

# A Tipping Point for “Totally Evidenced Policing”: Ten Ideas for Building an Evidence-Based Police Agency

International Criminal Justice Review  
2015, Vol. 25(1) 11-29

© 2015 Georgia State University

Reprints and permission:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/1057567715574372

icj.sagepub.com



Lawrence W. Sherman<sup>1,2</sup>

## Abstract

Increasing numbers of police professionals have decided to practice evidence-based policing. Yet many of these “early adopters” encounter opposition from their colleagues. Advocates of evidence-based policing (EBP) increasingly ask whether, or how, an entire agency can be transformed at about the same time, rapidly creating a “tipping point” for “totally evidenced” policing—defined as a steady growth of evidence-based decisionmaking on as many practices as possible. Such tipping points may require (1) a powerful advocate for EBP; (2) an “evolutionary” dimension to add on to any “smothering paradigm” that resists the addition of evidence to decision-making; and (3) strong external demands for change. Several attempts to create “totally-evidenced” decisions across entire agencies are under way. This article describes a hypothesis for how they might succeed, consisting of a 10-point plan to be implemented simultaneously.

## Keywords

evidence-based policing, totally-evidenced, organizational change, early adopters, organizational culture, research registry, tipping points, randomized controlled trials

## Small Steps Versus “Totally-Evidenced Policing”

Over the past half-century, the movement toward evidence-based policing (EBP) was measured in small steps. Since the first randomized controlled trial (RCT) in police decision making was launched in Liverpool in 1963 (Rose & Hamilton, 1970), over 100 tests of police practice have been completed and published (Lum, Koper, & Telep, 2011; Neyroud, 2012). Each publication added a new brick to a growing “wall” of evidence on what works in policing. Yet few publications gained much attention from police practitioners or made much difference in police practice.

<sup>1</sup> University of Cambridge, Cambridge, United Kingdom

<sup>2</sup> University of Maryland, College Park, MD, USA

## Corresponding Author:

Lawrence W. Sherman, University of Maryland, College Park, MD 20742, USA.

Email: lawrence.sherman@crim.cam.ac.uk

Almost two decades ago, Sherman (1998) proposed consolidating the knowledge gained from this evidence on the emerging model of evidence-based medicine (Millenson, 1997). The suggestion was essentially to move from reading a collection of studies (small steps) to one big step of what can be called, in hindsight, “totally-evidenced policing.” Inspired by Bernard Hogan-Howe’s (2012) heuristic concept of “total policing,” the idea of “totally evidenced” was present in Sherman’s original definition of EBP:

Evidence-based policing is the use of the best available research on the outcomes of police work to implement guidelines and evaluate agencies, units, and officers. Put more simply . . . It uses the best evidence to shape the best practice (Sherman, 1998, pp. 3–4).

Sherman’s model described a future world in which as many police practices as possible were employed or discontinued based on good evidence about their cost-effectiveness. What it did not say was how to get there. The idea of being totally evidenced—that best evidence would be used to guide *all* or increasing proportions of decision making—remains an unrealized vision in every profession, including medicine. The obstacle all professions have faced is a lack of systematic evidence about how professions or organizations become evidence based.

The key problem in gathering evidence on such tipping points is the unit of analysis. In applying evidence on better *outcomes*, the unit of analysis is micro-level: one offender, victim, hot spot, or neighborhood at a time. In applying evidence on better *decision making*, however, the unit of analysis is organizational: one police agency at a time. What works for changing decision making in a police agency can only be inferred from comparative analysis of police organizations—a more complex task than working within one agency. As a result, we have substantial evidence about delivering better micro-outcomes. We have much less evidence about changing organizational behavior to seek evidence to guide decisions (but see Rousseau, 2006; Drover & Ariel, 2015).

The demand for a clear road map to organizational change is fortunately stronger than ever. A growing number of “early adopters” (Gladwell, 2000) of the EBP paradigm are pressing ever harder to find their way, even without the road map. Several police agencies, in early 2015, are poised on the brink of a wide-ranging effort to use best evidence for changing the way police resources are used. In the lead is Trinidad and Tobago, which completely reshaped its patrol strategy (as measured by Global Positioning Satellite tracking) in 2014 to focus on homicide hot spots (Kumar, 2015; Sherman et al., 2014). Norfolk and Suffolk (United Kingdom) police have undertaken a massive program of experimentation and training to move their combined operations toward a state of becoming nearly totally evidenced as soon as possible, letting a contract to a National Health Service Trust to provide technical expertise informed by evidence-based medicine. Two Australian states are on the brink of a totally evidenced campaign, while two Scandinavian countries have committed substantial resources to doing so. One of these seven agencies is even discussing sending 85 police to receive graduate degrees in EBP from a leading university, including 12 PhD degrees, over a 6-year period, as merely the start of a campaign for a totally evidenced tipping point.

This demand for rapid change has been fed, in part, by two rapidly growing professional organizations, both founded since 2010: Over 1,500 people have joined the U.K.-based Society of Evidence-Based Policing (see [www.sebp.police.uk](http://www.sebp.police.uk)); another 500 are estimated to have joined the Australia–New Zealand Society of Evidence-Based Policing (ANZSEBP; <http://www.anzsebp.com/>). “We aim to make evidence-based methodology part of everyday policing in Australia and New Zealand,” as the ANZSEBP chair, assistant commissioner Peter Martin of Queensland Police, says on their website. Hundreds of the members of these organizations attend conferences and master classes each year, eager to learn the latest results of research about what works in policing—and what doesn’t. Even outside the English-speaking world, there is growing interest in EBP and membership in EBP societies, notably in Uruguay, Brazil, and China.

Yet there are still millions of police around the world who have never heard of EBP, let alone support it. The thousands who already do support it must swim against a tide of indifference or resistance. No matter how many want to bring evidence into their own work, they are undermined by many more who disapprove of that approach. In at least one U.S. police agency, a police officer enrolled in a PhD program has had to conceal it from colleagues, to minimize reprisals. It is no surprise that these early adopters ask whether there is a better way to transform policing toward totally-evidenced decisions.

The answer may depend on how we diagnose the causes of resistance to EBP. Some academics assign high, selfless motives to the resistance; other analysts suggest low, selfish motives. The high motives are said to reflect a clear understanding that policing is a “craft” that lies beyond scientific analysis. This theory suggests that the art of police practice will only be harmed by attempts to code and classify it statistically—with less favorable treatment of citizens, victims, or suspects. Similar alarmist claims, however, were made about research destroying the “art” of medicine in 1828 when Dr. Pierre C. A. Louis tested the practice of bloodletting of patients to cure them of pneumonia; his study found that bloodletting only hastened patient death (Morabia, 2006). Other high-minded opponents of EBP believe that all police should develop a skilled intuition as the basis of decision making; they fear that evidence will kill off such intuition.

