-in-fifteen	5-9	One-in-seven
Bullets (hits in relation to shots fired by police)	One-in-five	14-38	One-in-seven
Officers who achieved at least one hit	One-in-two[a]	N/A	Two-in-five

Notes: [a]Only figures available are for New York City 1971-75; See text for data sources. The average rates in this table are approximations since agencies do not always report the *n* associated with their aggregate figures. While greater precision is preferable, we find these figures to be sufficient for purposes of discussion herein

Table I. Summary of indicators of contemporary police field shooting accuracy and that of untrainted nineteenth century New Orleans police officers

Contemporary police performance

Incident hit rates report the percentage of a department's shooting incidents wherein at least one police bullet struck at least one opponent. Chicago's incident hit rate for 1975-77 was 27 per cent (Geller and Karales, 1981). Los Angeles' incident hit rate for 1980-88 was a comparable 28 per cent, as was New York City's late 1980s rate of 27 per cent (see Geller and Scott, 1992). The rate for 155 Michigan cities examined by Horvath (1987) over a five-year period spanning 1976-1981 was 32 per cent. A St Louis Police Department study found a higher incident hit rate, 37 per cent, for the period 1987-90 (cited in Geller and Scott, 1992). Baltimore reported 50 per cent based on approximately 150 incidents and the Metro-Dade Police Department's incident hit rate during the 1980s was 52 per cent. Some rates in the late 1980s were even higher. Dallas reported a 60 per cent incident hit rate during the 1980s and Philadelphia reported 59 per cent from 1986 to 1991 (Alpert, 1989; Dallas Police Department cited in Geller and Scott, 1992; Geller and Scott, 1992).

Although incident hit rates generally appear to have increased from the 1970s to the 1980s, they are difficult to interpret. For example, shooting frequency generally dropped over this 20-year period owing to less permissive attitudes, increasingly restrictive policies and closer reviews of officers' uses of deadly force (Geller and Scott, 1992). One important factor was the reduction in the number of shootings involving fleeing felons which, by their very nature, likely led to higher proportions of misses than many other shooting scenarios. Besides, incident hit rates give no indication whatsoever of how many cartridges were fired by the police to achieve perhaps a single hit. More revealing of police marksmanship is the opponent hit rate.

Person hit rate, the percentage of opponents fired at by police who were struck at least once, provides somewhat greater detail about police handgun shooting accuracy. In California for 1980-1986, 42 per cent of the suspects involved in incidents (N = 51) in which a police officer died were hit by police bullets during the initial contact (The Commission on Peace Officer Standards and Training, 1986). In those California incidents not resulting in the death of an officer, but which nonetheless involved firearms assaults (N = 520), approximately 38 per cent of the suspects were hit by police gunfire.

Geller and Scott's (1992) impressive compilation of departmental figures – even when restricting the discussion to departments which provided data for at least six consecutive years – shows that the percentage of opponents fired at by police in various cities who were struck with the minimally necessary single bullet ranged between 22 and 56 per cent. Thus, between approximately one- and three-in-five persons fired at by the police in several different cities actually were stuck by at least one bullet. This move from an incident- to an opponent-based performance indicator offers a clearer picture of field shooting performance.

The most commonly reported fatality rate reflects the percentage of citizens who die after being struck by police gunfire. Comparatively higher fatality rates might indicate greater accuracy since a larger proportion of shots striking

opponents' torsos – the principal target – generally would produce more serious wounds and thereby lead to increased numbers of deaths (e.g. Geller and Karales, 1981). One must be cautious about this indicator, however, since incapacitating or "stopping" opponents who present potentially lethal threats remains the purpose behind the vast majority of police firearms uses, not killing them. Before proceeding, there are several other factors apart from police shooting accuracy which should be considered in any discussion of fatality rates.

One is the variation between jurisdictions regarding the timeliness, quality and extent of trauma care. Increases in "preventable" deaths from automobile accidents led to the creation of emergency rooms and supporting services beginning in the late 1960s, but their numbers fell between 1981 and 1991 (Bazzoli and MacKenzie, 1995; Daily *et al.*, 1992; Giordano, 1994; Shackford, 1995). Most of these hospital "self-dedesignations" came during the late 1980s, and this could have increased the percentage of opponent fatalities (Bazzoli and MacKenzie, 1995; Daily *et al.*, 1992). For example, San Diego's creation of a regional trauma centre in 1984 led in a single year to a 55 per cent drop in deaths associated with trauma, and Washington, DC experienced a 50 per cent drop over a five-year period in the 1980s (Uzych, 1990). Conversely, then, there might have been an increase in trauma case deaths when this trend was reversed in cities such as Chicago, which went from ten to eight trauma centres, and in Dade County, Florida, which went from seven centres in 1985 to only one in 1986 (Uzych, 1990). Such closings therefore could have independently raised the death rates for persons shot by police officers in some locales.

