Systematic Review

POLICE RECRUIT TRAINING

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Abstract

An evidence based approach to guide the proposed changes to recruit police training under the Police Education Qualifications Framework (PEQF) in England and Wales requires that changes be grounded in the available evidence on what works in recruit training. This systematic review is a synthesis of primary evidence on police academies, field training, and how police recruits learn. The purpose of the review is to learn from the evidence to inform the development of a graduate level training programme in England and Wales. The review, inspired by a realist approach, includes a total of 33 studies conducted in a number of countries. Key training contexts, mechanisms, and outcomes were examined to determine how training works, under what conditions, and for whom. Findings indicate that student-centred teaching approaches were found to produce recruits promoting critical-thinking and problem-solving skills. Recruits preferred practical, hands-on training over theoretical lessons, and field training was consistently shown to have a positive impact on the process of transforming recruits from civilians into police officers. Finally, the role of academic and field training tutors was found to be of critical importance for recruits in integrating theoretical learning with practical skills. Based on the findings a preliminary theory of change is proposed to help guide implementation and evaluation of the new degree holder entry programme (DHEP) entry route. Policy implications for the College of Policing and police forces implementing the PEQF are discussed.

Introduction

Police recruit training plays a significant role in shaping police officers serving in the community. Training programmes are influenced by individual contexts, community needs and demands, political climates and national and international academic influence (Cordner and Shain, 2011). As such, there can be significant variation in police recruit training around the globe.

In England and Wales, policing is undergoing a shift towards becoming a more professionalised service. An important aspect of this move includes important changes to police recruit training and qualifications (Neyroud, 2011). These developments are being led by the College of Policing (CoP), driving forward the development and design of the Police Educational Qualification Framework (PEQF). The PEQF is "intended to support the development of policing as a profession through the provision of a coherent national approach to recognising and raising educational standards in policing" (College of Policing, 2016: n.p.). The PEQF specifies that all police recruits must now hold or attain a degree-based qualification to become a police officer, following an assessment that police constables are making decisions and problem solving as part of their routine work to the equivalent of a (graduate) Level 6 in the higher education qualifications framework. Three routes into the profession have been developed and standardised by the College of Policing: a higher apprenticeship route than earns the recruit a Bachelor's degree on completion (police constable degree apprenticeship; PCDA), a degree holder entry programme (DHEP) or graduate conversion course, and a bespoke pre-join undergraduate degree in professional policing. These three routes are deemed to be 'functionally equivalent' on completion, i.e. produce recruits with the same level of theoretical and practical skills and operational abilities, and enable officers to obtain publicly recognised qualifications at the relevant education level.

The aim of this systematic review is to develop the evidence-base of 'what works' in police recruit training by synthesising the available evidence on police recruit training in the research literature. This is the second report from the review process, the first of which presented a systematic map which provided an overview of police recruit training literature and described the methodology regarding our search strategy and quality assessment exercises (McGinley *et al.*, 2018). The map presented a summary of 109 studies on police recruit training, across a broad range of contexts and themes. This systematic review has a narrower focus, on particular themes, and synthesises studies assessed to be of medium or strong quality.

Methodology

This section will focus on the key elements of the methods used to conduct a systematic review of the available evidence on police recruit training.

This systematic review aimed to answer the question: 'What can we learn from the evidence on police recruit training that can inform the development of a graduate level training programme in the UK?', with a specific focus on two of the six themes identified within the systematic map (McGinley *et al.*, 2018).

Our search strategy involved keyword searches of 12 relevant electronic databases[1], including grey literature and dissertation databases, and searches of publications by relevant government, research, and professional agencies conducted by an information specialist. We applied the following inclusion criteria when screening records for eligibility in this review:

1. The study should relate to an entry level training programme for new police recruits.
    a. Police here refer to 'sworn' officers or public police as an executive arm of the government providing a service at the local, county, state or federal level
    b. "Entry level" here implies required to be certified to be capable of being deployed in public facing roles or operating independently
    c. Training is defined as "a planned and systematic effort to modify or develop knowledge/skill/attitude through learning experience"[2]

2. The study should report the findings of an empirical research project on police recruit training.

3. The study should cover substantive content on police training, i.e. should report on at least one of the following: curriculum, structure, length/duration, pedagogy, mode/delivery method, provider, assessment of trainees, evaluation of training (including outcomes), process of modernising training course or trainee experience.

4. The study must be available in English.

Our search and screening led to the retention of 109 studies on police recruit training, which were included in the map (McGinley *et al.*, 2018). Studies were coded by three researchers and inter-rater reliability (IRR) tests were conducted to resolve discrepancies and ensure consistency and quality of coding[3].

The included studies were then grouped into six main themes and several sub-themes following thematic analyses of the broad topics and intended outcomes of the studies (see Appendix A for more detail). Since the focus of the 109 studies was quite varied, a decision was made to hone in on a few themes for an in-depth synthesis to draw meaningful insights. Following consultation with the research project's Working Group[4], a decision was made to focus on two of the six themes, namely, a) academic and/or field training, and b) how recruits learn. The focus of the first theme was examining or evaluating either the academic component of the recruit training programme (e.g. the curriculum), the field training component (e.g. the tutor phase), or the entire training programme (both academic and field components). The second theme focused on how recruits learned to become a police officer focusing on learning theories or through cultural or organisational socialisation.

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[1] The following databases were searched using a list of pre-determined search terms: Criminal Justice Abstracts, PsycINFO, Scopus, ProQuest Criminal Justice Database, Global Policing Database, Sociological Abstracts, Education Database, ERIC (Education Resources Information Centre), ProQuest Theses and Dissertations, Social Policy and Practice, CINCH, Australian Federal Police Digest
[2] Inspired by the European Police College (CEPOL Glossary, 2005) definitions.
[3] Details of the methodology can be found in McGinley *et al.* (2018).
[4] Composed of members from academia, CoP, and practitioners involved in the PEQF and recruit training more generally.

Furthermore, all the 109 included studies were double-blind quality appraised and rated based on three established quality appraisal tools[5]. Only 13 studies (12%) were of a 'strong' quality, 55 studies (50%) were 'weak', and the rest (41, i.e. 38%) were of 'moderate' quality. This review synthesises 33 of the studies assessed to be 'strong' (seven studies) and 'moderate' (26 studies) on methodological grounds within the two identified themes. Of the 33 included studies, 19 (58%) employed a mixed-methods approach, 13 (39%) adopted qualitative methods and one study (3%) used a purely quantitative approach. Appendix B provides further detail on the method used, quality rating, theme, and units of measurement for each included study.

Framework

This review was inspired by the realist evaluation approach (Pawson and Tilley, 1997; Pawson, 2006), which focuses on the interaction of the three components, 'Context – Mechanism – Outcome'. Realist evaluation does not simply identify whether an intervention or program is successful, but examines *how* it works, *under what conditions,* and *for whom*.

Using realist evaluation terminology, data extraction codes were constructed to collect key information in relation to three components: context (understanding the setting within which a change occurs), mechanism (what it is about a policy, programme, or intervention that brings about its effect), and outcome (the intended aims and subsequent outcomes of a programme). Therefore, this review focuses on the training context, relevant mechanisms, intended outcomes, as well as key implementation factors that emerged from the evidence.

Context

This section gives an overview of the contexts within which police recruit training programmes operated. Within the realistic evaluation framework, it is important to examine context as "programs are always introduced into pre-existing social contexts and… these prevailing social conditions are of crucial importance when it comes to explaining the successes and failures of social programs" (Pawson and Tilley, 1997: 70). Appendix C tabulates the study contexts and the training programmes described. This table is organised by country to highlight similarities within these contexts. This table also highlights absence of relevant information in the studies.

While most studies provided some level of detail on the descriptive elements of the course, very few were specifically tested or shown to be evidence of best practice. This section will, therefore, just focus on a few contextual elements, such as country and timing of training, recruit educational background, and training structure. Additional training programme information, for example length of training or qualification received, can be found in Appendix C.

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[5] The Mixed Methods Appraisal Tool (MMAT; 2011), CASP Qualitative Checklist (2017), Effective Public Health Practice Project Qualitative Assessment Tool for quantitative studies (EPHPP; 2017)

Country of training

There was significant variation in the context of recruit training programmes of the 33 included studies. Over half (20 studies; 56%) the studies examined recruit training programmes in the United States (US). Five studies (14%) examined training programmes from the United Kingdom (UK). Other countries examined were Australia (3 studies; 8%), Europe (3 studies; 8%), Canada (2 studies; 6%), and one each from Saint Lucia, South Asia and South-east Asia (country not specified).[6]

The bulk of the evidence stems from the UK and the US, thus the focus of this review is on studies from these two countries. Training was most commonly provided by a training academy, but often in partnership with a university or a college. Two of these programmes in the US led to the attainment of a Bachelor's degree (Heslop, 2013; Vander Kooi, 2006).

Timing of Training

Whereas recruit training occurs in the UK post-employment, the US had both pre-join and post-join models, where recruits could complete their training prior to becoming an employed officer or as an employed officer (Chappell and Lanza-Kaduce, 2010; Heslop, 2013). Heslop (2013) found that in some parts of the US there is heavy reliance on the 'pre-join' model, whereby recruits pay for their own training before joining the police. This has advantages, particularly for smaller forces under financial pressure, and allows students find out if they are suited to policing before they are already employed. This research, however, did not specifically examine whether the funding model had an impact on either the motivation or achievement of recruits. Thus, funding of the training was discussed only in terms of the economic impact for the organisation and not whether it had an impact on standards of achievement or recruit motivation to learn.

Recruit Education

Evidence of a range of pre-employment educational experience of recruits was reported in the studies. Recruits having some form of higher education degree varied between 28% and 78% in studies (Chan *et al.*, 2003; Novakowski 2003; Hundersmarck, 2004; Morrow, 2008; De Schrijver and Maesschalck, 2015; Deverge, 2016). But not much else was inferred about the impact this might have had on either the quality of training, recruit success (or otherwise), or outcome of training. The only exception was Deverge's (2016) study that compared two recruit programmes, one in the US which required recruits to possess a higher education qualification and one in Canada which did not. His findings suggest recruits with higher education backgrounds performed better in cognitively oriented tasks, however, he could not conclusively establish if this impacted self-efficacy and motivation to learn.