The accusation of a low or selfish motive for resistance to evidence-based practice is said to be pure anti-intellectualism: a fear that someone else knows more than I do, and will try to “put on airs” or “lord it over me.” This fear may then provoke “straw man” criticisms: Too much education will rob police decision makers of common sense; it might make them “study problems to death, instead of just doing something”; they could “lose touch” with the ordinary people police must serve, getting too far off the ground to be interested in the details of local crimes and criminals.

My own intuition is this: Resistance to EBP is unlikely to be solved by aiming at either of these theoretical causes. The most evidence-based explanation, at least in other fields, seems that opposition to change stems from *fear of the unknown*. This fear may always be provisional, since once the change becomes familiar, it is no longer unknown. Once the change is understood, the resistance may disappear. It may even be completely reversed and replaced by strong endorsement.

This claim is supported by recent police experience with the introduction of body-worn video (BWV). In many agencies, opposition to BWV cameras was the initial reaction to requests that police wear them (Ariel, Farrar, & Sutherland, 2014; Drover & Ariel, 2015). Once they were assured that there was no hidden agenda to increase disciplinary actions based on BWV evidence, many police did not want to go anywhere without their cameras on. One Oregon officer said in 2014 that her body-cam was as essential to her work as her gun.

The rapid embrace of something that was widely rejected on first hearing follows a pattern more common than just resistance to change. The Nobel Prize-winning “prospect theory” (Kahneman & Tversky, 1979) even predicts the rejection of an idea if it is framed as a loss, but acceptance of an idea if it is framed as way to *avoid* a loss. This general theory has been widely tested and confirmed across a wide range of experiments (Kahneman, 2011).

Once the initial emotional barrier is breached, there is a further obstacle that EBP faces: the inherent complexity of understanding and applying good evidence. When “evidence” becomes fashionable, skilled officials may use the word promiscuously, asserting what the evidence says without ever citing their sources. That is exactly what proponents of EBP must challenge on a daily basis, unless a “total evidenced” culture of policing makes clear from the outset that all evidence is not created equal. As management professor Denise Rousseau told the Academy of Management (Rousseau, 2006, p. 258):

Proponents [of evidence-based management] are skeptical about experience, wisdom, or personal credentials as a basis for asserting what works. The question is “What is the evidence?”—not “Who says so?” (Sherman, 2002, p. 221). The answer, as the criminologist Lawrence W. Sherman indicates, can be

graded from weak to strong, based on rules of scientific inference, where before-and-after comparisons are stronger than simultaneous correlations—randomized, controlled tests stronger than longitudinal cohort analyses. Strong evidence trumps weak, irrespective of how charismatic the evidence’s presenter is. Sherman sums it up: “We are all entitled to our own opinions, but not to our own facts” (Sherman, 2002, p. 223).

It is clear that EBP is far more challenging and wide-ranging to implement than a specific technology like BWV cameras. The complexity of organizational learning is enormous. It is hard enough to teach one person to use the key concepts of causal inference, statistical analysis, systematic reviews of the literature, internal versus external validity, and many other tools. It is geometrically more difficult to get most decision makers in a police agency to master these concepts together, so that they are all on the proverbial “same page.” Little progress toward that goal has been made by taking small steps. Perhaps the next hypothesis to try is what Gladwell (2000) and others call a “tipping point:” the moment when suddenly, everything changes at once. The hypothesis would be that the most effective path to totally evidenced policing would be a 360-degree program of transformation, rather than reviewing—or even conducting—one study at a time.

## **Tipping Points in Organizational Change: Two British Health Policies**

The original idea of a tipping point is far removed from planned change. White flight from newly integrated neighborhoods; rapid adoption of new clothing styles; sudden swings in political party preferences; these and other examples have been used to describe tipping points. Many accounts offer no clue as to how a tipping point was started. The moment can be identified when the adoption “goes viral,” but the process may remain a mystery. What does happen, by definition, is that a vast proportion of decision makers change their minds simultaneously.

For the early adopters of EBP, the question is how to make that happen. The evidence may only rarely “speak for itself.” Whether it is accepted may depend on *who* speaks for it, whether it is seen as *evolution* or *revolution*, and how much external pressure there is to do something immediately to solve a pressing problem. All three of these points can be illustrated by a brief digression into 19th-century health policies in Britain, one in the Royal Navy and one as a classic case of evidence-based public health. Neither of these cases changed *all* decision making in a profession or organization. It was hard enough to change a decision on one big policy that was killing people. But the fact that the policy was changed by evidence was, indeed, revolutionary—and perhaps one of repeated tipping points of evidence moving from theory-only-based decision making to evidence plus theory-based decisions.

### **Three Centuries of Antiscorvy Policy**

This first example shows how a craft may develop a good policy, but then abandon it because it lacks the continuing support of good evidence. The craft was the British maritime occupations. The policy was consuming ascorbic acid to prevent the fatal disease of scurvy on long voyages. For over 40 years after 1744 when good evidence showed the policy was effective, the Navy refused to adopt it. The process by which that changed can illustrate a classic tipping point for evidence on one big practice—if not all of practices at once.

In the early 1600s, the first long voyages to India from Britain were threatened with *scurvy*: a disease that developed on long trips, causing sailors’ gums to bleed, teeth to fall out, bones to separate, and sailors to lose their strength. In 1601, Sir James Lancaster initiated British commerce with Indonesia by spending money on daily doses of lemon juice for all sailors to prevent the dreaded scurvy. Dutch traders on the same route even bought citrus fruit plantations in the East of Africa for

restocking ships on their way to and from Europe. Spanish and French ships adopted the lemon juice policy, both suffered widespread scurvy and failed to establish trade routes (Bown, 2003, chapter 4).

For three decades, lemon juice prevented scurvy on hundreds of long British trips, until someone at the East India Company decided to cut the budget. Lemon juice was expensive; sailors disliked the taste. Diluting it with more water seemed like a good idea. But with too little lemon juice to prevent the disease, scurvy came back with a vengeance. At that point, some officials pronounced lemon juice to be a failure. They switched to other remedies that were less expensive—but equally ineffective.

After 90% of British sailors died of scurvy on Admiral Anson's long combat expedition against the Spanish Navy ending in 1744, a ship's surgeon named James Lind conducted one of the first world's first controlled experiments with humans. In 1747, Lind systematically compared six different treatments for sailors with scurvy, finding only one that worked, that is, a compound similar to lemon juice. He did not know *why* it worked, but he knew that it *did* work. (In the 1930s, Cambridge University scientists isolated Vitamin C, or ascorbic acid, the lack of which was soon identified as the cause of scurvy, but the treatment worked for two centuries before anyone knew why.)

Lind soon retired from the U.K. Navy and published a comprehensive treatise on his results, as well as a very systematic review of other evidence on scurvy prevention. Despite his powerful (for its day) presentation of evidence, he could not persuade the British Navy to administer citrus juice to all sailors on long voyages (Bown, 2003, chapter 5).