Second, handgun bullet wounding "profiles" – penetration and expansion characteristics determine the potential volume of tissue which might be crushed during a bullet's passage – bear on lethality. Since bullet performance profiles vary, logically their relative lethality might vary too. To compound this matter, departments select their service cartridge(s) from a handful of popular cartridges for which ammunition manufacturers assemble numerous combinations based on bullet style, weight and velocity. It is possible that increasingly efficient bullet designs introduced in the late 1980s might bias fatality rates slightly upwards independently of marksmanship increases.

Third, physiological and psychological factors predispose people to react differently to being wounded. Individuals' psychological responses, for example, can influence the onset of shock as well as their general attitude toward being wounded, and this operates somewhat independently from the physical severity of the wound (e.g. Fackler, 1992; MacPherson, 1994; Newgard, 1992; Patrick, 1989). Keeping these matters in mind, we now consider the following hit-based opponent fatality rates.

Milton *et al.* (1977) found a mean opponent fatality rate of 29 per cent for seven major cities – Birmingham, Detroit, Indianapolis, Kansas City, Oakland, Portland (Oregon) and Washington, DC – for the years 1974-75. Individually, but only including those cities with at least a total of two-dozen fatal or nonfatal injury shootings during the two-year study period, the rates ranged from a low of 23 per cent in Kansas City to a high of 36 per cent in Indianapolis (Milton *et*

al., 1977). New York City's opponent fatality rate for 1971-75 falls within this mid-range at 30 per cent, being only slightly lower at 29 per cent for the much longer period of 1970-91 (Fyfe, 1978a; Geller and Scott, 1992).

The late 1970s fatality rate across four major cities studied by Scharf and Binder (1983) – Birmingham, Miami, Newark and Oakland – bears a close resemblance to those mentioned above; on average, 30 per cent of opponents hit by police bullets died of their wounds. Houston's 31 per cent fatality rate for 1980-1991 fits this pattern, too (Binder and Fridell, 1984). Chicago's rate during the mid-1970s was somewhat lower at about 26 per cent (Geller and Karales, 1981), a level which remained unchanged for 1974-91 (Geller and Scott, 1992). Opponents of Dallas and Los Angeles police officers died from their wounds somewhat more frequently than elsewhere; 39 and 38 per cent respectively, during the 1970s and 1980s. Examining fatality rates for six cities – Chicago, Dallas, Indianapolis, Kansas City, Los Angeles and New York City – over time reveals only minor differences for the 1980s as compared to the 1970s. Indeed, Indianapolis and Kansas City actually experienced lower rates during the more recent decade (Geller and Scott, 1992).

A fatality rate based on deaths in relation to persons fired at (instead of struck by bullets) provides a more limited statistic, though one comparable to Roussey's nineteenth century New Orleans data which indicated that 14 per cent of police opponents were killed. For the New York City police during the early 1970s this figure was 9 per cent, and in Chicago during the mid-1970s, 4.6 per cent (Fyfe, 1978a; Geller and Karales, 1982). Although it is impossible to determine the extent to which these differences might have resulted from improved medical care, the gross similarity is quite striking, particularly given the expanse of time and introduction of handgun training which should have resulted in more hits to the centre of the torso and thus more serious wounds.

Bullet hit rates are rarely reported, but they currently offer the most precise measure of police field marksmanship. In the mid-1970s, the Chicago Police Department's bullet hit rate was approximately 14 per cent; roughly 86 per cent of the shots fired at "criminal suspects" missed (Geller and Karales, 1982). For the period 1971-75, the New York City Police Department averaged 15 per cent hits (Meyer, 1980) though, by the end of the 1970s, shooting accuracy apparently stood "at slightly over 25 per cent of the rounds fired" (McGee, 1981). A decade later, New York officers' bullet hit rate against "perpetrators" was about 22 per cent, but in situations involving mutual exchanges of gunfire in 1992 it was only 17 per cent (Cerar, 1990; 1991; 1992). The Metro-Dade Police Department had a similar bullet hit rate of 16 per cent in the mid-1980s, a figure which remained the same during 1988-94 (Alpert, 1989; Alpert and Dunham, 1995). Los Angeles' bullet hit rate against suspects was consistently higher than all of the preceding at 30 per cent from 1974 to 1978 and approximately 38 per cent for 1987-88 (LAPD, 1990; Meyer, 1980). These higher rates might be explained by research which suggests that officers in this jurisdiction on average fired about 60 per cent more shots per incident in the 1980s than did their opponents (Geller and Scott, 1992), but it is possible that Los Angeles'

handgun training programme differs markedly from those used in the other cities available for comparison[1].

