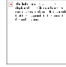

Extending the remit of evidence based policing

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Abstract:	Evidence Based Policing (EBP) is an important strand of the UK's College of Policing's Police Education Qualifications Framework (PEQF), itself a component of a professionalisation agenda. This paper argues that the two dominant approaches to EBP, experimental criminology and crime science, offer limited scope for the development of a comprehensive knowledge base for policing. Whilst both approaches share a common commitment to the values of science, each recognises their limited coverage of policing topics. The fundamental difference between them is what each considers 'best' evidence. This paper critically examines the generation of evidence by these two approaches and proposes an extension to the range of issues EBP should cover by utilising a greater plurality of methods to exploit relevant research. Widening the scope of EBP would provide a broader foundational framework for inclusion in the PEQF and offers the potential for identifying gaps in the research, constructing blocks for knowledge building, and syllabus development in higher level police education.

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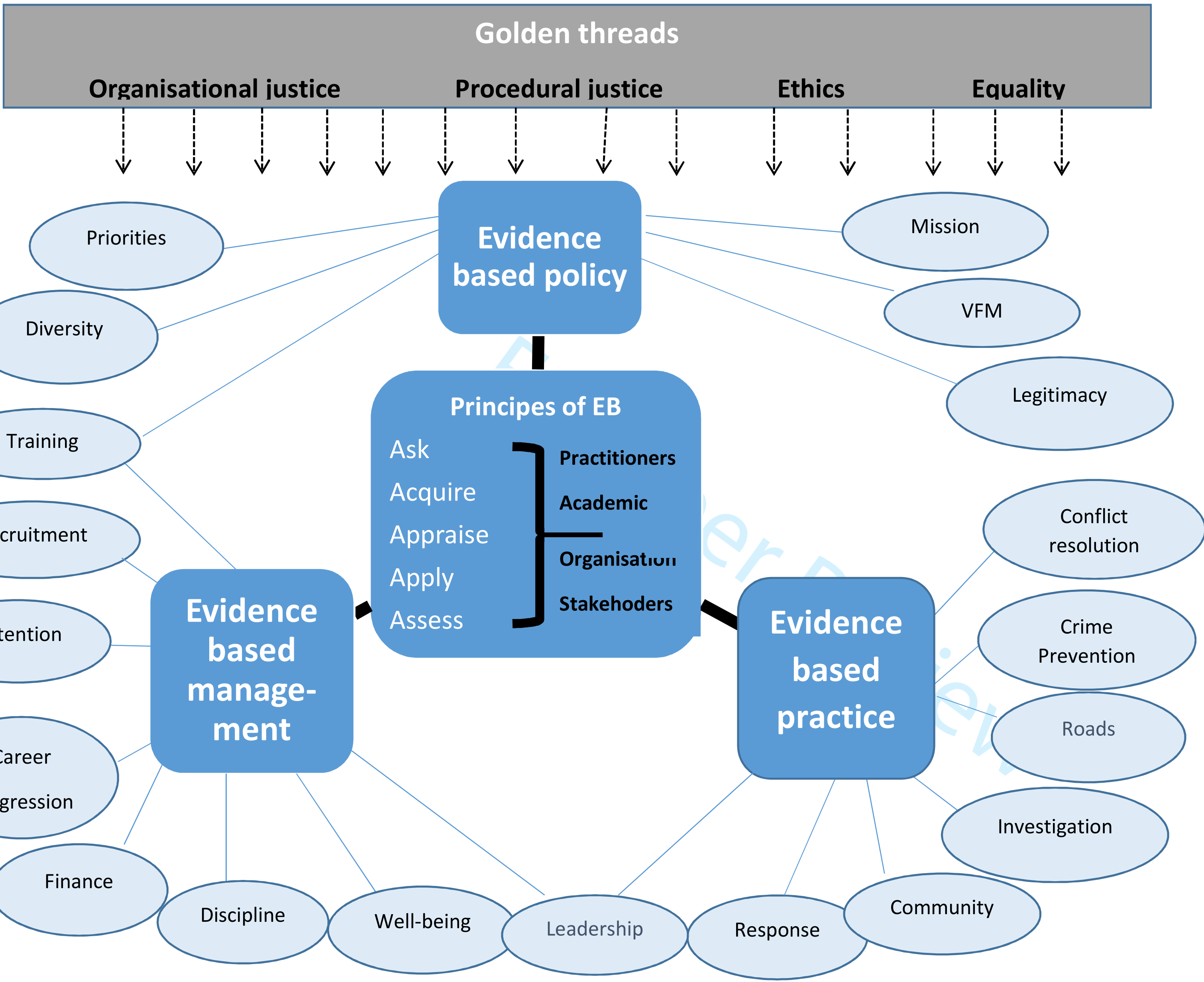

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INTRODUCTION

Professionalisation of the police dates back to the 1930s (e.g. Vollmer, 1936) and is the subject of much contemporary debate particularly in western democracies (Green and Gates, 2014; Williams and Cockcroft, forthcoming). Over the last two decades different conceptions of professionalisation have surfaced, prompted by calls from various stakeholders, including government and policy makers as well as the service itself, to instigate modernisation and reform. These include the Scanning, Analysis, Response and Assessment (SARA) model drawn from Goldstein's problem-oriented policing (Leigh, Read and Tilley, 1996), the introduction of performance management (Savage, 2007), intelligence-led policing (Ratcliffe, 2016) and community oriented policing (Sklansky, 2014). Efforts at utilising these approaches have only been partially successful not least because of a degree of resistance by the police themselves, particularly in their take up of academic research (Canter, 2000; Thacher,2008).