The irony here is that the *craft* of sailing had once known that citrus juice prevented scurvy. But that knowledge was forgotten. Not just once, but several times. When a ship's surgeon with 10 years before the mast developed strong research evidence to show what worked, the craft of sailing ignored it. Not for over 40 years was the evidence-based solution to the scurvy problem accepted, well after Dr. Lind was dead. Today, the *science* of naval and merchant marine *professions* accepts the evidence for preventing scurvy, and the disease is almost unknown in the first world. But where the evidence is not known, it can and does reappear regularly (Bown, 2003).

Historians suggest that a source of resistance to Lind's evidence was its threat to overthrow an entire way of thinking about illness. This "paradigm" of cause and effect was as old as the ancient Greeks, holding that all diseases came from four "humours" in the body. Theories of which diseases were caused by which humours led to equally powerful doctrines about what kind of treatments should work. Because lemon juice did not fit that doctrine of treatment theory, the juice idea had to be rejected. A similar problem confronted Galileo when his evidence of the earth rotating around the sun collided with a doctrine that the sun rotated around the earth.

How, then, did the British Navy finally adopt the policy supported by James Lind's experimental evidence? No one can answer that question with certainty. The explanation of any one event is by nature untestable, and testability (or falsifiability) of hypotheses is a hallmark of science (Popper, 1959/2014). But there are three conditions we can identify in that decision—conditions which may have much broader external validity as conditions of tipping points for evidence. The conditions we hypothesize are as follows:

- (1) having a highly respected and *powerful advocate* for the evidence;
- (2) using an *evolutionary, not revolutionary*, approach (Innes, 2013) to overturn what I call a "*smothering paradigm*" that rejects evidence contrary to the paradigm; and
- (3) responding to an *urgent external demand*.

In the scurvy case, the *powerful advocate* was Sir Gilbert Blane, an aristocratic Fellow of the Royal Society who had many friends in high places. He used an *evolutionary approach* to introducing citrus juice by adding it to the dominant (and less expensive) policy of giving sailors "wort of malt," a liquid extracted from the mashing process during the brewing of beer that could be dried and mixed with water on long voyages. Today we know that citrus juice works; wort of malt doesn't.

But replacing wort with lemon juice would have been too radical to get approval from the Admiralty. Because Captain James Cook had used *both* malt and juice on his long Pacific voyage to Australia and elsewhere, with no problems of scurvy, the precedent for Blane's recommendation was established.

The smothering paradigm in this case was the "four humours" theory of classical medicine, which the malt fitted but citrus juice did not. By using the evolutionary approach at sea in the 1780s, Blane did not have to call attention to his overthrowing of a long-reigning paradigm that rejected any evidence which did not fit the theory. Nor did he have to confront Sir John Pringle, the President of the Royal Society and defender of both malt and the smothering paradigm that supported it. But after Pringle's death in 1782 and Blane's appointment to the Navy's top medical board in 1795, overthrow it Blane did—along with other medical innovators of the era, such as Edward Jenner, the discoverer of a vaccine against smallpox in 1798, whose evidence also contradicted the four humors.

The *pressing external demand* in the scurvy case was the developing war France had declared against England in 1793. A new "trial" (with no control group) of lemon juice for the first 2 years of the war had produced a scurvy-free major voyage. With that new evidence, and a new seat as a commissioner to the Naval sick and Hurt Board, Blane obtained a victory for evidence on March 25, 1795. From that day onward, all British Navy ships administered citric juice daily to all sailors. The decision was taken "only" 48 years after James Lind conducted his controlled trial of citrus juice showing its effectiveness against scurvy.

### *Nine Days of Cholera*

In 1854, a published doctor named John Snow analyzed a cholera epidemic in London that killed 616 people in 9 days. He would soon become a *powerful advocate* for an evidence-based policy decision. He was already a published skeptic of the *smothering paradigm* supported by scientific pioneer Florence Nightingale and other medical leaders: the "miasma" theory that diseases were caused by bad smells (Johnson, 2006). Germ theory had not yet been proposed, and Snow did not even have a theory of his own. But he saw much evidence that smells did not cause disease and published a treatise against miasma in 1849. When cholera broke out, he traced its victims to the common denominator of having consumed water from a single well. On September 7, 1854, he used both his local standing and his credentials as a published researcher—plus a mass of research evidence on the daily cholera deaths—to persuade the local council to close that well.

The epidemic stopped, but the tipping point tipped back. Snow published his evidence with compelling maps of deaths from disease. Yet not long after the epidemic subsided, the well was reopened. Some decades were still needed to "tip over" the smothering paradigm—and keep it tipped. But the *urgent need* to stop hundreds of deaths daily unfroze the policy for at least a short time. The potential to reopen the well after the urgent need stopped may have made the decision more evolutionary than revolutionary. Thus, all three conditions were present in both the cases of scurvy and of cholera.

These two cases, while suggestive, offer only weak evidence for the three conditions we have considered. They remain mere hypotheses, not evidence-based conclusions. But even as hypotheses, they can be useful in theorizing about creating a tipping point for "total evidence" in a police agency. The key issue in policing, as in medicine, may be finding an evolutionary approach to a smothering paradigm.

## **The Police Craft as a Smothering Paradigm**

If there is a smothering paradigm holding back EBP, despite urgent external demands for change, it is the doctrine that a craft of problem solving cannot benefit from science. This paradigm holds



that the best way to make decisions is to learn from experience, and the more the better. The corollary is that statistical analysis of even large numbers of cases will fail to identify the particular details of a given situation, thus misleading rather than improving decisions; police would be better off without looking for such evidence.

This prevailing paradigm of “no research need apply” is not only espoused by practitioners; it has substantial backing in academic circles as well. The preference for intuition over analysis is central to a substantial intellectual split in the psychological study of decision making. On one side stands adherents of the Nobel Prize-winning (and evidence based) decision-making psychologist Daniel Kahneman. On the other side stand adherents of the human factors psychologist Gary Klein. The latter group has published substantial research on the merits of “naturalistic decision making” (NDM) with recognition-primed decisions.

As Kahneman (2011) points out, the major premises of the NDM view are false for many kinds of decisions. First, NDM assumes that the consequences of a decision will become immediately apparent to the decision maker, without taking long-term effects into the causal model. With evidence that police arrest decisions can have significant effects 23 years later (Sherman & Harris, 2014), for example, it is hard to see how any police officer can learn the effects of arrest by direct observation. Second, NDM assumes that the environment and context of the decisions remain stable and equally so across occupations and over time. While stable environments may be found more often in some occupations (such as firefighting) than others (such as medicine), that premise is hard to accept in the case of policing different communities with different views of police and law.

The straw man of the NDM police craft paradigm is that EBP gives no credence to experience. Nothing could be further from the truth. EBP is about *adding* evidence to policing, not about *replacing* experience. The original statement of evidence-based medicine described a *blending* of experience with statistical evidence, not a substitution of experience.

It is the addition of EBP to police experience that makes the total evidence approach truly *evolutionary*, not revolutionary. Like a smart phone that speeds access to information, EBP is a way of speeding access to experience. A good data analysis is nothing more or less than the processing of many years of experience, sometimes more than any one police officer can ever have as one person.