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[6] Two of the studies examined more than one training location. Lettic (2016) examined training in the United States, Southern Asia and South East Asia, and Deverge (2016) compared training in the United States and Canada.

Training Structure

Most training programmes (17 studies; 74%) were delivered in standalone blocks of academic and field training components, for example, with 20 weeks of academic and skills training in a training academy, followed by 10 weeks field training at a police force (Hendricks, 2014). Alternatively, a programme would be structured with the first block in the academy, second block in field training, and a final block returning to the academy (see for example, Novakowski, 2003). Five studies described training programmes with interspersed periods of academic and field training components. The field training component also appeared to be longer in the US, compared to the UK training studies (for example, 14-18 weeks for some US programmes compared with 10 weeks in some of the UK programmes). Training structure becomes important as it can be used as an effective mechanism to engender integration of theory and practice by interspersing academic content with field training, and then providing an opportunity for students to come back to the academy and reflect on their learning in the field, which we will be discussing further in the review.

Overall, there are substantial gaps in the descriptive aspects of the training programmes. One key reason for this is that much of the focuses of the studies were not on descriptions of the programmes, and some were only looking at a part of the programme, such as just the field training aspect, and as such did not describe the other aspects of the programme.

Mechanisms

A wide range of mechanisms were identified within the 33 studies, which fit broadly within two categories: learning and teaching strategies and integrating theory and practice. Mechanisms are the key factors that relate to "understanding what it is about a program which makes it work" (Pawson and Tilley, 1997: 66). Of the 33 included studies, 13 studies (39.4%) had some mention of mechanisms, 14 studies (42.4%) found some evidence of effective mechanisms and in 6 studies (18.2%) no mechanisms were identified. Appendix D gives an overview of the key mechanisms identified in the included studies.

Learning and teaching mechanisms

At a broad level, a number of student-centred learning theories were discussed which contained specific mechanisms to encourage effective learning. The two main learning theories discussed were andragogy and problem-based learning (hereafter referred to as PBL). Andragogy is a learning philosophy specifically in relation to the teaching of adults, which differentiates from the teaching of children known as pedagogy (Vodde, 2008). Andragogy emphasises active involvement of the learner in the learning process, as opposed to passive listening, and building on existing knowledge and experience. Andragogy also recognises that adults learn in different ways and have different learning styles (Charles, 2000; Chappell, 2007; Shipton, 2009; McCay, 2011). As shown in Appendix D, andragogy was identified as a mechanism in nine (27.3%) of the included studies.

Problem-based learning follows a similar approach to andragogy in that it is "learner-centred and emphasised experiential learning with passive facilitation and active learning" (Lettic, 2016: 25). Problem-based learning was identified as a mechanism in five (15.2%) of the included studies. Both learning theories centre on active participation in the learning

process, where andragogy focuses on building on past experiences and different learning styles, PBL emphasises working through problems in a collaborative way: "it is through learner's active participation in the learning event, the use of language and interaction with others, that learning occurs" (King Stargel, 2010: 14). The goal or outcome of PBL is to develop the learner's problem-solving and critical thinking skills (Vander Kooi, 2006).

Within the studies examined, both these learning theories were identified as particularly important for police recruit education:

> "Police education should make greater use of adult learning principles that encourage a learner-centred approach, promoting critical thinking skills within authentic learning contexts related to their policing duties" (Shipton, 2009: 58).

A number of specific mechanisms for the academic component recurred in the included studies, which were in line with the principles of student-centred learning models including andragogy and PBL. Other effective teaching techniques that were considered to be effective for encouraging critical thinking and problem solving were scenario based training, group discussions and debates and opportunities for reflection.

The first key teaching mechanism identified was the use of "practical, scenario-based teaching that includes active participation" (McCay, 2011: 87, see also Vander Kooi, 2006; Vodde, 2008; Seggie, 2011). Both scenario-based learning and 'active involvement' of the learner were identified as a mechanism in six studies (18.2%), respectively. Learning techniques such as "group discussions, simulation exercises, hypothetical case scenarios, PBL activities, the use of the case method, and peer-helping activities, all serve to capitalize on the experiences of the learner, thus enhancing the learning experience" (Vodde, 2008: 94). This is in line with previous research which found students prefer and respond well to practical learning, as opposed to traditional lecture-based teaching (Belur *et al.*, 2017). Scenario based teaching also allows students to be presented with useable examples to draw upon (Vander Kooi, 2006). An example of this was trainers' narration of stories about actual experiences and how to respond to them which was found to be very helpful by recruits in answering exams (Poradzisz, 2004).

It is also important those scenarios are not confused with 'war stories'. 'War stories' are informal lessons told by trainers to students and are commonly referred to as a barrier to recruit learning (Chappell and Lanza-Kaduce, 2010). It was commonly found that students are highly receptive to 'war stories', however, the examples given in these are most often in direct contrast to the style of policing being taught in the curriculum, i.e. community focused (Chappell and Lanza-Kaduce, 2010; Conti, 2011; Foley, 2014; Hendricks, 2014). These stories can also be used as a threat – "a sense of threat was consistently reinforced through explicit warnings and 'war stories' of other deputies' struggles" (Hendricks, 2014: 161). Scenarios should aim to present recruits with realistic experiences, without aiming to deter them through fear of failure.

Peer learning through group discussion and/or debate was considered a mechanism in five (15.2%) studies. This is another example of experiential learning technique during interaction between peers:

> "Students do not come to know a concept just by having it presented to them. They must construct it through exportation, reasoning, and discussion. Various concepts

and skills need to be scaffolded on top of students' prior experiences and together with each other" (Porodzisz, 2004: 13).

This example demonstrates the importance of recruits formulating and constructing knowledge based on prior experiences, in line with andragogy, and in discussion with other peers, adhering to PBL. The learning process must involve debate and discussion in order to challenge recruits' prior learning and encourage thinking about different perspectives (Shipton, 2009; Rantatalo and Karp, 2016). Lettic (2016: 26) identified that "students benefited from the differing opinions, literature resources presented, and disagreements", which led to better "information retention, understanding, integration and application of knowledge".

Nine (27.3%) of the included studies identified the importance of reflection, referring to the process of thinking back on one's practice or experience and considering why something was done a certain way, what the possible impact of this was, and if it could have been done differently (Vodde, 2008; Rantatalo and Karp, 2016). Reflection challenges students' pre-conceived knowledge, past experiences or attitudes (Heslop, 2011a). The use of 'reality checks', where trainers frequently check in with students to ensure the correct learning is taking place, can ensure that student views are challenged and placed within the correct (Charles, 2000). Further, Rantatalo and Karp (2016: 720), discuss the benefits of collective reflection, which "exposes subjects to a wider base of experiences and involves mutual resources" adding another dimension to peer learning.

However, the key to all of these mechanisms was considered to be effective facilitation and leadership by academic and field trainers and tutors. The evidence suggests that seamless integration of andragogy, combined with learner specific teaching methods that encourage group discussion and reflection on practice at both the individual and collective levels would be very effective in delivering the curriculum while encouraging critical thinking skills.

Integrating theory and practice

Integrating theory and practice was mentioned as a mechanism in seven studies (21.2%), however specific mechanisms for achieving transfer of learning were not often clearly articulated. The importance of consistency between the academic learning component and field training component through the application of learning principles, the role of the tutor, reflection and debriefing between the recruit and the tutor were identified as field training mechanisms, which encourage recruits to draw links between their academic learning and practical experience.

In designing recruit training programmes, consideration must be given to course structure to maximise learning. When combining academic and practical components of the course, the interspersed structure will provide more opportunities for recruits to apply what they have learnt in practice, and to reflect on what they have experienced operationally to facilitate the integration of theory and practice. This can include introducing time spent back in the academy of the university while recruits are in the field training phase (Stanislas, 2013), or interspersing academy learning with community placements (Heslop, 2011a). However, consideration must also be given to the timing of these interspersed periods. This is outlined by Heslop (2011a: 337):

"There were perfectly sound logistical and pedagogical reasons for sending the officers on placements only seven weeks into their training. This was at a time when it was envisioned that they would be open to learning new things as well as seeing things from different perspectives. At the same time, however, this also meant that while their experiences on the community placement had some meaning, they were not situated in their own field of policing".

Furthermore, moving away from the 'traditional academy model', which can be more akin to the strict, hierarchical, 'paramilitary' model, by interspersing academic learning with practical experience, is one way to counteract the negative aspects of recruit socialisation and police culture shown to hinder recruit learning, as well as to expose recruits to varied environments, similar to those they will eventually work in (Conti, 2000; Vodde, 2008). In Heslop (2011a), the purpose of placing recruits temporarily in organisations such as schools, hospitals, and charities was to help recruits understand diverse communities and the workings of organisations within their policing area. Recruits were "encouraged to reflect on their own 'values', 'beliefs' and 'professional role'" during this time, using their academic knowledge (Heslop, 2011a: 331).

Opportunities to integrate the academic components with practice arise during the field training phase. During this phase, recruits get their first opportunity to apply what they have learnt in the academy in practice, as well as begin to experience socialisation (Green, 2001; Hundersmark, 2004; Chappell, 2007). Furthermore, this gives tutors and trainers an opportunity to observe recruits performance and witness their development (Novakowski, 2003). Specific aspects of the field training component were identified as promoting the integration of theory and practice, considered pivotal for the training to be effective.