For Peer Review

More recently, the professionalisation agenda has been cast within the requirements of recognised professions (Green and Gates, 2014) marked by clearly articulated frameworks for practice training and educational developments within higher education institutions (Wood and Tong, 2009, Bryant et al, 2014). Included in gaining status as a profession, is the requirement to have a codified body of research evidence underpinning both practice and knowledge (Knutsson and Tompson 2017). The UK's College of Policing has been instrumental in putting into place the essential components that define the profession of policing. These include publication of a code of ethics, creating standards of practice and working towards a graduate entry programme for officers (Williams and Cockcroft, fortcoming). This marks a crucial move from vocational training for the police towards higher level education (Flanagan, 2008). The Police Qualifications Education Framework (PQEF[i]) recognises the key essentials for becoming a member of a profession, including national learning standards through the National Policing Curriculum (NPC), associated professional training topics and levels of mastery and knowledge acquisition through a variety of entry routes, all delivered in collaboration with higher education providers (Bryant et al, 2014).

An integral constituent of the PEQF is evidenced based policing (EBP). The College of Policing provides a wide ranging catch all definition as an approach creating, reviewing and

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using the best available evidence to inform police policies, practices and decisions (College of Policing What Works Centre, n.d.). The College conceptualises best available evidence to encompass carefully conducted peer reviewed research which is transparent about its methods, limitations, how any conclusions were reached and having a clear theoretical basis and context. In the absence of formal research, the College is also prepared to accept other evidence such as professional consensus and peer reviewed studies if gathered and documented in a careful and transparent way. This goes beyond how others, (c.f. Sherman 1998) have previously conceptualised EBP in a more constricted and constrained way to that which is produced through experimental designs.

The case for enlarging the definitional scope of EBP is well made and includes better understanding of modern policing problems (Knutsson and Tompson, 2017; Lum and Koper, 2017); application of the most effective solutions especially in times of financial austerity and diminishing resources (Weisburd and Neyroud, 2013); as well as helping to transform policing into a more legitimate and respected profession (Sherman, 2015). Whilst the value of EBP per se, is now widely accepted (Knutsson and Tompson, 2017), claims about what constitutes 'best' evidence remains a matter of dispute (Laycock, 2012; Lum and Kennedy, 2012; Williams and Cockcroft, forthcoming).

For Peer Review

There have been two dominant approaches to EBP, experimental criminology and crime science. As originally conceived, EBP was synonymous with experimental designs, particularly Randomised Control Trials (RCTs) drawn from a medical model of science articulated by Sherman (1998). Concerned about the disconnect between police action and outcomes, Sherman argued this could only be redressed by high quality, rigorous experimental research which provided the best evidence to underpin police decision making. Since then, EBP has been the subject of considerable debate about its methods, disciplinary boundaries, role of practitioner experience and embedding within policing, as well as its founding epistemology (see recent special edition of Policing, vol 8 no 4 for a wide-ranging discussion of these issues). Most recently, Knutsson and Tompson, (2017) argue that experimental EBP is too limiting and its methodological rigor screens out much potentially useful research evidence. They propose extending the scope of EBP in order to build a more inclusive evidence base as exemplified by the experiences of another approach to EBP, crime science, supporting the College of Policing's What Works Centre for Crime Reduction (WWCCR). Drawing its inspiration from the conceptual and empirical work of Ron Clarke

and the operational research of Leslie Wilkins, Laycock (2005) locates crime science within the theoretical traditions of routine activity theory, crime pattern analysis and rational choice theory. She sees it as outcome focused i.e. reducing crime, and multidisciplinery i.e. being as much about the biological, physical and computer sciences as it is about social science. Rather than a medical model, crime science allies itself to an engineering approach (Tilley, 2016) as being both practical and iteratively working towards solutions.

The contribution of the present paper is to look more closely at 'best' evidence and critically examine the experimental and crime science approaches. Both approaches share a commitment to using research about 'what works' to inform police decision-making and both have repositories which seek to facilitate the dissemination of reliable evidence. They differ in the methods employed and the quality thresholds used for the inclusion or exclusion of evidence considered reliable, valid and appropriate. Critically speaking, despite optimism that Sherman's experimental EBP could and would address a wide range of management, policy and practice issues (Fyfe, 2017; Neyroud, 2009) there is a concession that its coverage has been more limited than originally conceived (Lum and Koper, 2017). The experimental evidence based movement's research has zeroed in on crime control studies (Telep, 2016) and programme evaluations (Greene, 2014). Similarly limitations have been expressed about crime science. Haggarty (2007) and Punch (2015) have been critical of crime science because of its focus on crime control as if this was the only activity of the police, thereby skewing the knowledge base. The theoretical underpinnings of crime science are also potentially restrictive because they not only focus on eliminating or at least limiting crime, but are also skewed towards acquisitive crime.