The question of whether domestic violence cases escalate in seriousness over time, for example, has recently been addressed by analyzing 36,000 police callouts (Bland & Ariel, 2015). If a police officer answered three domestic calls a day for the average of 200 working days per year, it would take 60 years to experience that many calls: two or three entire police careers to experience 36,000 domestics. More important, it would be very difficult to keep mental track of what percentage of couples had any repeat calls (24%), which of those ever came to serious harm (about 2%), and what distinguished those who did from those who did not. It is no insult to experience to claim that computers can keep track of more information than humans; that is why the world has welcomed computers to make the benefits of modern life possible.

The fact that we all use computers to find information does not mean the computers make the final decisions. In policing, by law, people—the police—must make the decisions, based on relevant information, even if that information includes an evidence-based recommendation. Even in medical diagnoses, with advanced computerized artificial intelligence programming all the symptoms and treatment evidence (targeting and testing), a human being is still needed to interpret, accept, or reject a treatment recommendation (Butler, 2012). Yet few readers may prefer to have their own doctors forego the guidance of a vast, Google-like computer search just so the doctor can rely solely on intuitions derived from clinical experience.

The “smothering” claim of the “police craft” paradigm is that evidence has nothing to offer police. One common question in discussing EBP with police officials is “What’s in it for the police?” The answer is, of course, “a lot.” Yet even framing the question that way implies that

someone has said the opposite: “nothing.” The U.K. College of Policing, tasked with promoting evidence of “what works” in policing, often hears the skeptical question put in a different way: “How is this evidence going to help the constable on the midnight shift next Saturday in Brixton?”

The answers to such questions are manifold. EBP can reduce violence in police–citizen encounters (Ariel et al., 2014), increase public support for what police do, help to win praise for reducing crime or managing disorder, and generally improve respect for policing as a complex profession. But no profession would reject experience—and achievement—as a qualification for promotions or increased compensation. All that EBP suggests is that experience should include the application of complex evidence in a “slow thinking” mode about any major decision (Kahneman, 2011).

A subtext of the police craft paradigm is opposition to professionalization as a police “brand.” Some EBP advocates have indeed cited professionalism as a major benefit of creating and applying more evidence for police decisions (Sherman, 2011). But the same advocates are happy to jettison the vision of professionalization, if that is necessary to make EBP *evolutionary*, not *revolutionary*. Avoiding conflict over the symbolically loaded idea of a police profession may be the best way to bring evidence gradually into policing, while suddenly overthrowing the “evidence-is-irrelevant” paradigm—much like *adding* citrus juice to malt rather than substituting it.

When the “profession” of medicine resisted evidence-based cures for both scurvy and cholera, no one questioned its legal status as a profession. Yet at the time, medicine acted more like a modern craft than what a profession looks like today. Doctors in that era learned medicine largely by apprenticeship and experience. Few doctors ever attended universities. The few who did were not taught scientific testing (at least until the model for Sherlock Holmes, Edinburgh medical professor Joseph Bell, 1837–1911). What doctors were taught was *doctrine*—truths accepted based on authority, not evidence—just as theology students were taught, only with different doctrines. Both medical and theological students were taught to accept doctrine based on authority, not evidence. That is just as it should be for doctors where the law is concerned, but not where diagnosis and treatment are at stake. The same is true of policing.

The unique challenge policing faces is to marry two opposing kinds of doctrine. One doctrine must be based solely on the authority of a democratic state: the doctrine of law. The other doctrine must be based solely on the doctrine of empirical science methodologies: the testing of hypotheses using reliable measures. There is no substantive conflict between the law and science. But the combination of legal and scientific thinking can be jarring. That is why the first step in transforming a police agency toward becoming “totally evidenced” is to affirm the law as the source of police authority. The second step, however, is to affirm research evidence as the source of police effectiveness, guiding discretionary decisions within the wide boundaries defined by law.

How can that be done? The answer may depend on where you begin: frozen or unfrozen.

## Unfreezing for Change

Like medical practices in the early days of medical science, police practices may be more changeable in the face of *strong external demands*. Police agencies seem far more open to change when they are under external attack than when they are not. If they have a *powerful advocate* for EBP—like the chief executive or elected officials—then the external demands can be used to compel consideration of the EBP framework. It may not be possible for the advocates to manufacture such demands. But they occur with fairly high frequency in most police agencies. When they happen, they create a window of opportunity for a wide-ranging discussion of the way a police agency “does business”—or makes decisions. It is in such circumstances that an EBP advocate may gain greater influence, as the best (if not only) option for meeting the external demand.

“Critical events” such as riots, scandals, or deep budget cuts (Wilson, 1968) can provide effects that Lewin (1946) described as “unfreezing” a set of organizational practices. Those events call into



question many things, if not everything, police do. They may also lead to a rearranging of the “dominant coalition” of internal and external actors who control police policy (Sherman, 1978). If a police agency is already unfrozen, the plan offered in this article could have a chance to be adopted. But if a police agency sees no need or external pressure to change, then it may be best for powerful advocates to bide their time—until the pressure arrives.

When unfreezing does occur, there may be more demands for immediate action than any early adopter has readily at hand. The adopters may have read about some police experiments or attended some conferences. Most will not have considered the question of total transformation of a police agency. Yet with the following ideas to try, it may not be impossible to make that transformation happen. It is all the more likely if what has already happened includes some or all of the following:

- There is no poured-in-concrete commitment to continue a wide range of policies, no matter what new evidence may show.
- There is no xenophobic refusal to consider ideas or research findings that were “not invented here.”

Instead,

- There is a strong commitment to doing *everything* better, with continuous improvements.
- There is a sense of excitement that research can help to solve problems.
- There is a sense of urgency to start doing everything at once.

These conditions seem generally favorable to transforming a police agency. But they may also have risks.

The biggest risk is *high expectations for immediate results* and visible evidence that EBP “works.” These expectations vary in their specific form, but the biggest risk is expecting EBP to tell the agency how to solve every problem. Even if all police personnel memorized the 100 discoveries of EBP (Sherman, 2015), that knowledge would just scratch the surface of what any police agency needs to know to make all its policing evidence based. It may well be possible to undertake one highly visible project with clear results, such as the homicide prevention plan in Trinidad (Sherman et al., 2014). But other first projects have not fared as well, nor gained the results that were hoped for.

A second risk is *jumping to conclusions*. In the absence of new evidence of what *does* work, any evidence of what does *not* work creates an uneasiness that some will resolve by jumping to conclusions. If told that arrest for domestic violence causes premature death of victims due to diseases, not violence (Sherman & Harris, 2014), for example, some may conclude that arrests for minor domestic violence must stop immediately. Yet the evidence for that conclusion, so far, comes from only one experiment. The need for replications of that experiment with the agency’s own cases should be the first conclusion. Speedy changes in policy could be justified, but generally by a process of broader consultation and analysis of local evidence. Research done in other agencies can be a guide to new ideas. Its best use, however, may be to help drive a local research agenda.