As to the central issue considered herein – the type and degree of relationship between training operationalized as qualification and observed field performance – Alpert (1989, cited in Geller and Scott, 1992, p. 104) found for the Metro-Dade Police Department that, "there is no relation between shots fired that hit their targets and the officer's qualifying score". In basic agreement, McGee (1981) – then chief firearms instructor for the New York City Police Department – was unable to find a "clear connection" between range scores and bullet hit rates following his examination of field shootings in the 1970s. Geller and Scott (1992) note that this circumstance might not hold true for all agencies since, "it is possible that a careful comparative study would show that range qualification scores correlate much more closely with field combat skills in some locales than in others." Commenting on the 1980s bullet hit rate for New York City police which was somewhat less than half of that of Los Angeles police officers, they also noted that this "presumably [might be] due at least in part to superior police firearms training" (Geller and Scott, 1992). While fundamental differences between programmes could exist and thus provide an opportunity for some bullet hit rates to strongly correlate with training scores, no such research has yet been undertaken. Indeed, another factor deserving attention is the proportion of shootings incidents involving specialized teams which enjoy supplemental training, such as tactical team units or those serving "high risk" search warrants. Officers with additional preparatory training operating under such circumstances might be expected to demonstrate higher levels of shooting accuracy in field confrontations and thus offset perhaps lower ones by patrol and investigative personnel.

Summary assessment of training validity

There are sufficient similarities between levels of field marksmanship reported for untrained nineteenth century police officers, untrained contemporary opponents and today's well-equipped, highly trained and handgun "qualified" police officers to tentatively support our contention that police handgun training doctrines and techniques might provide poor preparation for the challenges posed by armed confrontations. The police occasionally encounter well-armed opponents who put them at severe disadvantage, but the vast majority of confrontations find the police and their opponents confronting one another comparably armed with handguns.

The 1980s brought exclamations from police that they were too frequently, or even regularly, "outgunned" by criminals. Such claims stretched any factual basis since the police obviously avail themselves of modern weaponry. Additionally, the impact of training on gunfighting outcomes should far exceed those of a technological nature since practical advances in design features during the late twentieth century have been modest. Indeed, the drive to adopt "better" handguns in hopes that a hardware change would bring dramatic improvements in field performance have distracted us from more thoughtful

avenues by which to improve officer and public safety when deadly force must be exercised.

While the police do perform at higher levels than their contemporary opponents as well as their untrained cohorts of the nineteenth century, available statistics do not inspire great confidence in the basis for the skills officers rely on under precarious circumstances. Indeed, given rudimentary familiarity, one wonders to what degree police perform above chance levels. While additional research into early-twentieth century police and late-twentieth century opponents' marksmanship performances is sorely needed to clarify this matter, simultaneously embarking on a thorough reconsideration of training programmes hardly seems premature.

Research recommendations

Among more general concerns such as safety, police handgun training's utility properly derives from its applicability to gunfighting in a civilian setting. Unfortunately, there do not appear to be any performance standards, nor do we know precisely which skills are necessary or best for the task. To remedy this situation, we recommend that future research efforts regarding police firearms training include:

- careful examination of firearms and firearms-related training developments throughout the twentieth century;
- developing a taxonomy for distinguishing major schools of thought, doctrines and techniques;
- standardizing measurements of police handgun field accuracy, as well as collecting such data from many more departments and in much greater detail;
- developing a general theory about police gunfighting from which practical training and performance goals and objectives can be derived;
- quasi-experimentation to identify robust techniques through the controlled, yet interactive environment provided by computer-generated simulations as well as tightly scripted role-playing scenarios;
- qualitative research into the gunfighting arts and confrontational performance; and
- evaluating the process and product of police recruit and in-service firearms training programmes and periodically providing feedback to programme administrators and trainers.