Unless field training complements academic content, recruits may begin to "question the validity of their [academic training] as a result of their initial exposure to operational policing" (Chan *et al.*, 2003: 122). Successful integration of theory and practice occurs when students are able to apply what they have learned in the academic component to the practice environment, or 'transfer' their knowledge (Hundersmark, 2004; Rantatalo and Karp, 2016). Furthermore, this integration encourages recruits to "see the big picture", and understand the theory behind their actions: "If the recruits understood the rationale behind their actions they… would be better prepared to learn from their own experiences in the future" (Charles, 2000: 81).

Course consistency and coherence, whereby the learning theory and principles applied in the academic components carry through to the field training components is crucial. As some police agencies have transitioned towards training police recruits in the principles of community policing, the disconnect happens because recruits "receive academy training in community policing, then go into field training programs based on traditional philosophies of policing" (Chappell, 2007: 499).

A clear example of a technique that can be used to facilitate reflection during field training and link theory and practice in a cyclical process was provided by Thorneywork (2004) referring to Kolb's Model of Experiential Learning Cycle (ELC). This theoretical framework involves a cyclical process of four key components: experience, review and reflect, interpret, and action plan. When applied in the policing practice environment, it can encourage recruit officers to critically analyse and reflect on practical experiences (Thorneywork, 2004).

Involving the learner in an 'active' way, as opposed to a passive way means there is a greater emphasis on applying knowledge instead of memorising it. One example of encouraging this is through linking key topics or 'threading' within the curriculum design:

> "Integrating key topics, or 'threading', means that selected important themes will be discussed in relation to each substantive topic or module (i.e., woven throughout the curriculum). For instance, communications lessons (or diversity training or officer safety) can be reinforced in arrest scenarios, in crowd control exercises, and in community relations material. Integration helps recruits draw connections among multiple subject areas, which facilitates mastery over the curriculum and prepares recruits for problem-solving challenges when they enter the field" (Chappell and Lanza-Kaduce, 2010: 191).

This encourages recruits to construct links between concepts and see the bigger picture of what is being taught, encouraging the ability to think critically and problem-solve.

Another potential useful field training technique to encourage integration of theory and practice was de-briefing whereby the tutor discusses a practical experience with the recruit, encouraging the recruit to first reflect on their practical experience (for example, after an incident) and then giving useful feedback (Green, 2001; Chan *et al.*, 2003; Thorneywork, 2004; Chappell and Lanza-Kaduce, 2010).

The facilitation of this process by a competent tutor is vital here, as well as for tutors to be encouraging, rather than overly critical (Thorneywork, 2004). Encouraging recruits to reflect and improve on their experience with their tutor is, furthermore, important in accustoming recruits with the cyclical feedback process that is an inherent part of problem-solving (Chappell and Lanza-Kaduce, 2010).

The evidence consistently suggested that the importance of the tutor's role during this phase cannot be understated as the field training officer (FTO)/tutor has a "long term impact on the recruit" (Novakowski, 2003: 147). Furthermore, "tutors are seen to be the bridge linking the training environments where the students have to contend with group dynamics and the realities of policing" (Thorneywork, 2004: 48). Green (2001) and Chan *et al.* (2003) highlighted the need for tutor constables to be supportive, trustworthy and approachable, as well as maximise opportunities for development, and be able to give and receive feedback. Tutor's approaches to their role can either be authoritative or facilitative, the latter producing more effective outcomes. Some examples of authoritative techniques include repetition of tasks, demonstrations, feedback (without reflection) and vicarious learning. Examples of facilitative techniques include hands-on experience, debriefing after incidents, pre-briefing prior to incidents, posing scenarios or role plays, task setting and setting action plans (Thorneywork, 2004: 90-91). Thus the evidence highlighted the role of the tutor as being key not just for recruit learning, but also for the development of a professional police officer.

Implementation

Implementation is a vital element in any intervention, including police training: "For both successful and unsuccessful initiatives, it is important for the practitioner to know what was done, what was crucial to the intervention and what difficulties might be experienced if it were to be replicated elsewhere" (Johnson *et al.*, 2015: 468). The factors identified in this section were considered important for the training to achieve its intended outcomes. Poor

implementation can result in mechanisms 'back firing', or resulting in unintended consequences. The two key areas of implementation were organisational buy in and the role of the trainer/tutor.

Organisational buy in

Most of the studies which discussed implementation were examining the introduction of andragogy or PBL into police training (or a combination of the two overlapping principles). Charles (2000: viii) refers to implementing a new learning model into police training as requiring "an organisational transition of epic proportions". The review revealed that an appropriate change in police culture (founded in the 'paramilitary model' of traditional training) is essential if the transition to an andragogical and learner oriented model is to succeed. For example, "a disconnect between the adult teaching model and the organisational milieu will hinder learning and create organisational conflict that will detract from the learning experience" (Charles, 2000: vii). The 'paramilitary model', characterised by hierarchy, obedience to authority, isolation, stress and discipline, was identified as a particular barrier to recruit learning (Conti, 2000; Chappell and Lanza-Kaduce, 2010; Stanislas, 2013). The influence of police culture was also identified as an impediment to newer, more innovative models of policing in that there exists a "subcultural preference towards traditional policing" over new models such as community policing and problem-based policing (Chappell, 2007: 501). Chappell (2007: 501) argued that "police subculture is the single biggest impediment to the successful implementation of policing reforms in general, and COPS [community policing] in particular". Together this suggests that an appropriate change in police culture is an essential pre-requisite if training reform is to become embedded.

While socialisation was identified as a mechanism by some studies, it was also found as having a negative impact during classroom training in the academy in prioritising police culture over academy learning. Recruits are receptive to the environments within which they experience operational police work (Conti, 2011), and the effect of 'traditional' police socialisation, characterised by obedience to authority, stress and hierarchy, is contrary to the academic development of the independent, critical thinking and problem-solving recruit (Conti, 2000; Chappell and Lanza-Kaduce, 2010; Conti, 2011). Integrating theory and practice was often forfeited within the training programmes, if operational policing, often referred to as "real police-work" (Chappell and Lanza-Kaduce, 2010: 195), was privileged over academy work that was "scenarios" and "made up reality" (Chan *et al.*, 2003: 155)

Another barrier that can arise from a lack of support from the organisation, or poor implementation, is a lack of adequate resources for recruits. This can include equipment that would aid recruits in their learning, such as access to computers or a library, as well as physical attributes of the learning environment. Facilitation of specific learning activities such as group discussion and debate is aided by the physical environment which must be conducive to such activities. For example, lecture halls make it difficult for classes to have this small group interaction (Vodde, 2008). Poor facilities can contradict progress that is being made with the introduction of new learning models (King Stargel, 2010; Stanislas, 2013). Importantly, organisations must avoid the "quantity over quality" policy, whereby students are over-recruited, thereby limiting staff-student ratios and putting pressure on existing resources (Foley, 2014: 207).

The importance of field training in facilitating the integration of theory and practice, as well as exposing recruits to operational police work and socialisation into the culture, cannot be stressed enough. Organisational buy-in also covers ensuring that field training is organised and delivered so as to be effective. The most significant factor in the field training component is a supportive and effective tutor constable or FTO. Key to this is continuity, whereby recruits remain with the same tutor for their field training period. This involves having adequate number of tutors available to meet the demand of recruits, and appropriate scheduling. Continual change of tutor and environment is not optimal for recruit development (Green, 2001). Field tutors need to be carefully selected, choosing officers who are motivated individuals with adequate expertise, training, and motivation to teach (Novakowski, 2003). Six studies indicated how tutors or trainers were selected for their role, with all except one (Chan *et al.*, 2003) following some form of formal selection process. In Chan *et al.*, field training officers were chosen based on availability and not for their interest in education. Ideally, tutors/trainers should volunteer for the role or show an interest in teaching (Green, 2001; Vodde, 2008), or alternatively be selected by their superiors, who recognise their ability and potential (Thorneywork, 2004; Hendricks, 2014).

Essential for the field training phase is management by shift supervisors. Managers must recognise the needs of recruits, and as such be allocated shifts or jobs that are beneficial to their development. The pressure to resist mismanagement lies with the tutor who must "manage the development of their probationers and also deal with the demands of the public, requests for assistance from colleagues on shift and orders from supervisory officers" (Green, 2001: 13). It is important that adequate time is allocated for recruits and tutors to engage in reflection or de-briefing, during this crucial phase, despite organisational and operational pressures.

Based on the evidence, studies found that consistency of values between academic training and field training or operational practice was essential to ensure learning and knowledge retention occurred as intended. This includes avoiding the negative aspects of police culture or recruit socialisation during field training. Failure of field tutors/trainers to acknowledge academy learning, or actively encourage recruits to 'forget' what they learnt in the academy as field or operational training is where the 'real training' occurs was argued by a number of studies as being counterproductive and detrimental to the training process:

> "For all the rhetoric of 'professionalism'… the bulk of recruit training was based on the notion that policing is a craft to be learned 'on the job'... Probationers developed a number of strategies for coping with the challenges of the job and for fitting in at their new environment… This strategy of 'keep your mouth shut' or 'be seen and not heard' was a demonstration of respect for experience and rank; it was also a survival technique" (Chan *et al.*, 2003: 304).

This provides further evidence of the need for field training officers and tutors to be provided with adequate training and support, to ensure that there is cohesion between academic learning and the field training component. Implementation of the field training programme therefore requires support and coordination between all agencies, including the academic institution, the field training provider and all training staff (Novakowski, 2003: 152).

Trainer/tutor Role

Paramilitaristic academies were found to have been at odds with community-oriented policing agencies, and also the principles of andragogy (Charles, 2000; Chappell and Lanza-Kaduce, 2010; Stanislas, 2013). Since the paramilitary academy model consists of a punitive culture of training, often resulting in a high stress environment for recruits, a teacher-centred method fits more appropriately. However, community-oriented policing values problem-solving and critical thinking skills which are better developed through student-centred teaching methods. It is important to note the police academy or environment within which recruits are taught should complement the adult education model (Charles, 2000).