Similarly, the finding of one analysis that the “Koper Curve” optimum for policing hot spots is 15-min patrols (Koper, 1995) may suggest a universal law of optimum patrol time. But no such law exists, even though many have jumped to that conclusion. Rather, this important finding should be tested against a similar analysis in tens or hundreds of police agencies. The fact that the Koper Curve has not been replicated in over two decades since its publication makes this point even stronger.

No agency can become evidence based by merely reading other agencies’ evidence. The quest for knowledge about what works *right here* may be the strongest value for transforming the culture of a police agency into evidence-based thinking. That value can be translated into a large portfolio of

local research projects. At last count, for example, the West Midlands police had over 100 registered research projects, many (but not all) in partnership with a range of universities.

Yet an emphasis on innovation may create a third risk of *premature experimentation*. Change leaders may be eager to launch their own “experiments”—a word with many meanings. The most important caveat is that merely “trying” an innovation is not much of an experiment. To produce strong and lasting evidence of what works, an experiment requires specific methods and research designs. The default option will be to “Try” new policies with a before-and-after “Level 2” (Sherman et al., 1998) analysis to decide whether they “work.” There is nothing wrong with that, but EBP needs more conclusive evidence. Nothing would corrupt the name of EBP faster than 100 new “experiments” that lack control groups or fair comparisons. Even worse, these innovations may *appear* to work and get widely adopted, but they could actually be ineffective or even counterproductive (just as in the case of treating scurvy with malt). A Maoist, bottom-up view of “let a thousand flowers bloom” without scientific standards or peer review could engage great effort and enthusiasm, but with little benefit. The prospect of engaging hundreds or thousands of people in bottom-up EBP is nonetheless inspiring and powerful, as long as their work meets minimal standards of reliability.

The challenge, then, is to generate enthusiasm coupled with high standards of research.

## Educating the Culture

A broader and deeper understanding of science throughout a police agency can begin with the scientific requirement for hypothesis testing. That challenge stands in sharp contrast to the legal advocacy culture of selective case building: evidence-based conclusions rather than conclusion-based evidence. The idea of neutrality may be hard to absorb, even among people who support EBP. One local police leader of a randomized trial, for example, suppressed and rewrote a Cambridge report he had commissioned on the trial that showed mixed results—by excluding the negative evidence and only “highlighting the good contributions” of the program he tested with Cambridge assistance.

Nothing could be more important than for the police culture to learn this lesson: in science, we must let chips fall where they may. The crucible for this value is reacting to research findings that contradict national policy or even law. Even if evidence is not altered or suppressed, the smothering paradigm of “national policy” may cause the evidence to be ignored. The best vaccine for this problem is to educate the culture of a police agency to understand and appreciate science.

Education may increase the confidence of police officers in using knowledge of what works. Ideas as unfamiliar as a “control group” or a “Crime Harm Index” (Sherman, 2013) may need to become part of the working language of a police agency to make the culture support EBP. Education may thus become the foundation of a larger edifice of strategic actions to reinforce the parallel reliance on science, law, and police experience with local contexts and (small “p”) politics. But education alone is unlikely to create a tipping point. It needs to be accompanied by other ways of engaging police with the process of science, so that they can enjoy *learning by doing*.

## Ten Ideas for Guiding a Tipping Point

When “unfreezing for change” occurs, it may be useful to have a multi-step plan in hand, ready when its time has come. The best plan for each agency may vary somewhat—or even a lot—from what is presented here. The following list of 10 ideas is based on experience or planning with a range of “unfrozen” police agencies around the world. But there is minimal evidence on how well these ideas work in policing; it is impossible to say how important each one may be—or whether all are necessary. What they offer is a breadth of engagement of all parts of a police agency in a simultaneous—but evolutionary—transformation. The 10-point plan below may be untested in policing, but

all 10 points have precedents elsewhere in science and other professions. What follows the list is a short elaboration on each idea.

1. Creating an EBP *unit* (EBPU) to serve as a resource for the entire agency, guiding, and compiling research results, and coordinating the next nine steps.
2. Offering a comprehensive *EBP training program* of “master classes,” recruit and in-service training, in both group discussions and online, with regular updates on new research in the agency and around the globe, focused initially on the 100 major discoveries in EBP.
3. Sending a selected “power few” (Sherman, 2007) leaders or analysts to complete a *master’s degree-level program* each year, including a research thesis, at a leading university, who can then help to train others in the agency as well as to “train the trainers,” and conduct their own research projects as examples.
4. Creating a permanent *Central Registry of EBP Projects* undertaken in the police agency, with direct links to the detailed reports of the evidence the projects produce.
5. Announcing an *open invitation for projects*—some already designed by experts for police officers to lead the project in the field, as well as many projects as agency staff want to propose, register, and undertake, all with advance approvals based on strong methods and due diligence for potential conflicts across projects.
6. Establishing a *peer-review process* for commenting on and improving all protocols for new EBP projects prior to internal approval, registration, and publication.
7. Retaining “*embedded*” *PhD-level criminologists* to review protocols and project reports, as well as to support education and training in EBP.
8. Maintaining a *public EBP website* to post, update, and retain the growing local and global evidence about targeting, testing, and tracking police resources in the agency.
9. Creating “*evidence cops*” in the EBPU to review selected police practices to see how well they accord with external and internal evidence.
10. Offering *annual prizes* for the named authors of the best EBP projects.

The vision of this plan is clearly to decentralize EBP, so that it would be driven by “grass roots” interest to be bottom-up (or middle-up) rather than top-down (Sherman, 2009). Like science itself, it would rely on individual inspiration and enterprise to ask and answer research questions on behalf of the entire police community. It would allow EBP to run like a running coach alongside the policing performance of an agency, providing valuable commentary and important suggestions about improving techniques for better results. But it would allow everyone to help lay more bricks onto the walls of evidence, comprising the structure of knowledge in which police decision making will be located.

### Creating an EBPU

A small, power few staff of highly productive trainers and coaches can be assigned to a headquarters EBPU that serves the entire police agency with both resources and regulation. One precedent for an EBPU is found in the 6,000+ officer Western Australia Police. Large police agencies often debate whether they have too many specialist units, but this kind of unit is fundamentally different: It is designed to change the way all members of the police agency think about their jobs. A small group of evangelical, but “cool,” people can do that. Their core skills would be telling stories, debating big issues like the craft of policing and how evidence can help, and explaining the core concepts of prediction and causal inference. Their productivity can be measured in terms of their accomplishment of the other nine steps. If there is a problem in locating them organizationally, the easiest path may be assigning them to the training division (police academy).

### *Offering a Comprehensive EBP Training Program*

A program of recruit and inservice training about EBP for currently serving officers would help to change the decision-making culture of a police agency. This can be accomplished in classrooms, in person with the right kind of teachers, or individually at police stations or at home by such means as an online video course (e.g., Sherman, 2015) for as many staff as can be afforded and who may wish to take it.

Whether anyone should be compelled to attend in the early days deserves careful consideration. An experiment comparing voluntary versus compulsory attendance at EBP training is one possibility. The question is whether there would be greater effectiveness from training people who want to learn, without distraction from those who would rather not be present. Yet that might also backfire by splitting the police agency into two camps: pro-EBP and anti-EBP. This is a key decision in how to implement training.