For Peer Review

There are a number of arguments for extending the remit of EBP. Firstly, it is important to differentiate between the police as a social institution (taking in elements of legitimacy and trust, accountability and probity) and as a set of policing processes (including managing resources, workforce well-being as well as operational practices). Making such a distinction allows consideration of management issues as well as policy and practice and all need to be incorporated within the ambit of EBP. Secondly, theories, methods and themes can be more widely cast to address a broader range of policing tasks and extending interest in a greater variety of crimes, and include as yet critically under scrutinised managerial and organisational aspects of policing such as effectively managing culture change as well as

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extending examination to new practice issues, for example, radicalisation interventions. Thirdly, the complexity of the modern policing landscape as well as the reality of short decision-making time scales can only be aided by not limiting relevant research to the high benchmark of experimental designs and RCTs. Fourthly, the task of recognising pertinent knowledge can more readily be achieved and gaps in scholarship identified. This in turn can contribute to a research agenda addressing omissions in and building up the corpus of knowledge. Fifthly, as both crime science and the experimental approach acknowledge, critical to institutionalising EBP is the education of police officers. This means being clear about what police officers are expected to know. In the world of higher education this is often achieved by subject benchmarking. Mapping the broader evidence base can assist in curriculum development for policing degrees for students to tap into the categories of knowledge required. In the case of the UK, the PQEF includes investigative practice, protecting the vulnerable and public safety, as well as cross cutting themes such as ethics, equality and diversity. As yet the knowledge base is patchy and as Lum and Koper (2017) argue, there is a need for a fully articulated knowledge base for how otherwise, can reliable findings be communicated, implemented or taught.

For Peer Review

THE EXPERIMENTAL APPROACH

Epistemological origins

Sherman's Police Foundation lecture in 1998 was when EBP was first formally articulated. Sherman advanced the concept of evidence based policing as comprising the twin aspects of experimental research to establish what works and ongoing outcome evaluations to determine what an intervention actually achieved. He argued EBP itself was not new but was developed from and built on previous attempts at professionalisation- namely, the New York Police Department's Compstat data driven performance approach, community policing models and Goldstein's problem oriented policing, by emphasising the role of systematically conducted research studies (Sherman, 1989). Willis, Mastrofski and Weisburd (2007) suggest two contrasting theoretical orientations underpin Compstat a technical/rational and an institutional. The former is based on the notion of goal driven systems and the latter on the working of institutional hierarchies. Scott (2000) argues that problem oriented policing represented a shift from a legalistic model of assigning blame to notions of spreading out responsibility as a way of responding to problems. What was new in experimental EBP was Sherman's drawing from medicine as an exemplar of a profession based on strong scientific

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evidence with RCTs as a rigorous method to guide both practice and systemic changes in the way policing was to be done. Sherman has since elaborated his definition of EBP as:

> "a decision-making process that uses reliable, unbiased, quantitative evidence on prediction and prevention as a primary criterion for setting goals, choosing priorities, making policies, making decisions, managing compliance, assessing results and improving policies" (Sherman, 2009:21).

Sherman originally had argued that reliable evidence can only be produced only through a research programme of small scale experiments with large samples (RCTs) which can be combined into meta-analyses such that certainty can be applied to the effect sizes of an intervention. Moreover, the most reliable evidence is drawn from systematic reviews which synthesise findings from prior evaluation studies (Farrington and Petrosino, 2001:36) and which use strict criteria, based on the Maryland Scientific Scale, to include or exclude studies. The Maryland Scale provides quality criteria of the reliability of evidence for application ranging from basic correlational designs at the lower end and RCTs considered as the gold standard. In line with the College of Policing's position, there is recognition that non-experimental designs can provide informative evidence. There is also an acceptance of "bottom-up" EBP by practitioners if appropriate standards are in place, although there remains the caution against enthusiastically conducted research without proper comparison groups or peer review (Lum and Koper, 2017; Sherman, 2015).

For Peer Review

Dissemination

Experimental EBP goes beyond recommending a particular methodological approach but also seeks to make the results of evidence (scoping reviews, RCTs and systematic reviews (SRs)) readily available. In 2000, the Campbell Collaboration Crime and Justice Data Base was formed (Farrington and Petrosino, 2001). This mimics the Cochrane Collaboration (established in 1993, for Medicine). The synthesising of EBP knowledge is work in progress as exemplified by the Evidence-Based Policing Matrix, developed at the George Mason University to make research evidence accessible to practitioners (Lum, Koper and Telep 2011). This is a visual representation of approximately 125 research studies on police crime control interventions based on three dimensions: type and scope of intervention; specificity of goals; and level of proactivity of the intervention. Studies cluster in terms of their position in the matrix and are distinguishable in terms of effectiveness. Veigas and Lum (2013) provide an example of the application of the matrix undertaken to assess patrol strategies in the Derbyshire police, one of the forces in England. Mazerolle, Eggins, Higginson and Stanko

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(2017) describe other open access web sites such as the Global Policing Database (see www.gpd.uq.edu.au) whose aim is to capture both published and unpublished evaluations of policing interventions.