Andragogical (adult education) models seemed to demand a different set of skills than traditional teachers, requiring knowledge of methods putting the student at the centre of learning; methods which would often be contrary to the model under which they were trained (Charles, 2000; Lettic, 2016). Evaluations showed frustration by recruits towards instructors attempting to teach using student-centred methods without the proper training and a visible lack of "buy in" from instructors (Lettic, 2016: 95). In general, student-centred models were praised for their effectiveness in teaching recruits and were considered more likely to provide a more satisfying experience (Vodde, 2008; Shipton, 2011).

The evidence suggested that one of the most important factors for implementation was the need for trained and motivated trainers. Both trainers, during the academy phase, and tutors, during the field training phase, need to be sufficiently trained in order to deliver a new learning model and to understand their role. This is key within andragogy as "the adult education philosophy requires highly skilled and knowledgeable instructors that must be versed in various learning methods, which are often contrary to the quasi-military model under which they were trained" (Charles, 2000: vii). The instructor's role within both andragogy, and PBL, is notably different to the traditional lecture-based, teacher focused model of police training. The teacher's role within PBL is to "live in the background… which is a difficult role to assume when the instructor is used to be the focus of the students" (King Stargel, 2010: 140). However, trainers also must develop specific facilitation skills (Shipton, 2011), for example, withholding immediate answers to encourage students to find information themselves (Lettic, 2016), but also being conscious of when to 'check in' with students to ensure they are finding and understanding the right answers (Charles, 2000). Key to note is also the importance of both academics and practitioners in delivering training in partnership: "Along with well qualified academics and tutors, experienced police practitioners play a necessary and large part in all pre-join training programmes including those delivered in academic institutions" (Heslop, 2013: 21).

Trainer and tutor 'buy in' is also highly important, meaning that training staff are informed about why a new approach is being adopted (King Stargel, 2010), and what their role within it is (Lettic, 2016). One study that compared the experience of PBL in three contexts, found that in a training environment where there was "a lack of training and 'buy in' from instructors", the students were frustrated and confused (Lettic, 2016: 95). Conversely, in the other contexts where a strong connection was observed between the instructor, students and the material, there was a much more positive experience of PBL (Lettic, 2016).

The evidence indicated that the training received by trainers is variable, with some receiving no new training (Chappell, 2007), and others receiving training that was as variable as eight

hours, two days, one week or up to 140 hours. These studies, however, did not indicate the quality of the training received, or if they trainers/tutors felt this was adequate to perform their role.

Training Aims and Training Outcomes

To synthesise the outcomes of the training programmes reviewed, it was first essential to establish what the training aims were and whether the studies were measuring related outcomes. The wide ranging focus of the 33 studies included meant that often outcomes were not comparable, mainly because the aims themselves were hugely variable.

Aims

The evidence reported in the studies was sometimes a little unclear whether the reported aims were that of the training programme, or the ones that were determined by the study authors. Further, some studies reported training aims for the whole programme and others for part of the programme or for particular teaching and training methods. Other studies did not mention programme aims but were focused on study aims[7]. We have tried to distinguish between the two by categorising overall programme aims for individual officers and overall aims of a particular teaching or learning model. The study aims are more varied and dependent on the interests of the study authors.

Most studies did not specify the training aims tacitly, assuming it was not necessary to define specific aims because police academies are legally required to teach a curriculum with well-defined subjects. Some authors provided a list of topics that were seen as important, such as "police integrity, the code of ethics, police misconduct, police organizational values and their discretionary power" (De Schrijver and Maesschalck, 2015: 105) or 'policing activities, police technology, tactical intervention, crowd control, and commitment to training' (Deverge, 2016). Others presumed that the aim of the foundation degree was to transfer knowledge sufficiently to enable recruits to pass examinations without specifying what knowledge (Heslop, 2011b) or whether the success in exams translated into behaviour in practice.

Training aims for recruit officers

Chan *et al.* (2003: 44) explains the general aim of the Police Recruit Education Programme (PREP) was to produce "reflective practitioners" who were accountable, effective decision makers, and operationally independent. Following their training, officers should have "knowledge of policing, effective communication skills, commitment to ethical standards, respect for individual rights, self-awareness, empathy, and problem solving skills" (Chan *et al.*, 2003: 44), though specific training objectives were not detailed. Similarly, Conti (2011) does not provide aims of training, but rather notes recruits must meet performance requirements for "physical fitness, self-defence, fire-arms, and the like". He argues the academy experience was when "recruits must perpetually demonstrate that they are worthy

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[7] Appendix E gives an overview of aims reported as programme training aims and study aims of the author.

of an eventual elevation to the status of police officers" (Conti, 2011: 411), and failure to meet those requirements means the recruit is unfit to become an officer.

A number of studies focused on reporting the development of specific skills as part of the general training. For example one study reported that the aim of various parts of the training was to improve communication skills, in the very specific context of report writing to enable recruits to pass a written communication examination, and successfully write reports during field training (Hendricks 2014). Another study reported that the aim of a new course that adopted a problem-solving focused, scenario-based curriculum that integrated tactical and communication skills within the community-policing model was aimed at the preparing recruits to generalise their communication skills from the academy to the field, when confronted with real situations (Hess 2014). Aims for specific parts of the training, such as field training were as ambiguous as producing constables fit for independent patrol status (Green, 2001) or "to reach a level of competence in the workplace to the satisfy action of their tutor constable" (Thorneywork, 2004: 2). Other studies were even less descriptive when defining the aim, saying field training bridged the gap between academy training and operational police work through supplemental training and real world experience (Novakowski, 2003).

Aims of academies which incorporated a community-oriented approach were said to produce officers capable of developing rapport and building trust with local communities, having strong officer presence, and being decisive and assertive (Chappell, 2007).

Training aims of specific training models

Charles (2000) examined the implementation of an adult education model and reported that a new student-centred approach encouraged recruits to think creatively and problem solve, enabling them to think about each situation carefully to figure out the most appropriate response, as different situations may require different tactics. On top of aiming to produce recruits who could analyse and evaluate, this training model intended to encourage recruits to build on their own experiences by learning from mistakes and accomplishments.

An alternative 'narrative' method of teaching, examined by Poradzisz (2004), differed from traditional methods in several ways, such as reducing lesson plans to outlines, disallowing PowerPoint presentations, and encouraging instructors to discuss stories from their experiences. The aim of training using this approach was to teach recruits when dealing with individuals with mental disorders to assess, mediate, use available resources, and maintain safety.

Lettic (2016) evaluated PBL in three countries: the US; Southern Asia and Southeast Asia. The aim of training in this study was, through problem-based training, to produce a recruit who had the ability to fulfil five broad duties based on the mission statements of police departments. Those duties were: carrying out peace officer functions; assisting communities in preventing crime; fostering a cooperative relationship between police and the community; apprehending unlawful persons; and executing warrants and related duties. While the above looks more like a job description than training aims, it is more information than provided by many authors. Vander Kooi (2006) also assessed a PBL model, and did not provide explicit training aims. He noted, however, training should transform recruits into problem solvers who can work with the public, using community resources in a collective, collaborative

fashion. Vodde (2008) examined an andragogical instructional methodology in basic training, but was the only author of any of the 33 studies who acknowledged the clear lack of training outcomes.

Study Aims

Fourteen (42%) studies did not provide any detail regarding training aims or intended outcomes of training They did, however, provide aims for undertaking their study which spanned a variety of different purposes. Conti (2000) and Conti and Doreian (2014) both examined socialization by examining recruits' relationships with other recruits during training. Morrow (2008: 7) also examined socialization, to find "what it means to 'be' a police officer". Her study traced the cadets' transformation from civilians to troopers to uncover who the recruits were as people during that journey. McCay (2011) examined ways in which adult education techniques could improve training by examining attitudes, emotions and personal characteristics of recruits to find what elements of training recruits viewed as most impactful. A number of studies examined the impact of particular training techniques, or parts of the curriculum in terms of student satisfaction and attitudes (Shipton, 2009; King Stargel, 2010; Stanislas, 2012; Weber, 2012; Wong, 2014). Finally Chappell and Lanza Kaduce (2010) examined the positive impact of socialisation during training.

Outcomes

The synthesis focuses on the outcomes that are relevant to achieving the intended training aims. There was under-reporting of training outcomes within the 33 studies, given that a number of studies did not even identify clear training aims. Many of those that did provide this information, did not focus on the evaluation of the overall outcomes, but on specific aspects of the training, such as effectiveness of training models, teaching methods, particular aspects of training or on student satisfaction with training or trainer. The outcomes provided by authors were mixed, ranging from successfully completing the training, to achieving some skills or qualities as a result of training.

Chan *et al.* (2003: 200) state, "for most of the cohort, the transition from recruit to constable was successful: less than 10 per cent of the cohort left the police service through resignation or termination". Many of the studies examined a whole training program, academy program, or field training programme, and it can only be assumed from the evidence reported that the general aim of all academies was for recruits to ultimately pass formal examinations and progress to become police officers. Green (2001: 112) reported "it can be seen that the constabulary's minimum standard is being achieved in the majority of cases". Therefore, the majority of recruits successfully completing training is an expected outcome in all academies. McCay (2011: 89) concluded the training programme "had equipped this class with the requisite skills and attitudes" to function as a police officer, and Vodde (2008) also found recruits were equipped with the skill sets and competencies needed to function as a police officer.

On the other hand, some programmes reportedly increased specific skills or qualities. For example, De Schrijver and Maesschalck (2015: 109) found "the overall pattern remains the same: at all academies recruits report higher levels of knowledge at the end of their theoretical training" regarding knowledge of the code of ethics. Vander Kooi (2006) found

that specific training methodologies increased recruits' problem solving and critical thinking skills.

However, not all outcomes measured were very positive. For example, Heslop (2011a: 340) found placements which took training out of the classroom and into the community "had only a limited effect". Foley (2014: 194) found training produced physically fit recruits, due to two hours of physical education per day at the academy, but recruits felt they actually had "little or no acquisition of skills but knew how to take a direction from authority".