Conclusions

The NRA and the FBI by far had the greatest influence on early police firearms training developments; the former between the World Wars and the later during the post-War World II era leading up to the turbulent 1960s. Over the decades, interactions between well-meaning firearms instructors have routinely involved

the mutual exchange of non-validated concepts, techniques and methods in the belief that the infusion of different material would enhance officer safety. Each department set its own procedures regarding the onset of training, its content, frequency and rigour as well as standards for competence, and instructors often adjusted their programmes arbitrarily. This persists today, and while establishing the precise bases for such decisions is difficult, expert and personal opinions, intuition and the characteristics of the most recent successful or disastrous shooting incident are highly influential.

Since the 1980s, practitioner organizations such as the American Society of Law Enforcement Trainers (ASLET) and the International Association of Law Enforcement Firearms Instructors (IALEFI) have been providing useful forums for enhancing police firearms training. While neither presently champions the use of scientific approaches or programme evaluation to improve gunfighting performance potential, this situation might improve if interested parties can be convinced to pursue joint academic-practitioner projects.

Handgun qualification for the police, something originally conceived as a test of marksmanship proficiency for soldiers and competitive shooters, still consists of shooting at fixed numbers of clearly defined targets at well-known distances, standard firing elements and sequences, liberal time limits, and arbitrary threshold scores. The rote firing of time-honoured courses and their derivatives produces well-practised range marksmen, but it does not assess their ability to perform in gunfights.

Being "handgun qualified" should mean being able to perform competently during unpredictable armed confrontations arising out of routine activities involving close-range exchanges of gunfire, and to do this it must reflect the totality of the training. Nevertheless, handgun qualification typically is only one of several annual shooting sessions for which officers' scores are recorded. Other important firearms activities – supplemental static firing range courses, tactical exercises involving live-fire, role-playing scenarios using "non-gun" training props and interactive computer simulations – logically should enhance officer field shooting potential, but instead are routinely deemed as only training and thereby escape both scrutiny and a meaningful role in overall assessments of performance potential.

Finally, it is difficult to reconcile demonstrated police handgun accuracy with the commonly held notion that the police are competent with their handguns by way of their participation in mandated recruit and in-service training. Since qualification implies competency, it is important to reconsider what, and how, the police are taught, particularly since the handgun remains a primary defensive tool and will continue receiving the bulk of departmental firearms budgets, training time and effort. Even assuming for a moment that the gunhandling and marksmanship components of a particular training programme are valid, we emphasize that officers are not truly qualified merely by firing a rote "qualification" course since much more than this is required to produce the type and degree of preparation needed for armed encounters.

To be valid, police handgun qualification must reflect the realities of armed confrontations, and this requires research into such things as the nature and characteristics of field shootings, physiological limitations which cannot be mitigated by training, as well as the doctrine and specific techniques taught to police officers for defeating lethal assaults and seizing dangerous fleeing felons. Until these become a priority for the police, validation will remain elusive and qualification a misleading and aimless activity.

Note

1. Earlier, Meyer (see discussion in Geller and Karales (1981)) offered that the higher firing rates in Los Angeles could be partially responsible for the higher fatality rates found there, the observation being that 4.4 bullets were fired per incident in 1977 at a time when 37 per cent of the police opponents hit by police bullets were killed. The average firing rate in Los Angeles dropped to a noticeably lower 3.2 bullets per incident by 1979, however, without any corresponding fatality rate reductions. The degree to which higher average police firing rates generate higher bullet hit rates or fatality rates currently is difficult to assess, but the above suggests that training differences might exert less influence than the shot-to-shot circumstances, i.e. either firing or holding fire when there is a strong likelihood of missing should have little influence on fatality rates since firing will be unlikely to produce hits and thus be roughly as effective as not having fired at all. Yet these easily discernible options should directly affect average incident firing rates as well as bullet hit rates.

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Appendix

Performance indicator	New York City transit opponents (%)	New York City opponents (%)	Philadelphia opponents (%)	Chicago opponents (%)	Houston opponents (%)
Incident hit rate	–	12[b]	–	–	–
Percentage of officers hit	12[a]	–	28c	–	–
Fatality rate (based on those officers fired upon by opponents)	–	14[d]	–	16[e]-22[f]	10[g]
Bullet hit rate (hits in relation to shots fired by opponents)	–	10[h]	–	–	–

Notes: [a]New York City Transit Police Department for 1985-90; [b]1990; [c]1987-91; [d]1970-91; [e]1974-82; [f]1980s; [g]1980-1991 (approximation for the 1970s, 1980s and early 1990s)

Table AI. Performance of contemporary opponents against police officers