Impact

In the development of the experimental EBP approach, Neyroud et al (2015) outline some of the key achievements including: the expansion of experimental criminology with more than 100 field experimental studies adding to a growing data base; increases in the number of systematic reviews lodged in the Campbell collaboration data base; creation of Evidenced-Based Policing Societies in Britain, Australia, Canada and the United States; the emergence in the UK of the College of Policing; and launch of the Global Policing Database giving access to over 7,000 studies. Heaton and Tong, (2015:63) conclude that the links between the UK's College of Policing, the University of Cambridge and the work of the George Mason University, particularly the production of the evidenced based policing matrix, have been greatly influential in promoting evidence based policing in the UK.

Amongst the significant contributions of the experimental approach is systemizing evidence for the efficacy of focused patrols or 'hot spot' policing (Koper, 1995). This shifted police attention from targeting people to focusing on places and challenged the notion of displacement of crime from targeted areas (Weisburd and Telep, 2014).

What the experimental EBP approach advocates is greater user engagement and co-production (see for example Veigas and Lum, 2013) and there is demonstrably a rapprochement between academia and police practitioners (Tompson et al 2017; Wood et al, 2017; Foster and Bailey 2010; Canter, 2004) with some notable successes such as the Scottish Institute for Policing Research (SIPR) and the Universities Police Science Institute (UPSI) in Wales. An evaluation of SIPR by the Scottish Funding Council (2017:11) praised the importance, relevance and quality of the research undertaken in providing the police with an evidence base for developing policy and practice and especially mentioned the fact that police engagement in SIPR had fundamentally changed their approach to how they secured evidence.

Critique

For Peer Review

The experimental approach is not uncontentious (Knutsson and Tompson, 2017; Wood et al, 2017; van Dijk, Hoogewoning and Punch, 2016; Greene, 2014; Laycock, 2012; Sparrow, 2011; Hough, 2011, 2010; Thacher, 2008, 2001). Amongst the areas of challenge are: the epistemological value of a medical model applied to policing; appropriateness of and concerns about ethical aspects of RCTs; and the potential loss of informative research using non- experimental methods; a wariness to include non-scientific inputs such as police experiences; and underdeveloped theorising.

Thacher (2001:391) gives a trenchant criticism of the application of the medical model as the epistemological basis for police research. He proposes that Sherman's comparison of the scientific criminologist with an oncologist delivering "treatments" with recommended "dosages" fails because the context in which police deliver services is much more complex contingent and contextually situated, affecting larger societal outcomes such as community cohesion and human rights. Whilst medicine may serve the purpose of extending a life, the police have to balance a more ambiguous mix of purposes such as equity, due process and the rule of law. Greene, (2014: 213-215) also discusses the limits of a medical model as applied to policing. The analogy falls down when, for example, considering why a patient may choose to ignore recommended dosages of medication. Medical advice is taken (or not taken) voluntarily by the patient and is not the same as instructions from a police officer who has the statutory authority to use force if necessary to command compliance from an unwilling drunk or a person with a weapon. Exponents of the experimental approach do recognise some of these limitations (Neyroud, 2009), but nevertheless argue this should not inhibit the application of rigorous experimental designs to produce high quality evidence to guide policy and practice. Yet as Knutsson and Tompson (2017) point out, the screening criteria for eligible research on problem oriented policing by the Campbell Collaboration, filtered out over 90% of possible studies.

Critics (e.g. Knutsson and Tompson 2017; Lumsden and Goode, 2016; Greene, 2014; Sparrow, 2011; Bullock, and Tilley, 2009; Hope, 2004; Pawson and Tilley, 1994) argue that the primacy of RCT designs excludes much research evidence of value that could inform policing and criminal justice policy when the 'gold standard' criteria are strictly imposed. Bullock and Tilley (2009) suggest that the work on repeat burglary victimisation (Farrell and Pease, 1993) may have been overlooked if judged by the strict Maryland Scale reliability threshold criteria yet Laycock (2000) describes this as one of the Home Office's most

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successful projects. Additionally, Bullock and Tilley (2009) argue that there would be a paucity of research if only RCTs were relied upon as there have been relatively few conducted overall and fewer yet conducted within the UK.

Cautions about the over-reach and limitations of experimental designs (Greene, 2014) also appear critical. Hough (2010) concedes that RCTs have their place but are low on external validity; in other words, the ability to generalise to other circumstances. Cartwright (2012) elaborates this criticism by suggesting that just because an intervention might work in a target setting (efficiency) this does not necessarily mean it will work outside the parameters of the testing situation (effectiveness), not least because of the local and fragile nature of causal principles that govern policy effectiveness (p308). This criticism is encapsulated by Hough, 2011:190) who concludes RCTs provide little explanation about the underlying causal mechanisms for why an intervention may or may not work and on whom. By way of example, the RCT conducted by Sherman and Berk (1984) found in favour of presumptive arrest in cases of domestic violence offences. Sherman and colleagues conducted extensive replications to conclude arrest reduced recidivism. In a review of this series of studies, Dutton and Corvo (2006) reported that whilst the initial effect of arrest did indeed reduce recidivism, after about nine months the arrested group actually had higher recidivism than the non-arrested group. In other words, overall, the longer-term effect of arrest appeared to increase the rate of repeated violence. Moreover, there were differential effects by ethnicity of arrested perpetrators, in that for white men there was a reduction in repeated violence but for African American men there was actually an increase. In the light of a number of subsequent re-analyses, Dutton and Corvo (2006:460) concluded that the evidence in support of the deterrent effect of an arrest policy for domestic violence offenders is small and inconsistent and actually increased the risk of victimisation amongst black women.