One of the biggest gaps in the review of evidence was the lack of evaluation of overall training outcomes. Without the articulation of specific training aims, the evaluation of outcomes was scattered and disparate. We were therefore unable to synthesise the training outcomes in any meaningful way to be able to conclude whether any training programme, or part of it, 'worked' or not.

Discussion

In this section, the key findings and their implications are summarised to guide future recruit training. The findings are discussed in terms of the context of the training, understanding how the training works and whether there are any specific conditions under which the chances of success are maximised. We also highlight limitations of the evidence and discuss a theory of change based on the evidence that exists and that which is missing in order to guide future implementation and evaluation of the degree-holder entry programme (DHEP) under the Police Educational Qualification Framework (PEQF) in England and Wales.

In describing the training program context, the overarching aim was to investigate the relationship of the context to the outcomes of the recruit training, and how decisions about the design or delivery of a recruit training programme can affect the effectiveness of a programme. Context matters to "the extent to which these pre-existing structures 'enable' or 'disable' the intended mechanisms of change" (Pawson and Tilley, 1997: 70). However, our findings showed that much of the available information on the contextual factors of training from the included studies was purely descriptive, and studies did not specifically look or find a relationship between the contextual factors and outcomes related to recruit training. The sole contextual factor that emerged as relevant was the importance of an integrated programme structure, whereby academic and field training components are interspersed, as opposed to being delivered in standalone blocks.

Few studies explicitly referred to the mechanisms that ensured training effectiveness, and those that did, merely mentioned them with reference to the literature. Only a few studies attempted to evidence these in the study. However, a number of implicit mechanisms were inferred from the studies by the authors. Overall, mechanisms were broadly grouped into two types: learning and teaching mechanisms; and integration of theory and practice – both of which aimed to enhance a number of outcomes for students.

Learning and teaching models such as andragogy and PBL were found to contain a number of specific techniques that aimed to facilitate learning and teaching for recruit training. These included scenario-based teaching methods that encouraged active participation, reflection and peer learning. Problem-based methodologies emerged as a mechanism of good practice for ensuring highly skilled, and satisfied recruits at the end of training. In particular

these methods were found to increase recruits' problem-solving and critical thinking skills which are needed to overcome the challenges operational police officers are faced with on a daily basis (Vander Kooi, 2006; Lettic, 2016). Recruits prefer more practical, hands-on teaching methods which fits with student-centred approaches by taking advantage of, and focusing on, recruits' input. Evidence suggests it is good practice to present training in a realistic and hands-on manner thus encouraging student participation (McCay, 2011; Weber, 2012). Further, scenario based training was found to be a useful way for recruits to practice, allowing recruits to use their experiences while holding them accountable (Weber, 2012).

Successful integration of theory and practice is key to ensuring the success of any police training programme. This could be partly engendered by judicious design and structure of the course whereby there are built-in opportunities for incorporating theoretical inputs into operational practice. Recruits can then learn from the experience by assessing and reflecting on it within an academic environment. Especially important is the field training aspect which, arguably, is the most important period of initial training in the process of becoming a police officer (Hendricks, 2014). An enthusiastic, highly skilled, and experienced field training officer (FTO) can have a positive impact on their recruit, but an FTO without those qualities and requisite experience can have a negative effect. Appropriate selection of tutor constables and FTOs who are capable of facilitating the process of linking academy knowledge with field operation and have adequate years of experience (Novakowski, 2003; Foley, 2014) is very important. Both academy instructors and mentors should be knowledgeable, highly skilled, and experienced, and perceived as such by the recruits.

A number of implementation factors were also mentioned as being important to ensure that the training be considered effective. At a high level, any changes that occur to a training programme require thorough commitment to the change, by the organisation, key decision makers and implementers. This includes, at the organisational level, the introduction of policies and changes to training structure that are necessary for the change to be successful. It also requires organisations to invest in the training of their trainers and tutors, as well as ensure that the right trainers and tutors are selected. This will ensure that training is delivered by highly skilled and motivated trainers that have 'bought in' to the changes in the curriculum and teaching and learning methods being introduced. Furthermore, students also feel this investment, so that they understand their role within their training environment, and they too can 'buy in' to the training. Changing recruit training from paramilitaristic models to encouraging independent thinking and problem solving requires a change in the organisational culture, which has traditionally valued operational expertise over theoretical knowledge. Any change in police culture is a long term process, nevertheless evaluations expect to measure immediate results of changes in training. It is, therefore, worth noting that thorough implementation of any new learning model can take time, and the results might not be as apparent in the short term (Charles, 2000; Chan *et al.*, 2003).

A review of the available evidence suggests several important policy recommendations for guiding the design and delivery of a graduate level training programme (see McGinley *et al.*, 2018). However, since many of the studies did not either mention training aims or focus on evaluation overall training outcomes, the evidence on whether training works was inadequate. The review suggests that thus far very little attention has been paid to defining what the end outcomes of the recruit training are, except in broad terms such as 'delivering the curriculum' and 'enabling recruits to become police officers'. Some studies mention attainment of specific skills that are the intended outcomes of specific aspects of recruit

training. Consequently, most evaluations focused on whether those specific skills, for example, communications skills training improves report writing or interview techniques, were achieved immediately following the training. Training success (or otherwise) has traditionally been measured in terms of trainee satisfaction with the training or trainer, and/or their performance in exam related tasks. Almost none of the studies assessed whether the purported learning fed into behaviour in practice or even whether the learning was sustained over the short or medium term. Thus, conclusions about whether or not the training "works" were based on 'artificial' assessments and rarely focused on the intended outcome of improving service to the public (if that could be assumed to be the ultimate goal of producing a professional police officer in a liberal democracy like the UK).

Clearly almost all the studies looked at traditional recruit training which seems to be on par with Level Three[8] training in the UK. However, the raise in the level at which the College of Policing are aspiring new recruits will be able to operate at, envisages a sea-change in not only the content but also the teaching and assessment methods. Close collaboration between forces and HEIs will bring about a shift in conceptual and cultural attitudes towards training that should assist the implementation of the new curriculum and training under the PEQF. However, in order to evaluate whether this 'uplift' in training has the desired impact, it is first important to articulate what the desired outcomes are and work out the steps whereby the proposed new training will achieve these intended outcomes.

A Theory of Change

A large gap in the literature is the absence of a theory of change for recruit training, which is intended to simply but elegantly explain how and why an initiative works (Weiss, 1995). The first step is to determine what the outcomes of the initiative, i.e. graduate conversion course training for recruits, should be; the second, to determine what activities are required to implement that initiative; and finally identifying the contextual factors that might affect the achievement of the intended outcomes (Connell and Kubisch, 1998). Articulating a theory of change before conducting any evaluation has the advantage of sharpening the focus of the intervention, and designing appropriate assessment points to evaluate the effect on the outputs and outcomes at various stages of the process (Weiss, 1995). Further, it also encourages agreement between the various stakeholders as to the causal attribution between what aspects of the intervention are intended to lead to specific outcomes.

Thus, the design and delivery of the new recruit training under the PEQF and any proposed evaluations should be guided by a theory of change for police recruit training. If the evaluation has to be more sophisticated than a process evaluation, then understanding and testing 'how' the theory works i.e. the mechanisms, is essential. We therefore present a first attempt at articulating a theory of change for the DHEP which can be amended if required to evaluate the effectiveness of training under the three entry routes. A good theory of change is plausible, doable, and testable (Connell and Kubisch, 1998). Based on these principles, Figure 1 presents the inputs, outputs, outcomes, and impact of recruit training under the PEQF that are grounded in our findings from this review and a previous review of graduate training courses in other professions and other related work (Belur *et al.*, 2017; Belur, 2018).

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[8] Referring to the difficulty of the qualification (https://www.gov.uk/what-different-qualification-levels-mean)

It is the culmination of the learning from the work conducted as part of the larger research project.

The inputs for any degree-holder programme (or graduate conversion course) will require forces to work in partnership with HEIs. Our previous work (Belur *et al.*, 2018) suggests that a collaborative model would work best, whereby academic and practitioner tutors work in close collaboration to structure the course design, delivery and sharing of teaching load as well as assessments. The result would be a well conceptualised course with an integrated structure and using andragogic methods suitable for adult learners. The delivery of the academic and field training components should correspondingly be meshed in a way as to integrate theory into practice. The assumptions in the model below are really the contextual conditions that must be present in order for the requisite outputs and outcomes to occur. The aims of this training are articulated in terms of desired changes at the individual officer level, their attitudes and behaviour, as well as at the organisational level, in terms of better management and performance. The overall impact of the new recruit training would be to lead to benefits at the organisational and societal levels.

Thus assessments should be creatively designed to assess whether the interim outcomes are achieved along the way, and also that the measurement tools are actually assessing what they are meant to assess, i.e. actual change in behaviour rather than trainee satisfaction or attitudes. This will require further work in terms of – first, setting up the vital interim outcomes that should be measured and second, creating effective measurement tools and administering them. There are well-designed existing assessment tools for evaluating the impact of training in the medium and long term. However, there is still more work to be done in terms of deciding up front what success would look like, i.e. what standards of training and of professionalisation are 'good enough' (Bowling, 2007) to be considered value for money? Is the goal merely to improve current training outcomes or whether there should be a baseline for what 'good' looks like, which then becomes the minimum expected level of achievement?

Finally, the unknowns are factors identified by stakeholders in Learning and Development units of various forces (Belur *et al.*, 2018), and are something that the evaluations of the new DHEP training need to monitor closely.

We acknowledge that there might be several problems with the theory we propose identified by Weiss (1997). However, we focus on the three main shortcomings at the design phase, according to Weiss (1997), as being – there might be different possible theories to explain the effect; concepts might be articulated in different terms, so what we call assumptions, might be necessary conditions for the theory to work; and finally, the programme is more complicated than the simplified version presented here to be of practical use and that each strand of how particular inputs lead to specific outcomes and impact might have to be worked out separately. However, we hope that our pioneering attempt at articulating a theory of change is a starting point for scholars and practitioners to think about designing and evaluating recruit training in more defined terms than the delivery of a set curriculum assessed through exams or other tools to determine success.