There may be less concern about mandatory teaching of EBP in recruit training for all new officer and staff recruits. Nothing could show an agency's commitment to EBP more powerfully than by introducing it into the recruit curriculum. As Mazerolle (2015) has suggested, the idea of evidence could work best not as a stand-alone, "add-on" to a legal and operational curriculum. Rather, she proposes that it be woven throughout all dimensions of the curriculum, from firearms training to domestic violence policy. Teaching what the evidence shows on all these issues would symbolize the task of promoting compliance with law as a behavioral skill, equal in importance to technicalities of law and prosecution. Once a decision to introduce EBP at that level is made, detailed planning would be needed to decide how much and what kind of training to offer, and how to integrate it with continuing education by in-service training. It is important that both senior staff and recruits come quickly to equality in their levels of knowledge about EBP.

For the people (of all ranks) who become project leaders and award winners, a continuing series of master classes could be offered by EBP experts from other agencies, or even with presentations by the agency project leaders themselves.

### *Funding a Few Part-Time Master's Degree Students*

A number of agencies that have been pushed by powerful advocates in the direction of total evidence have had a critical mass of graduates of the Cambridge University Police Executive Programme, a part-time master's degree. The advocates have included chief superintendent Alex Murray of the West Midlands Police, elected the first chair of the Society of Evidence-Based Policing in 2010. Other examples include Stephen Williams, commissioner of police in Trinidad and Tobago; Sara Thornton, chief constable of the Thames Valley Police and chair of the National Police Chiefs' Council in England and Wales; Simon Bailey, chief constable of Norfolk; Stephen Brown, deputy commissioner of the Western Australia police. Increasingly, however, these leaders select younger officers at lower ranks, investing for more remaining years in the police careers of these students.

The point of graduate education is not to claim any magic for the Cambridge master's degree, but to encourage other universities to offer similar programs focused on EBP. While a number of police executive master's degree programs are offered around the world, only one appears to be focused tightly on the tools and knowledge of EBP—so far. A larger and more geographically diverse set of degree programs would help support this step.

Once leaders or analysts complete a part-time master's degree-level program at a leading research university each year, including a research thesis, they can then help to train others in the agency. They can "train the trainers," and conduct their own research projects as examples. They can also staff the EBPU at a high level of expertise. Several police agencies have sent as many as four

students to Cambridge in one cohort, and one agency is considering far larger numbers than that. Their aim is to create a critical mass of professionals who share the same operational framework for implementing EBP. More evidence is needed on whether there is a threshold of critical mass, where it may be (in terms of numbers), and whether it depends on how the graduates are deployed when they complete the master's degree program.

### *Creating a Central Registry of EBP Projects*

A central registry for all EBP projects undertaken in a police agency could monitor both present and past projects, with direct links to the detailed reports of the evidence that each projects produces. This would deploy one of the great tools in science for avoiding selective reporting of results. Most medical journals, for example, now require advance registration for all efforts to produce new evidence, without which they will refuse to publish any results from an RCT. The top priority of the EBPU could be to help anyone and everyone in the police agency to register a brief research design protocol in advance of doing the research. The EBPU would then track the registered projects for sending in results. This registry would be organized around the three "Ts," the description of which (Sherman, 2013) could stimulate a wide range of projects:

*Targeting* analyses of the distributions of frequency and harm levels of crimes or problems across micro-places, victims, offenders, times of day, criminal networks, or any other unit of analysis staff may identify. There should be no one way to do this, as long as each protocol is transparent about the:

- definition of the unit of analysis;
- source of data for every unit in the analysis;
- time period or area to be included;
- comprehensive analysis of all units; and
- research questions to be addressed in the analysis

*Testing* of current or new policing practices with a control group, with a more detailed protocol for RCTs and a reduced version of that protocol for Level 3 or 4 testing designs, including:

- the unit of analysis;
- the entire sample and how it will be selected;
- the dependent variable (outcome measure) to be compared between the two or more police practices in the test comparison;
- how some targeted units in the sample will be selected to receive a police practice being tested;
- how other targeted units will be selected as clear and fair (very similar) comparison group receiving some other policing practice; and
- what time frame is expected for the test.

*Tracking* studies of any police practice or activity, to determine levels of delivery of the services to any standard requested. This can include anything from "response time" studies to minutes of patrol time in hot spots. It can also include any correlations between tracked police activities and changes in crime or harm rates related to those activities, such as the Trinidad patrol minutes versus homicide graphs. The protocol filed in advance for a tracking study could be the same as for targeting studies:

- definition of the unit of analysis;
- source of data for every unit in the analysis;
- time period or area to be included;

- comprehensive analysis of all units; and
- research questions to be addressed in the analysis.

*Triple-T projects.* A fourth category for advance registration with the EBPU would be the highest and best use of EBP: a simultaneous use of all three Ts to tackle a particular problem in a particular place, such as domestic violence in an entire police district, anti-social behavior in one night club zone, or nondomestic violence inside dwellings housing unrelated adults (Bowden & Barnes, 2015). These would always be command-level projects (although at different levels of command), in which the protocol identifies:

- the specific objective(s) or focus of the project;
- the commanding officer leading the targeting–testing–tracking project;
- the units of analysis for targeting;
- the analysts providing the targeting analyses;
- the data source for measuring the crime or harm targeted;
- the police practices to be employed or tested; and
- the data source for tracking those police practices.

### *Extending an Open Invitation for EBP Projects*

EBP will flourish with as many projects as agency staff want to propose, register, and undertake, with advance approvals based on strong methods and due diligence for potential conflicts across projects. The higher the proportion of police officers who have worked on a research project, the higher the understanding and acceptance of EBP may become—right across the police agency.

There are two ways to achieve a high level of participation very quickly. One is to have the EBPU work with experts to design a “blueprint” for a research project. The protocol for the research would say exactly how it should be done: police actions, data recording, and data submission for independent analysis. Then volunteers can be solicited from a wide range of locations.

For example, consider a design in which police officers hand out chocolate to groups of intoxicated people on the street after closing hours for drinking establishments. The purpose of the chocolate is to raise their blood sugar so they will not be so irritable that they will get into fights (Sherman, 2013). Random assignment would require recording the time and place when such crowds are identified, with the decision to distribute chocolate made at the beginning of each shift by accessing a computer program on a secure internet site. Data on violent crime in a defined area would then be collected on all the nights when crowds were identified, comparing nights with *documented* chocolate handouts to nights with no chocolate. Once the data are compiled, independent analysts can say whether the chocolate reduced violence or fights. The officer implementing the experiment would be the first author, the analyst the second. The report would be peer reviewed, and if approved, published and added to the websites (see subsequently).