For Peer Review

The randomisation component of RCTs, presents some ethical concerns (Punch, 2016; Laycock, 2012; Sparks, 2011, Hollin 2008). In part, these relate to the risks for people consigned to the control rather than 'treatment' group and the possibility that they may be deprived of an intervention that potentially could be of benefit to them. Hollin (2008:94) is concerned that experimental randomisation may result in sentence 'override', that is giving power to researchers to allocate offenders randomly over due process of sentencing options. Hollin asks if the treatment option was withheld and an offender commits a further offence,

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could that victimisation have been avoided? Not participating in the experimental treatment could affect an offender's security classification or have an impact on parole decisions.

There are those who object to the privileging of the 'scientist' (Punch, 2016; Sparrow, 2011; Thacher, 2008). Sparrow (2011:5) argues "experience and skills count too; there are myriad ways of discovering useful truths without the elaborate machinery of social science evaluations". As Jaschke et al (2007:111) propose, "practitioners should try to identify circumstances and problems that are of concern to communities. This interest can/should/must be taken as the starting point of a whole set of attitudes and processes that will result in useful knowledge… for future police or scientific investigations". Sherman (1998:4) had suggested that the approach he advocates parses out "unsystematic experiences as the basis for police work". Although this position is softened in later writing (Sherman, 2015), Lum and Koper (2017) warn against the overvaluing of police experience.

For Peer Review

To briefly summarise, notwithstanding the promise of and the progress made by the experimental approach (Neyroud et al, 2015), it is recognised that much more needs to be done for greater take up (Sherman, 2015). Other problems include- limitations imposed by strict adherence to RCTs as the preferred methodology (Bullock and Tilley, 2009); a dominant conception of police knowledge being abstracted from its context (Wood et al 2017); the "thinness" of theoretical explanations (Greene, 2014); and the availability of limited evidence about other topics such as organisational behaviours (Sherman, 2015).

Crime science

Epistemological origins

Crime science (or more recently crime and security science) tries to address some of the shortcomings listed above. As with the experimental approach, crime science recognises the importance of applying science, experimentation, research and evaluation to the work of policing (Laycock, 2012). It differs in its more eclectic epistemology, drawing from both the physical and social sciences and, as explained by Laycock (2005:8), being more pragmatic about the nature of evidence. For Laycock, there is 'no gold standard methodology' rather evidence is generated by the appropriate methodologies determined by the question or hypothesis under investigation (Laycock 2012:2).

Rather than drawing on medical science and principles, Tilley (2016) explains crime science's debt to engineering. Engineering begins with a hypothetical solution to a problem rooted in theory and aided by experience and intuition. What then follows are multiple tests as the hypothetical solution is translated into practice. Tilley and Laycock (2016) suggest engineers and police operate in a similarly constrained resource environment, focus on practical problems, are concerned with public safety and have histories of craft apprenticeship. Another common element is learning from mistakes and adaptation in the light of experience.

Crime science's underpinning theoretical ideas include routine activity theory, crime pattern analysis and rational choice theory leading towards the concept of situational crime prevention. Crime science maintains that understanding crime and its control is key (Clarke 2004) and requires an appreciation of the context, causal mechanisms and outcome patterns that are manifest in empirical data (Pawson and Tilley, 1994). Tilley (2000:100) describes this realistic evaluation approach as being concerned with "finding out what outcomes are produced by what interventions and how they are produced and what is significant about varying conditions in which the intervention takes place". Their model proceeds by offering a set of conjectures (theoretical ideas) for looking at the internal variation of the impact of some intervention.

Dissemination

Arising from the principles of realistic evaluation, Johnson, Tilley and Bowers (2015) designed a coding system to distil the quality and coverage of systematic reviews of evidence relating to crime prevention interventions. When the College of Policing and the Economic and Social Research Council jointly funded a consortium to develop the What Works Centre for Crime Reduction (WWCCR) (see Hunter, Wigzell, May and McSweeney, (2015) for a description and evaluation) Johnson et al (2015) devised EMMIE. This is **E**ffect of intervention, the identification of the causal **M**echanism(s) through which interventions are intended to work, the factors that **M**oderate their impact, the articulation of practical **I**mplementation issues, and the **E**conomic costs of intervention (EMMIE). EMMIE assesses the probity, coverage and utility of evidence and where context is an essential feature. This framework evaluates research made available through the Crime Reduction Toolkit hosted on the College of Policing web site (see http:/www.crimesolutions.gov).