Conclusion

The review synthesises the available evidence contained in 33 studies on police recruit training across various countries. Inspired by a realist approach, the review synthesises the evidence within the Context-Mechanism-Outcome configuration to draw some conclusions about whether recruit training works, and if so, for whom and under what conditions. The systematic review of police recruit training revealed that there is a wide range of evidence but it is quite scattered and diffuse. Although studies described the context, rarely did they associate it with the implementation or mechanisms linked to the success of the training. Underdeveloped theory guiding police training has meant that mechanisms are often left unarticulated, and even if they mentioned, are rarely tested. Finally, the lack of any specific conceptualisation of training aims and outcomes in the medium and short term has meant that success has been measured in terms of student satisfaction or ability or successful completion of the training. There is an urgent need for a proper theory of change and the design of logic models to guide the design and implementation of the three training routes under the PEQF. Even more important is a theory based evaluation of the proposed training, to establish whether the three training routes are achieving comparable outcomes and further to establish whether and why any particular route has been more 'successful' (or not) than others.

Figure 1: Theory of Change for DHEP

Assumptions

Candidates possessing appropriate critical thinking and problem solving skills

Collaborative partnership arrangements

Upskilling of field tutors and mentors

Academic and field tutors working and assessing jointly

Organisational buy-in for innovative teaching and learning methods

Inputs

Degree conversion course curriculum

Recruitment of graduate candidates

HEI involvement

Independent QAA body to oversee

Outputs

Design and delivery of training in partnership

Integration of classroom and field training

Consolidation of theory and practice through adult learning and teaching methods

Outcomes

Innovative solutions to problems and exercising critical thinking skills

Professionalism drawing upon an evidence based approach

Actions grounded in principles of procedural justice

Effective leadership and performance management

Impact

Reduction in crime

Improved public service

Improved confidence in the police

Stronger police community relations

Reformation of negative aspects of organisational culture

Unknowns

1. Impact on diversity
   - Recruitment
   - Retention
2. Functional equivalence between three entry routes

Measurement Tools

Official Crime Figures

Victim Survey

Public Attitude Surveys
- Confidence in the police
- Police legitimacy

HMIC Inspection Reports

Assessment of training
- Theoretical skills
- Practical skills

22

References

All studies included in the Systematic Review are marked with an asterisk (*)

Belur, J., Agnew-Pauley, W., and Tompson, L. (2017 Under review) Designing a graduate entry route for police recruits: lessons from a rapid evidence assessment of other professions. *Police Practice and Research*.

Belur J. (2018) Organisational readiness for the PEQF: Interviews with stakeholders, MOPAC

Bowling, B. (2007) Fair and effective policing methods: Towards 'good enough' policing. *Journal of Scandinavian studies in criminology and crime prevention*, *8*(S1), 17-32

*Chan, J. B. L, Devery, C. and Doran, S. (2003) *Fair cop: Learning the art of policing*. University of Toronto Press

*Chappell, A. T. and Lanza-Kaduce, L. (2010) Police academy socialization: Understanding the lessons learned in a paramilitary-bureaucratic organization. *Journal of Contemporary Ethnography*, 39(2), pp. 187

*Chappell, A. T. (2007) Community policing: is field training the missing link?, *Policing*, 30(3), pp. 498-517

*Charles, M. T. (2000) Police training: breaking all the rules. Implementing the Adult Education Model into police training, Charles C Thomas Publisher

College of Policing (2016) *Proposals for Qualifications in Policing,* (Accessed 11 Dec 2017). Available online at: www.college.police.uk/News/College-news/Pages/peqf_consultation.aspx

Connell, J. P., & Kubisch, A. C. (1998) Applying a theory of change approach to the evaluation of comprehensive community initiatives: progress, prospects, and problems. *New approaches to evaluating community initiatives*, *2*(15-44), 1-16.

*Conti, N. and Doreian, P. (2014) From here on out, we're all blue: Interaction order, social infrastructure, and race in police socialization. *Police Quarterly*, 17(4), pp. 414

*Conti, N. (2000) *Creating the thin blue line: Twenty-one weeks of police socialization*. PhD thesis, University of Pittsburgh (United States)

*Conti, N. (2011) Weak links and warrior hearts: A framework for judging self and others in police training. *Police Practice & Research*, 12(5), pp. 410
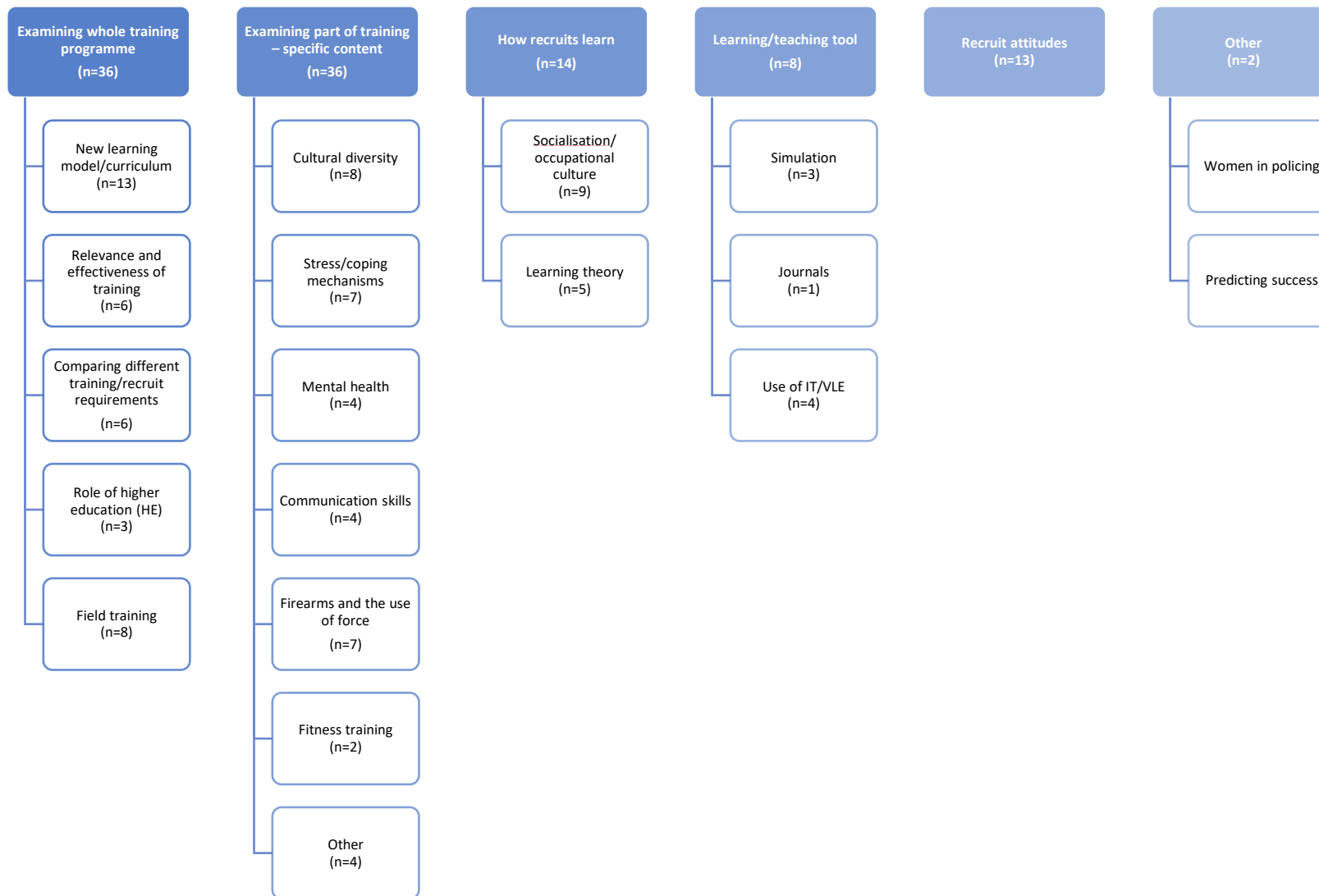
Cordner, G. and Shain, C. (2011) The Changing Landscape of Police Education and Training, *Police Practice and Research*, 12(4), pp. 281-285

*De Schrijver, A. and Maesschalck, J. (2015) The development of moral reasoning skills in police recruits. *Policing*, 38(1), pp. 102-116

*Deverge, C. A. (2016) Police education and training: A comparative analysis of law enforcement preparation in the United States and Canada. Master's thesis, The University of Southern Mississippi (United States)

*Foley, J. S. M. (2014) "Training for Success?": An analysis of the Irish Garda Siochana Trainee programmes from 1922 to present day. PhD thesis, University of Portsmouth (United Kingdom)

*Green, R. C. D. (2001) Comparative study of the effectiveness of three of the Probationer Training Units within Hertfordshire Constabulary. Master's thesis, University of Hull (United Kingdom)

*Hendricks, M. R. (2014) Gauging alignment between school and work: An Activity Theory analysis of police report writing instruction. PhD thesis, The University of Texas at El Paso (United States)

*Heslop, R. (2011a) Community engagement and learning as 'becoming': findings from a study of British police recruit training. *Policing & Society*, 21(3), pp. 327-342

*Heslop, R. (2011b) Reproducing police culture in a British university: findings from an exploratory case study of police foundation degrees. *Police Practice & Research*, 12(4), pp. 298-312

*Heslop, R. (2013) Police pre-employment training the United States of America: (A study conducted under the auspices of a Fulbright Police Research Scholarship). Wakefield, UK: West Yorkshire Police Training and Development Centre. Available online at: http://www.richardheslop.net/PDFs/Heslop%20Fulbright%20USA%20Police%20Training%20Report.pdf

*Hess, E. M. (2014) Developing communications skills for 21st century policing: Evaluating the LAPD Academy's new recruit basic course. PhD thesis, Fuller Theological Seminary (United States)

*Hundersmarck, S. F. (2004) Sixteen weeks and a year: The generalization of knowledge and identity between the police academy and police field training. PhD thesis, Michigan State University (United States)

Johnson, S.D., Tilley, N. and Bowers, K.J. (2015) Introducing EMMIE: an evidence rating scale to encourage mixed-method crime prevention synthesis reviews, *Journal of Experimental Criminology,* 11 (3), pp. 459-473

*King Stargel, T. M. (2010) *The perceived value of problem -based learning at a police training academy*. PhD thesis, Seattle University (United States)

*Lettic, S. (2016) Problem based learning (PBL) in police training: An evaluation of the recruit experience. PhD thesis, Capella University (United States)

*McCay, D. A. (2011) They are old enough to carry guns, should we teach them like children? The application of adult learning strategies in police training. PhD thesis, Purdue University (United States)

McGinley, B., Agnew-Pauley, W., and Belur, B. (2017). Police Recruit Training Programmes: A Systematic Map of Research Literature.