Or consider a design in which the head of a large traffic unit wishes to randomly assign police to wear reflective sunglasses (or not) when they stop a car and speak to the driver. In a large police agency with hundreds of officers on traffic duty, an experiment with 10,000 traffic stops could be done in a month or two. The drivers’ license numbers could then be entered into the data base for this RCT, with 2-year follow-up of whether the drivers in each condition filed complaints against the traffic officer or even were reticketed for speeding or other violations. The hypothesis may not strike some readers as very important. But the question arises every day around the planet, millions of times: Should the police officer take off sunglasses before speaking to a traffic violation suspect?



This kind of design if sponsored by the commander of traffic—rather than external researchers—could inspire a range of experiments in traffic enforcement. Some of them may even save lives.

The second major way to encourage EBP projects is to extend an “open invitation.” This would allow officers to identify their own projects across the Triple-T, as detailed earlier. By establishing the registration requirement, the EBPU can track the growth of EBP projects across the agency. Until such time as there may be too many projects, it would be reasonable to encourage as much engagement as possible. Requiring that all projects have authors, which implies that a report must be written with authors taking responsibility, should further personalize their engagement. Suggesting that authorship credit be widely awarded should also bring in more commitment from constables involved in operational roles for EBP. A set of authorship guidelines and categories established by EBPU could help to clarify that process.

This strategy for stimulating EBP projects is probably higher risk than designing projects for volunteers to carry out. Yet in both predesigned and open-invitation research, the need for strong quality control can be met in a standard scientific way.

### *Creating a Peer-Review Process*

The wide open invitation for initiating EBP projects can be regulated for quality control by a bastion of science: the process of peer review. By establishing a peer-review process that includes professionals with advanced postgraduate training in EBP, the EBPU can produce comments on and improvement of all registered EBP protocols before their registration is approved. This should help to raise quality from the outset. In addition, external experts could be consulted on especially large or complex projects. By retaining external expertise, while building internal expertise, a police agency will shape every EBP project from before birth to have the best chance of success in producing high-quality evidence.

It would be a great service to field officers if the EBPU could guarantee peer-review commentary on proposed project protocols within 2 weeks of submission. These comments could be provided orally by phone or in person, rather than creating an unnecessary written-record bureaucracy; only if the authors of the protocols request written feedback would the requests for revisions have to be put into writing. The level of skill and experience in developing the peer-review feedback, however, should receive strong support from embedded criminologists (see Retaining “Embedded” PhD-Level Criminologists section) with EBP experience. Peer review is potentially painful and conflict inducing. It requires teaching skill and diplomacy. Mere training in general social science is not good enough.

### *Retaining “Embedded” PhD-Level Criminologists*

The idea of “embedded” criminologists has been described in a number of settings, most recently in the Boston, MA, Police Department (Braga, 2015). A scholar experienced in EBP research could provide massive help in designing and executing research, peer-reviewing proposed protocols, and commenting on conclusions drawn from project reports. A high level of skill is essential, especially with specific experience in this type of work. It is also very important to have such expertise to support education and training in EBP, from recruits to commanders. They can be given security clearances to work with police agency data. They can be given training in the current state of police data systems, acquiring specific familiarity with agency data issues. Agencies can seek such help in a global market of experienced police researchers, many of whom could be engaged on a remote location basis. Their expertise could be applied through e-mail and Skype meetings and be supplemented by recruiting local social scientists to become more skilled in EBP research methods and questions.

Perhaps the most important product of the embedded criminologists would be to train in-house analysts. No matter how much training operational people receive in EBP, they can benefit from the advice and data-retrieval skills of analysts who have a more advanced understanding of it. A cadre of well-trained analysts in operational units can be the first stop for discussing a research protocol before it is sent to the EBPU for review, possible revision, and then registration and project launch. These analysts could be taught to use a customized toolkit for plotting statistical power curves, listing targeted unit identifiers, and creating trend lines and bar graphs for testing and tracking. These toolkits might change as the IT systems change, but the need for them could even help a police agency in its ongoing effort to design the IT to fit the needs of police decision making—including EBP analyses.

### *Maintaining a Public EBP Website*

As a 21st-century vision, it would seem natural to centre an entire EBP effort on a website. This website should arguably be open to the public, with the exception of sensitive material about a limited number of serious and organized crime targets. High-volume patterns based on large samples do not compromise any individual case, but they do provide good evidence for discussion of police resource allocation with the general public. Organizing the registries and completed reports under the three Ts would be one way for everyone to access the material. Other ways would include searches under author names, or each type of crime, or noncrime problems such as traffic accidents or noise. Regional or district-level geography could also be a search lever. The Home Page could be updated regularly, with headlines for the most recent discoveries or international journal publications of the agency's self-generated evidence.

The embedded criminologists could also work with the EBPU to review and critique previous examples of what works websites, from the United States Department of Justice ([www.crimelutions.gov](http://www.crimelutions.gov)) to the new "what works centre" website the College of Policing ([www.college.police.uk](http://www.college.police.uk)). A very different approach from those websites would limit each agency's website to its own local evidence. But it would also provide links and references other evidence. It could provide a read-only library of the original sources of the 100 top EBP discoveries and other materials. This approach would stress the names of the local agency staff who did the work to produce each report and create an incentive for staff to put their EBP projects on their CV as part of their qualifications for promotions or postretirement employment.

### *Creating Evidence Cops*

As Millenson (1997) and Sherman (1998) have described, the concept of the evidence cop is a proactive way to identify "evidence gaps." For these purposes, a gap exists when there is good research to say that professionals could be getting better results by doing something different from what they are doing. Based in the EBPU, these *evidence reviewers* (a more diplomatic name) could review selected police practices by assignment from the police executives or senior operational commanders. Their mission would be to see how well, in each case, police practices accord with external and internal evidence.

### *Offering Annual Prizes*

While the evidence on the effects of prizes is not clear, there could be great benefit from annually awarding prizes to the named authors of the best EBP projects in each of the four categories of registration. The effects of this approach may vary by local culture and might best be tested. In some places, it may encourage the best of a sports-like competitive spirit to raise the level of quality of the

work. It may also encourage more work to be done. Prizes sometimes backfire, however, and would need to be approached with wide consultation for setting criteria, selection processes, and other rules to make the process appear legitimate.

## Conclusion: Testing the Hypotheses

It is important to stress that the 10-point plan above has no specific evidence behind it. For both medicine and policing, it is a sign of maturity to say when we don't know. What we don't know is how to change police agencies overnight. Up to two centuries of tradition and culture cannot be discarded with any 10-point plan. But there can nonetheless be substantial progress made. The speed at which police agencies are raising their sights in this direction is rapidly growing. At the same time, 2014 was a year of almost unprecedented criticism of police across the North Atlantic nations. With rising external demand, the prospects for an evolutionary solution may be brighter than ever.

This article ends with an open invitation. To any police leader who even attempts this 10-point plan, we shall extend an invitation to give a full report to the annual International Conference on Evidence-Based Policing held at Cambridge. Successes and failures are equally welcome. It is the study of both kinds of outcomes that offers the shortest pathway to learning what works.