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Impact

Crime science then seeks to explain crime and its causes; help prevent crime through situational and design interventions; contribute to the investigation of crime; and encourage police to appreciate the importance of data, testing hypotheses, controlling for bias and establishing a corpus of knowledge (Laycock, 2008). Some progress has been made. Whilst it is difficult to establish unequivocally the reasons for the worldwide phenomenon in declining crime rates, Farrell et al (2010) for example, present convincing evidence to show situational crime prevention's impact on auto crime.

An evaluation of the WWCCR, completed three years after its inception, indicated a move in the direction of EBP principles percolating albeit slowly through the police service (Hunter, May and Hough, 2017). The survey and qualitative interviews with police officers undertaken during 2016 as part of the evaluation found that compared to baseline data (from 2014), there was greater involvement in research by police officers and staff: there were more examples provided of research informing decisions; a perception of research evidence as now more important to practice than previously; more police research collaboration with universities; greater dissemination of research evidence to operational staff, including via intranet space for promoting research and the products of the WWCCR; hand-held devices for officers to provide easy access to the internet; 'research cafes' to initiate discussion about local problems and possible solutions; force training on evidence-based practice and various examples of more junior ranks of officer initiating activities to develop force engagement with research.

For Peer Review

Critique

There are some critical voices about the distinctive contribution made by crime science. Squires (2016) concludes that the promise of crime science has rather fallen short on delivery and describes Clarke's (2004) attempt to distinguish crime science from criminology as confused and incoherent. Cockbain and Laycock (2017) concede that crime science's boundaries do lack clear distinction and its theoretical underpinnings may be too narrowly drawn. Without theory we cannot understand the underlying processes that explain why things happen (or do not happen).

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Haggarty (2007) is more trenchant in his criticism, suggesting the claims of novelty in crime science's focus on situational crime prevention is an over reach because it is adding to already existing scholarship within criminology. When reviewing the case studies presented in Smith and Tilley's (2005) edited collection, Hope (2006) expressed the view, that crime science lacked sufficient reflexivity thereby undermining the engineering model of iterative testing whilst Loader and Sparks (2010) suggested that by being outcome focussed, and interested in how crime happens, crime science is prepared to sacrifice some scientific rigour in order to be timely and relevant. Tilley and Laycock (2016) argue that policing is a fast-moving environment and it is simply not practical to postpone a decision whilst awaiting the outcome of lengthy research. They call for a case by case judgement about the reliability and validity of all available evidence.

For Peer Review

More particularly, there is criticism of the "singularity" of focus. Of the studies lodged in the WWCCR, most are reviews of quantitative research. Haggarty (2007) says that insights offered by social construction approaches have not "penetrated" into crime science inquiries. A further potential adverse outcome expressed by Punch (2016) is that research funding will be skewed towards crime control as if this was the police's only activity. Van Dijk et al (2016) are critical of crime prevention research posed only by the question "what works", partly because much in the complexity of crime lies outside the ability of the police to control its causes. Willis and Mastrofsky (2016:12) agree that the focus on what works research (whether by experimental EBP or crime science) has skewed research towards crime control. This is an important goal of the police, but their police officer informants draw attention to a much broader array of considerations, demanding sophistication in the moral reasoning in police work. Officers were concerned about what choices will produce the best set of outcomes (including minimising violence or the threat of violence, delivering a sense of justice, and resolving the underlying problem causing the dispute); and what constitutes enough police effort, or what justifies the amount of police resources expended. Thacher (2008) argues that an evidence based approach that focuses on whether something works may be helpful to a policy maker but does not inform a practitioner about how best to carry out the intervention. He suggests, as do others, (Jaschke et al, 2007; Willis and Mastrofski, 2016), that police practitioner experience is of value in defining the research agenda and implementing practice. Williams and Cockcroft (forthcoming) argue for the recognition of discretionary decision making facilitated by informal or tacit knowledge which have been instrumental in the delivery of policing.

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Crime (and security) science is a broad construct covering a diverse range of topics within the rubric of crime control. Cockbain and Laycock (2017) suggest crime science has quite fluid boundaries and researchers may contribute to its evidence base without necessarily self-identifying as crime scientists. The EMMIE framework offers scope to consolidate findings into an evidence base (Tompson and Knutsson, 2017) with the potential for strengthening theory of underlying processes that contribute to successful interventions. It is an avowedly evidence based problem-solving approach to crime control. Tompson and Knutsson, (2017) see a harmonisation rather than competition between experimental EBP and the problem-oriented underpinnings of crime science but they argue for an extension to other areas of police business.