*Morrow, J. L. (2008) Creating the blue code: Identity, gender and *class in a police training environment. PhD thesis, University of Colorado (United States)

Neyroud, P. W. (2011) *Review of Police Leadership and Training*, London: Home Office

*Novakowski, M. (2003) Exploring field training within British Columbia's independent police agencies: It's the singer, not the song. Master's thesis, Royal Roads University (Canada)

Pawson, R. and Tilley, N. (1997) *Realistic Evaluation*, London: Sage

*Poradzisz, D. J. (2004) *Alternative instructional methods in police learning*. PhD thesis, University of Illinois at Chicago (United States)

*Rantatalo, O. and Karp, S. (2016) Collective reflection in practice: An ethnographic study of Swedish police training. *Reflective Practice*, 17(6), pp. 708-723

*Seggie, B. W. (2011) Initial police training for the 21st century: Is the learning strategy meeting the needs of the organisation?. PhD Thesis, University of Southampton (United Kingdom)

*Shipton, B. (2009) Problem Based Learning: Does it provide appropriate levels of guidance and flexibility for use in police recruit education?. *Journal of Learning Design*, 3(1), pp. 57-67

*Shipton, B. (2011) Expanding police educators' understanding of teaching, are they as learner-centred as they think?. *Journal of Learning Design*, 4(2), pp. 1-19

*Stanislas P. (2013) Transforming St Lucian policing through recruit training in a context of high crime. In *International Perspectives on Police Education and Training.* Abingdon: Routledge, pp. 209-234

*Thorneywork, D. (2004) *Just how good is Nellie or Neil? Assessing the teaching skills of the tutor constable*. Master's Thesis, University of the West of England (United Kingdom)

*Vander Kooi, G. P. (2006) *Problem-Based Learning: An attitudinal study of police academy students*. PhD Thesis, Western Michigan University (United States)

*Vodde, R. F. (2008) The efficacy of an andragogical instructional methodology in basic police training and education. PhD Thesis, University of Leicester (United Kingdom)

*Weber, A. A. M. (2012) *An evaluation of a Midwestern police academy.* Master's Thesis, University of Minnesota (United States)

Weiss, C.H. (1997) How Can Theory-Based Evaluation Make Greater Headway?" *Evaluation Review* 21, No. 4.

Weiss, C.H. (1995) Nothing as Practical as Good Theory: Exploring Theory-based Evaluation for Comprehensive Community Initiatives for Children and Families. In *New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts*, ed. James Connell et al. Washington, DC: Aspen Institute

*Wong J.S.Y. (2014) *Field training officers' ratings of communication and listening skills in police officer trainees*. PhD Thesis, Fuller Theological Seminary, School of Psychology (United States).

Appendix A: Study Themes

Examining whole training programme (n=36)	Examining part of training – specific content (n=36)	How recruits learn (n=14)	Learning/teaching tool (n=8)	Recruit attitudes (n=13)	Other (n=2)
New learning model/curriculum (n=13)	Cultural diversity (n=8)	Socialisation/ occupational culture (n=9)	Simulation (n=3)		Women in policing
Relevance and effectiveness of training (n=6)	Stress/coping mechanisms (n=7)	Learning theory (n=5)	Journals (n=1)		Predicting success
Comparing different training/recruit requirements (n=6)	Mental health (n=4)		Use of IT/VLE (n=4)		
Role of higher education (HE) (n=3)	Communication skills (n=4)				
Field training (n=8)	Firearms and the use of force (n=7)				
	Fitness training (n=2)				
	Other (n=4)				

Appendix B: Method used, quality rating, theme and units of measurement for all studies

Author	Title	Methods	Quality rating	Theme	Measurement
Chan *et al.* (2003)	Fair cop: Learning the art of policing	Mixed	Strong	How recruits learn	Surveys of recruits (demographics, initial expectations of training, current experiences training, field training experience, views of their organisation, orientation towards police work) Interviews with recruits Observations at various stages of training Review of course materials
Chappell (2007)	Community policing: is field training the missing link?	Qualitative	Moderate	Examining academic and/or field training programme	Examined tutor evaluation forms of recruit performance
Chappell and Lanza-Kaduce (2010)	Police Academy Socialization: Understanding the Lessons Learned in a Paramilitary-Bureaucratic Organization	Qualitative	Moderate	How recruits learn	Observation of academy phase Review of course material
Charles (2000)	Police training: breaking all the rules. Implementing the Adult Education Model into police training	Mixed	Moderate	Examining academic and/or field training	Surveys of client departments (determining the effect of training methodologies) Interviews with chiefs, sheriffs, FTOs, past and current students and departmental representatives Observation of academy component
Conti (2000)	Creating the thin blue line: Twenty-one weeks of police socialization	Mixed	Moderate	How recruits learn	Surveys of recruits (demographics, social network analysis - interactions with recruits at lunch, commuting, who they know best) Interviews with academy staff Informal interviews with recruits and staff Observation of academy component
Conti	Weak Links and Warrior	Qualitative	Moderate	How recruits learn	Ethnographic observation of training academy

(2011)	Hearts: A Framework for Judging Self and Others in Police Training		Moderate		
Conti and Doreian (2014)	From Here On Out, We're All Blue: Interaction Order, Social Infrastructure, and Race in Police Socialization	Mixed	Moderate	How recruits learn	Surveys of recruits (demographics, social network analysis with focus on race) Observation of academy component
De Schrijver and Maesschalck (2015)	The development of moral reasoning skills in police recruits	Mixed	Moderate	How recruits learn	Surveys of recruits (knowledge of the code of ethics and their moral reasoning skills) Observation of integrity training sessions in five academies
Deverge (2016)	Police education and training: A comparative analysis of law enforcement preparation in the United States and Canada	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits (assessing levels of motivation and self-efficacy throughout the training) Interviews with instructors
Foley (2014)	"Training for success?": An analysis of the Irish Garda Siochana trainee programmes from 1922 to present day	Mixed	Strong	Examining academic and/or field training	Surveys of recruits (demographics, opinions on overall training, reliability of an educative instrument, their participation in certain activities and events) Interviews with recruits, trainers and retired trainers Focus group with trainees Observation
Green (2001)	Comparative study of the effectiveness of three of the Probationer Training Units within Hertfordshire Constabulary	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits, tutor constables, and supervising sergeants (perceptions of each other) Interviews with recruits, tutors and sergeants
Hendricks (2014)	Gauging alignment between school and work: An activity theory analysis of police report writing instruction	Qualitative	Strong	How recruits learn	Interviews with recruits, instructors, field training officers and major audiences of police reports (supervisors and prosecutors)

					Observation of academy component and ride along's Review of course materials
Heslop (2011a)	Community engagement and learning as 'becoming': findings from a study of British police recruit training	Qualitative	Moderate	How recruits learn	Interviews with recruits
Heslop (2011b)	Reproducing Police Culture in a British University: Findings from an Exploratory Case Study of Police Foundation Degrees	Qualitative	Moderate	How recruits learn	Interviews with recruits
Heslop (2013)	Police Pre-Employment Training the United States of America: (A study conducted under the auspices of a Fulbright Police Research Scholarship)	Mixed	Moderate	Examining academic and/or field training	Statistics gathered from the Bureau of Justice statistics and other governmental bodies (descriptive data) Observations of police training establishments Interviews with students, trainers, academics, practitioners
Hess (2014)	Developing Communications Skills for 21st Century Policing: Evaluating the LAPD Academy's New Recruit Basic Course	Mixed	Moderate	Examining academic and/or field training	Surveys of Field Training Officers (rating themselves as an FTO, also evaluating how well the academy prepared their probationer in these competencies: Problem Solving/Critical Thinking, Community Relations/Policing, Communication, Professionalism, other skills) Interviews with field training officers Analysis of field training officer observation forms
Hundersm arck (2004)	Sixteen weeks and a year: The generalization of knowledge and identity between the police academy and police field training	Qualitative	Strong	Examining academic and/or field training programme	Observation and interviews of recruits during academy and field training
King (2010)	The perceived value of problem -based learning at a	Qualitative	Strong	Examining academic and/or field training	Interviews with recruits Observation of academy component