## Acknowledgments

The author wishes to thank the Regulatory Institutions Network of the Australian National University for supporting the development of this article, as well as the following people for their ideas and discussions in which much of the material emerged: Alex Murray, Heather Strang, Stephen Brown, Ian Stewart, Lorraine Mazerolle, Peter Martin, Roy Newland, Jeanette Kerr, Debbie Platz, Chris Dawson, Andrew Colvin, Sir Denis O'Connor, and Warwick Jones.

## Declaration of Conflicting Interests

The author hereby declares a potential conflict of interest with respect to the research, authorship, and/or publication of this article, insofar as he is a paid consultant and trainer for police agencies trying to adopt evidence-based policing, and the University of Cambridge Institute he directs receives tuition fees from police agencies who send their students to attend the MSt course in applied criminology and police management.

## Funding

The author disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The author received no financial support for the research, authorship, and/or publication of this article except from his salary as Wolfson Professor of Criminology at the University of Cambridge.

## References

- Ariel, B., Farrar, W. A., & Sutherland, A. (2014). The effect of police body-worn cameras on use of force and citizens' complaints against the police: A randomized controlled trial. *Journal of Quantitative Criminology*, 1–27 (Published online November 19, 2014).
- Bland, M., & Ariel, B. (2015). Targeting Escalation in Reported Domestic Abuse: Evidence From 36,000 Callouts. *International Criminal Justice Review*, 25, 30–53.
- Bowden, S., & Barnes, G. (2015). Targeting Non-Domestic Violence Inside Houses of Multi-Occupancy. *International Criminal Justice Review*, 25, 54–63.
- Braga, A. (2015). The 2014 McCord lecture of the academy of experimental criminology. *Journal of Experimental Criminology* (forthcoming).

- Bown, S. R. (2003). *Scurvy: How a surgeon, a mariner and a gentleman solved the greatest medical mystery in the age of sail*. London, England: Penguin.
- Butler, S. (2012) *Final jeopardy: The story of Watson, the computer that will transform our world*. New York, NY: Mariner Books.
- Drover, P., & Ariel, B. (2015). Leading an Experiment in Police Body-Worn Video Cameras. *International Criminal Justice Review*, 25, 80–97.
- Gladwell, M. (2000). *The tipping point*. New York, NY: Little, Brown & Co.
- Hogan-Howe, B. (2012). “Total Policing.” Lecture Delivered to the Cambridge Police Executive Programme, Institute of Criminology, University of Cambridge [Video]. Available from <http://sms.cam.ac.uk/media/1282731>
- Innes, M. (2013) *Rebooting the PC*. London, England: Policy Exchange.
- Kahneman, D. (2011). *Thinking, fast and slow*. New York, NY: Farar, Straus & Giroux.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47, 263–229.
- Koper, C. S. (1995). Just enough police presence: Reducing crime and disorderly behavior by optimizing patrol time in crime hot spots. *Justice Quarterly*, 12, 649–672.
- Kumar, S. (2015). Reducing Homicide With Hot Spots Police Patrols: A Rollout in Trinidad. Somersham, England: Cambridge Centre for Evidence-Based Policing.
- Johnson, S. (2006). *The ghost map: The story of London’s most terrifying epidemic—and how it changed science, cities, and the modern world*. New York, NY: Penguin.
- Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues*, 2, 34–46.
- Lum, C., Koper, C. S., & Telep, C. W. (2011). The evidence-based policing matrix. *Journal of Experimental Criminology*, 7, 3–26.
- Mazerolle, L. Personal Communication, University of Queensland, December 14, 2015.
- Millenson, M. (1997). *Demanding medical excellence*. Chicago, IL: University of Chicago Press.
- Morabia, A. (2006). Pierre-Charles-Alexandre Louis and the evaluation of bloodletting. *Journal of the Royal Society of Medicine*, 99, 158–160.
- Neyroud, P. (2012). (Year one Report on PhD dissertation). Institute of Criminology, University of Cambridge, Cambridge, England.
- Popper, K. (2014). *The logic of scientific discovery*. London, England: Routledge. (Original work published 1959)
- Rose, G., & Hamilton, R. A. (1970). Effects of a Juvenile Liaison scheme. *British Journal of Criminology*, 10, 2–20.
- Rousseau, D. M. (2006) Is there such a thing as “evidence-based management”? *Academy of Management Review* 31, 256–269.
- Sherman, L. (2011). “Professional Policing and Liberal Democracy” The 2011 Benjamin Franklin Medal Lecture. London: Royal Society for the Encouragement of Arts, Manufactures and Commerce London. (November 1, 2011).
- Sherman, L. W. (1978). *Scandal and reform: Controlling police corruption*. Berkeley and Los Angeles, CA: University of California Press.
- Sherman, L. W. (1998). *Evidence-based policing*. Washington, DC: The Police Foundation.
- Sherman, L. W. (2002). Evidence-based policing: Social organization of information for social control. In E. Waring & D. Weisburd (Eds.), *Crime and social organization advances in criminological theory* (Vol. 10, pp. 217–248). New Brunswick and London: Transaction Publishers.
- Sherman, L. W. (2007). The power few: experimental criminology and the reduction of harm. *Journal of Experimental Criminology*, 3(4), 299–321.
- Sherman, L. W. (2009). Evidence and liberty: The promise of experimental criminology. *Criminology and Criminal Justice*, 9, 5–28.
- Sherman, L. W. (2013). The rise of evidence-based policing: Targeting, testing, and tracking. *Crime and justice*, 42(1), 377–451.

- Sherman, L. W. (2015). *Evidence-based policing in 100 discoveries*. Somersham, England: Cambridge Centre for Evidence-Based Policing (Cambridge-ebp.net).
- Sherman, L. W., & Harris, H. M. (2014). Increased death rates of domestic violence victims from arresting vs. warning suspects in the Milwaukee Domestic Violence Experiment (MILDVE). *Journal of Experimental Criminology*, 1–20 (published online 2014).
- Sherman, L. W., Gottfredson, D. C., MacKenzie, D. L., Eck, J., Reuter, P., & Bushway, S. D. (1998). *Preventing crime: What works, what doesn't, what's promising. Research in Brief*. Washington, DC: National Institute of Justice.
- Sherman, L. W., Williams, S., Ariel, B., Strang, L. R., Wain, N., Slothower, M., & Norton, A. (2014). An integrated theory of hot spots patrol strategy implementing prevention by scaling up and feeding back. *Journal of Contemporary Criminal Justice*, 30, 95–122.
- Wilson, J. Q. (1968). *Varieties of police behavior: The management of law and order in eight communities*. Cambridge, MA: Harvard University Press.

### Author Biography

**Lawrence W. Sherman** is the Wolfson professor of criminology at the University of Cambridge, where he is also the director of the Institute of Criminology, chair of its Police Executive Programme, and the director of the Jerry Lee Centre for Experimental Criminology. He also serves as Distinguished University Professor at the University of Maryland Department of Criminology and Criminal Justice. Since his appointment as an analyst in the New York City Police Department in 1971, he has worked in partnership with police agencies in over 30 countries, designing or leading over 40 experiments in policing.