For Peer Review

EXTENDING THE REACH OF EVIDENCE BASED POLICING

Mazeika et al (2010) in a review of police research trends, found the highest proportion of published studies were about policing strategies (37%) whilst fewer than 5% were concerned with organisational change, training, recruitment or retention respectively. As discussed above, there have been several calls for broadening the base of EBP (Lum and Koper, 2017; Knutsson and Tompson, 2017; Van Dijk, et al, 2016; Bullock and Tilley, 2009: Thacher, 2001; Greene, 2014). Policing's focus is not solely on offenders or crime events. Policing is community facing and involves victims, especially the vulnerable, and is responsible for security and public safety. Telep (2016) suggests that EBP should cover issues such as legitimacy, procedural justice and training, in other words, widen interest in the 'what' of what works. Punch (2016) would include as important, research on public order, police use of force, corruption, senior officer abuse of power, undercover work, sieges and regime change, human rights, diversity, oversight, accountability and governance. Other topics such as organisational structures and designs, police management styles and philosophies, police leadership, supervision and control, organisational politics, productivity and quality, change and development should also be included (Jaschke, et al 2007:78). Hartley and Hesketh (2016) suggest that the police should be addressing citizen needs, values and expectations within the context of contributing to the wider aims of society; for example, enabling citizens to live within a peaceful and just society and live safe and fulfilling lives.

Whilst it is agreed that both experimental EBP and crime science have contributed much in developing the knowledge base about policing (Wood, et al. 2017; Punch, 2016; Natarajan, 2016) from the above analysis, it is concluded that their contribution is theoretically limited

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and as yet has not explored the full range of policing practice nor investigated management processes and organisational change.

Drawing from crime science, it seems sensible to develop a plurality of methods in generating evidence. Thacher (2008) and Punch (2016) provide a list of alterative research methods that have been successfully adopted in policing research and cite exemplars of published studies utilising these. Also sensible, is Laycock and Tilley's (2016) suggestion for a triangulation of results from different research methods, with greater weight given to findings pointing in the same direction when derived from different research traditions. This suggests a mixed methods epistemology.

As mentioned above, much of the early academic research on policing was based on a social constructionism and detailed ethnographic observations (Cain, 1979; see also Heaton and Tong, 2015 for a review). Contemporary researchers (e.g. Dick and Jankowicz, 2001; Lippert and Stenson 2010; Hallsworth, 2013) conceptualise issues relevant to policing as socially constructed, for example, crime is the result of exaggerated labelling and rooted in shared collective experiences. This is verifiable by examining the context and mechanisms of people's experiences and the meanings they ascribe to these. Mixed methods approaches which incorporate both qualitative and quantitative methods are advocated by Maruna, (2010) and Schulenberg, (2007). These are more pragmatic in focus and often seek views from 'consumers' of services. Mixed methods are interested in how people make sense of events and outcomes in their lives (Maruna, 2010). The advantages of combining methods are that qualitative techniques provide "deep immersion" to flesh out situational and contextual factors often missed (or not asked about) in quantitative approaches (Maruna 2010:127). Schulenberg, (2007:101) offers three reasons for adopting a mixed methods design: presentation of a larger spectrum of views; better addressing of theoretically driven research questions; permitting stronger inferences to be drawn. Quantitative methods are more precise and hence replicable and the application of statistical techniques can reduce confounding factors. Qualitative methods can cross validate quantitative findings.

Secondly, certainly as implied by Sherman (2015) and suggested by Tilley and Laycock (2016), a wider constituency needs to be consulted in generating evidence, including consumers of services and the practitioners delivering them. The definition offered by the Cabinet Office resonates with but goes further than the College of Policing's suggestion that evidence can come from a wider range of sources to include:

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> "expert knowledge; existing domestic and international research; existing statistics; stakeholder consultation; evaluation of previous policies; new research, if appropriate; or secondary sources, including the internet. Evidence can also include analysis of the outcome of consultation, costings of policy options and the results of economic or statistical modelling". (Cabinet Office, 1999:33)

By referring back to the original conception of evidence based medicine, five process steps are described that explicitly include the experiences of practitioners and affected groups: i.e.

- Ask: The problem should be discussed with experienced practitioners so that it can be articulated clearly and as explicitly as possible.
- Acquire: Obtain the best information about the problem to examine relevance and validity.
- Appraise: Critically weigh the evidence found
- Apply: Utilise the evidence within the context of relevant professionals and affected groups
- Assess: Evaluate the outcomes (Sackett et al, 1996).

For Peer Review

By including other constituencies, the research endeavour is broadened in scope. An exemplary case study is the community intelligence-led policing (CILP) initiative developed by the Universities Police Science Institute (USPI) and adopted by South Wales Police (Innes, 2014). Arising from a diagnosis by Her Majesty's Inspectorate of Constabulary that the police were becoming detached from those being policed, the National Reassurance Policing Programme was established. This comprised researchers from the University of Surrey to develop the theory and collect empirical evidence, police officers whose role was to translate research findings into practice and Home Office researchers whose task was to conduct a process and outcome evaluation (Inness, 2005). Innes et al. (2009) developed this work further by combining community intelligence information, including statistical analysis of hot spots, one to one interviewing with affected community members, focus groups to identify policing priorities and an evaluation of deployment strategies.