	police training academy			programme	Analysis of documents
Lettic (2016)	Problem based learning (PBL) in police training: An evaluation of the recruit experience	Mixed	Strong	Examining academic and/or field training	Archival data (demographics of recruits, quantified [rated] qualitative recruit journal entries on experiences while training using problem based learning) Interviews and observations of recruits in three different countries
McCay (2011)	They Are Old Enough To Carry Guns, Should We Teach Them Like Children? The Application of Adult Learning Strategies in Police Training	Qualitative	Strong	How recruits learn	Interviews with recruits and training staff Observation of academy component
Morrow (2008)	Creating the blue code: Identity, gender and *class in a police training environment	Qualitative	Moderate	How recruits learn	Interviews with recruits and trainers Observation of one recruit class over academy component Analysis of training manuals
Novakowski (2003)	Exploring Field Training Within British Columbia's Independent Police Agencies: It's the Singer, Not the Song	Mixed	Moderate	Examining academic and/or field training	Surveys of recently graduated recruits (evaluating the field training content, and their FTO) Action research methodology
Poradzisz (2004)	Alternative instructional methods in police learning	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits (instructional satisfaction, inspiration, and cross-subject integration), recruit test scores (comprehension of training material) Interviews with instructors
Rantatalo and Karp (2016)	Collective Reflection in Practice: An Ethnographic Study of Swedish Police Training	Qualitative	Moderate	How recruits learn	Observations, interviews and focus group with recruits Review of course material
Seggie (2011)	Initial police training for the 21st century: is the learning strategy meeting the needs	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits, sergeants, supervisors, tutors, and trainers (on the effectiveness of initial recruit training, opinions on effectiveness of

	of the organisation?				teaching and learning) Interviews with trainers, tutors, assessors, senior officers, sergeants and recruits
Shipton (2009)	Problem Based Learning: Does It Provide Appropriate Levels of Guidance and Flexibility for Use in Police Recruit Education?	Qualitative	Moderate	How recruits learn	Observation and participant in a PBL course aimed at tutors or trainers
Shipton (2011)	Expanding Police Educators' Understanding of Teaching, Are They as Learner-Centred as They Think?	Mixed	Moderate	Examining academic and/or field training	Surveys of police and non-police educators (dominant teaching approaches) Open and closed questions
Stanislas (2013)	Transforming St Lucian policing through recruit training in a context of high crime	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits (perceptions of their basic training) Interviews with recruits Observation of academy component
Thorneywork (2004)	Just how good is Nellie or Neil? Assessing the teaching skills of the tutor constable	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits (evaluating ten-week tutored period regarding problem based learning, reflective practice, role playing, instruction) Interviews with tutors and recruits Observation of tutor-recruit feedback sessions Analysis of documents
Vander Kooi (2006)	Problem-Based Learning: An Attitudinal Study of Police Academy Students	Quantitative	Moderate	Examining academic and/or field training	Surveys of recruits (perceptions of whether or not the teaching method improved their problem-solving and critical thinking skills, enjoyment, and competency)
Vodde (2008)	The efficacy of an andragogical instructional methodology in basic police training and education	Mixed	Moderate	Examining academic and/or field training	Surveys of recruits (andragogy vs pedagogy, measured recruits' reaction, learning, behaviour, results under both teaching styles) Interviews with recruits and academy directors Observation of all components of training

					Administration of problem based learning assessments.
Weber (2012)	An Evaluation of a Midwestern Police Academy	Mixed	Moderate	Examining academic and/or field training	Retention rates of graduated recruits Interviews with police officers Observation of academy component
Wong (2014)	Field Training Officers' Ratings of Communication and Listening Skills in Police Officer Trainees	Qualitative	Moderate	Examining academic and/or field training programme	Interviews with field training officers (FTO) Archival data from the training academy

Appendix C: Training programme descriptive information for all studies (n=33)

Author	Study country	Length of training			Structure	Provider	Timing of training	% of recruits with HE qualification	Qualification attained	Accreditation and quality assurance
		Total	Academy / university	Field training						
Lettic (2016)	United States of America South Asia and Southeast Asia		6 months		Interspersed	Training academy				
Heslop (2013)	United States of America Ohio (and sometimes Kentucky)	579 hours				Both training academy and HEI and forces	Pre-employment and post-employment		Bachelor degree	
Vodde (2008)	United States of America New Jersey		23 weeks			Training academy				
Weber (2012)	United States of America Minnesota	1 year				Training academy				
Vander Kooi (2006)	United States of America Michigan	4 years			Standalone	HEI/University	Pre-employment		Bachelor degree	External accreditation

Study	Country				Type	Setting	Employment	Assessment		Accreditation
Hess (2014)	United States of America LAPD		6 months		Standalone	Training academy				
McCay (2011)	United States of America Indiana		15 weeks			Training academy	Pre-employment			
Chappell & Lanza-Kaduce (2010)	United States of America Florida	3 years			Standalone	Academy run by a community college	Pre-employment and post-employment			
Poradzisz (2004)	United States of America Chicago Police Department				Standalone	Training academy		Mentioned but not specified		
Deverge (2016)	United States of America Canada		USA: 11 weeks Canada: 15 weeks		Interspersed	Training academy		67%		
Chappell (2007)	United States of America			14 weeks	Standalone	Field training - police force	Post-employment			
Charles (2000)	United States of America	480 hours			Standalone	HEI/University - Police training institute	Pre-employment	Mentioned but not specified		External accreditation
Conti &	United		21 weeks			Training				

34

Doreian (2014)	States of America					academy				
Conti (2000)	United States of America		21 weeks		Interspersed	Training academy	Pre-employment			External accreditation
Conti (2011)	United States of America		21 weeks			Training academy	Post-employment			
Hendricks (2014)	United States of America	10 months	6 months	4 months	Interspersed	Training academy	Post-employment			
Hundersmarck (2004)	United States of America		16 weeks	14-16 weeks	Standalone	Both training academy and HEI/university	Pre-employment	78%	Foundation/ associate degree	External quality assurance
King Stargel (2010)	United States of America			18 weeks		Both training academy and HEI/university		Mentioned but not specified		
Morrow (2008)	United States of America		22 weeks		Standalone	Training academy		33%		
Wong (2014)	United States of America				Standalone	Training academy				
Green (2001)	United Kingdom Hertforshire	30 weeks	20 weeks	10 weeks	Standalone	Training academy	Post-employment			

	constabulary									
Heslop (2011b)	United Kingdom England		6 weeks		Standalone	HEI/University	Post-employment	Mentioned but not specified	Foundation/ associate degree	
Heslop (2011a)	United Kingdom	2 years				Both training academy and HEI	Post-employment		Foundation/ associate degree	External accreditation
Seggie (2011)	United Kingdom		18 weeks		Standalone	Police forces	Post-employment		Lever 3 or 4 NVQ	
Thorneywork (2004)	United Kingdom		21 weeks	10 weeks	Standalone	Training academy				External quality assurance
Stanislas (2013)	Saint Lucia	2 years	6 months		Interspersed	Training academy				
Rantatalo & Karp (2016)	Europe Sweden	1 year				Training academy				
Foley (2014)	Europe Ireland	Two years	30 weeks	66 weeks	Interspersed	Training academy	Post-employment		Bachelor degree	External accreditation Internal quality assurance
De Schrijver & Maesschalck (2015)	Europe Belgium	One year	8 months	6-10 weeks	Standalone	Training academy	Pre-employment	37%		
Novakow	Canada		22 weeks	13-17	Standalone	Training	Post-	51.70%		

ski (2003)				weeks		academy	employment			
Chan *et al.* (2003)	Australia	2 years			Standalone	Training academy		28%		
Shipton (2009)	Australia				Standalone	HEI/ University			Foundation/ associate degree	
Shipton (2011)	Australia					Both HEI/ University and police force			Foundation/ associate degree	External accreditation

Author	Andragogy	PBL	Scenario-based	Active involvement of learner	Peer learning	Reflection	Integrating theory and practice	Tutor as a key role	Application of learning principles	De-briefing (facilitated reflection)	Socialisation	Total mechanisms
Thorneywork (2004)			X			X	X	X	X	X		6
Chappell & Lanza-Kaduce (2010)	X		X			X			X	X	X	6
Vodde (2008)	X		X	X	X	X						5
Chan *et al.* (2003)						X		X		X	X	4
Charles (2000)	X			X			X				X	4
Lettic (2016)	X	X			X	X						4
Chappell (2007)	X								X		X	3
Green (2001)						X		X		X		3
Vander Kooi (2006)	X	X		X								3
Shipton (2009)	X	X		X	X							3
Rantatalo & Karp (2016)					X	X	X					3
McCay (2011)	X		X	X								3
Deverge (2016)	X		X									2
Novakowski (2003)							X	X				2
King Stargel (2010)		X		X								2
Seggie (2011)			X	X								2

												Total
Heslop (2011a)						X						X	2
Hundersmarck (2004)							X						1
Poradzisz (2004)					X								1
Wong (2014)		X											1
Weber (2012)						X							1
Foley (2014)							X						1
Stanislas (2013)							X						1
Hendricks (2014)								X					1
Conti & Doreian (2014)												X	1
Conti (2011)												X	1
Heslop (2011b)												X	1
Heslop (2013)													0
Hess (2014)													0
Shipton (2011)													0
Conti (2000)													0
De Schrijver & Maesschalck (2015)													0
Morrow (2008)													0
Total	9	5	6	6	5	9	7	5	3	4	8	

Appendix E: Table of Studies referring to Training Aims

Short Title	Overall aims of training	Specific aims of parts of the training	Aims of specific teaching methods	Specific study aims
Chan *et al.* (2003)	x			
Chappell and Lanza-Kaduce (2010)			x	
Chappell (2007)	x	x		
Charles (2000)	x		x	
Conti and Doreian (2014)				x
Conti (2000)				x
Conti (2011)	x			
De Schrijver and Maesschalck (2015)	x			
Deverge (2016)	x			
Foley (2014)				x
Green (2001)		x		
Hendricks (2014)				
Heslop (2011b)	x			
Heslop (2011a)		x		
Heslop (2013)				x
Hess (2014)	x			
Hundersmarck (2004)		x		
King Stargel (2010)				x

Lettic (2016)	x		x	
McCay (2011)				x
Morrow (2008)				x
Novakowski (2003)		x		
Poradzisz (2004)		x	x	
Rantatalo and Karp (2016)				x
Seggie (2011)				x
Shipton (2009)				x
Shipton (2011)				x
Stanislas (2013)				x
Thorneywork (2004)		x		
Vander Kooi (2006)			x	
Vodde (2008)			x	
Weber (2012)				x
Wong (2014)				x
Total	9	7	6	14