Thirdly, a further widening of an evidence based approach could be achieved by more conspicuous inclusion of evidence based management. This is an evolving field which Briner, Denyer and Rousseau, (2009) define as a family of approaches supporting decision making, and is done by practitioners rather than scholars. Evidence based management relies on

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evaluated external evidence, practitioner experience and judgement, context and stakeholder input. Rynes and Barttunek (2017) describe some of the areas of concern to evidence based management researchers. These include enhancing productivity; training and development; knowledge production; and the co-production of initiatives. As well as drawing on management theories, a mixture of systematic reviews and case study methodologies are used with a variety of stakeholders. Briner and Denyer (2012) describe the maturing of evidence based management in its use of systematic reviews which utilize explicit and transparent methods such as thorough literature searches and critical appraisal of individual studies, and draw conclusions about what is known or not known on a given topic. They draw attention to EPPI - (Evidence for Policy and Practice Information) and Co-ordinating Centre which conducts and publishes systemic reviews and is developing tools and methods as well as providing training (see https://eppi.ioe.ac.uk/cms).

For Peer Review

Evidenced based policy making attempts to reduce uncertainty in ever increasing complex environments of policy problems by using the best available evidence (Ingold and Monaghan, 2016). It tries to answer questions such as what options will deliver the goods and achieve best value for money or how can innovation and competition drive productivity (Head,2008)? Its methods include impact assessment and appraisal; strategy and policy evaluation; survival guides; comparative studies; and concerns cover gender mainstreaming, risk management, community engagement and improving standards (Sutcliffe and Court, 2005). Policymakers need to understand the value of evidence, to become more informed as to what evidence is available, know how to gain access to evidence and be able to critically appraise it (Davies, 2004: 18).

By combining the three domains of policy, management and practice a potential template for evidence based policing is proposed. Each evidence base hub can be populated by topic areas, with each topic delineated into yet further degrees of granularity as the discipline develops and research accumulates more knowledge.

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As well as three distinct evidence hubs, it is crucial to explicitly incorporate important values that should infuse professional life. Van Dijk et al (2014:19) ask that the 'big picture' should accompany big issues research. By this they mean that policing tasks are intimately connected to a healthy relationship between the citizen and the state and a policing mandate is connected to propriety, human rights, procedural justice and legitimacy. As mentioned in the introduction, Green and Gates (2014) itemise ethics as an essential component of being a profession. The College of Policing, in publishing a code of ethics for the police, commits the service to nine governing principles; accountability, fairness, honesty, integrity, leadership, objectivity, openness, respect and selflessness. Equity is also an essential principle in the sense of policing by consent and the equitable allocation of services (Jones, Newburn and Smith, 1996). Equity can also be thought of as parity of gender and ethnicity distribution within police forces (Brough, Brown and Biggs, 2016; Prenzler, Fleming and Sinclair, 2010). Procedural and organisational justice derive from the work of Tyler and colleagues about the legitimacy of policing both in relation to the citizen and the internal workforce. It is argued that these matter and should be woven into EBP (hough,2010).

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CONCLUSION

To enhance its contribution, EBP needs to improve its theoretical basis (Hough, 2010 Greene, 2014); extend its content boundaries (Telep,2016); broaden its methodologies (Thacher , 2008; Punch, 2016) redouble effort to embed within policing (Lum and Koper,2017) and promote futher collaborative co-production of research (Lumsden and Goode,2016). Scholarly reflection and debate has moved EBP on from its original focus on experiments conducted through RCTs to wider-reaching recognition that a plurality of method is desirable as is an extension of scholarship to include management and organizational aspects and the incorporation of a wider range of practice issues (Knutsson and Tompson, 2017). This could be hastened by conducting more systematic reviews to a broadened menu of topics to determine findings that are substantiated, promising, unproven and to identify areas where research evidence is lacking. This in turn will help develop a research agenda and contribute to knowledge building. The template proposed in this paper may assist in codifying the content areas for the corpus of knowledge and offers the basis for syllabus development in the new graduate programmes within the apprenticeship degree and graduate conversion courses being advanced by the College of Policing as the educational pathway towards the

profession of policing. If the PEQF is to enable the police to understand, use and generate evidence as part of the professionalisation agenda, it needs to cover core aspects of management as well as practice with more advanced levels commensurate with an officer's seniority.

A modern police officer not only requires practice skills but also tertiary level education which integrates the academic theory and knowledge underpinning and contextualising practice. Jaschke et al, (2007) powerfully argue that there are very strong reasons for integrating these: police officers need to understand the social, political, sociological, psychological, communicative, legal and ethical consequences of their actions. Integration of theory and practice within an ethical and procedurally just framework is in line with how most other professionals are educated. Progress is being made and significant developments are being advanced by the experimental and crime science perspectives. These should be seen not as competitors, but as contributors to the growing evidence base for professionalising the police and developing police education in a more holistic way. Yet, we caution that the actual operationalisation needs to be as evidence informed as the underpinning principles themselves. Policing, as an emergency service, is by nature influenced and shaped by the challenges encountered in the aetiology of crime and perhaps even more importantly, crime prevention and public safeguarding. Improvements in theorising is a further necessary ingredient. Therefore, any overarching framework, such as the PEQF, can only serve the profession if it remains adaptive, consultative and informed by theoretically based research from pluralistic perspectives. It should therefore be a key focus to take a wider evidence based approach to determining to what extent the plurality of education routes proposed, deliver what they purport to deliver – policing fit for the 21st century.

[i] //www.college.police.uk/What-we-do/Learning/Policing-Education-Qualifications-Framework/Pages/Policing-Education-Qualifications-Framework.aspx

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