Investigating Serious Violent Crime: What works, what doesn’t and for what crime types?

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Introduction

Serious violent crime is a persistent and significant criminal justice issue (see Eisner, 2003; Fuller, 2013; Truman, Langton, & Planty, 2013; Wallace et al., 2009). In 2003 and 2008, the Australian Institute of Criminology delivered a clear message: despite the relatively low number of incidents compared to non-violent crime, serious violent crime offences account for a substantial portion of the costs of crime in Australia (Mayhew, 2003; Rollings, 2008). Moreover, a number of scholars have demonstrated a decline in police clearance of serious violent crime over recent decades (Horvath et al., 2001; Litwin & Xu, 2007; Riedel, 2008). Although investigation and responding to serious violent crime are core components of police work, the evidence-base for police investigative techniques for serious violent crime lacks the level of evaluation and synthesis seen for other policing interventions which have been predominantly assessed according to their impact on general crime and disorder.

This systematic review aims to redress this imbalance by conducting the first ever systematic review focusing on the effectiveness of techniques that police use to investigate serious violent crime. Our review examines the evidence on police investigative techniques for serious violent crime to determine what works, what doesn’t, and for what crime types. Specifically, we systematically evaluate the impact of police investigative techniques on key police outcomes in the context of serious violent crime: offender identification, arrests, elicitation of confessions, convictions and case closure.

Defining Serious Violent Crime and Police Investigative Techniques

There is variation in the way that ‘serious violent crime’ is operationalised in the literature and we note the conceptual ambiguity between what constitutes violent crime and what constitutes serious violent crime. The most common approach has been to provide an offence-based definition of serious violent crime which includes the following offences: murder, manslaughter, rape or other sexual assault, aggravated assault and robbery (Brame, Mulvery, & Piquero, 2001; Day et al., 2012; Kramer & Ulmer, 2002; Truman et al., 2013). We argue that a simple offence-based definition is the most pragmatic approach for this review, yet we do acknowledge that there are differences in the way that offences are defined and aggregated across jurisdictions and research. For example, research may distinguish between aggravated, domestic violence and general assault, whereas other research may group all assault offences in the one category. Therefore, while we adopt an offence-based definition in our review, the conceptual subtleties of what is meant by ‘serious violent crime’ are incorporated into our methodology and research synthesis.

Defining ‘police investigative techniques’ is more straightforward than defining serious violent crime and, based on policing literature, we define a police investigative technique to be any activity or strategy used by police to gather evidence in order to identify offenders, arrest offenders, elicit confessions, close cases or secure convictions (Newburn, 2007; Palmiotto, 2004; Stelfox, 2013). Examples include: collection and testing of DNA or forensic evidence, line-ups, interrogation and interview techniques, specialised task forces, deception detection techniques, facial composites, surveillance techniques and psychological profiling. To include both reactive

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4 See Ulmer & Bradley, 2006; Wallace et al., 2009; and Wellner 2013 for preliminary attempts to create measures of offence severity based on penalties and sentences.
and proactive criminal investigations, we define the police investigative period to be from the point that a serious violent crime comes to the attention of police (e.g., suspected, reported or detected) until the point when the case is either closed or transitioned to the judicial arm of the criminal justice system (Newburn, 2007; Palmiotto, 2004; Stelfox, 2013; United Nations Office on Drugs and Crime, 2006).

Importance of the Review

As noted above, serious violent crime is a persistent and significant criminal justice issue. Police are at the frontline of controlling and responding to serious violent crime and a major part of their role in this respect is investigation (Newburn, 2007; Palmiotto, 2004; Roberts, 2007; Stelfox, 2013). The techniques police use to investigate serious violent crime play a large role in determining whether an offender is identified, arrested or makes a confession, which then impacts whether cases are cleared or a conviction is secured. While these are important outcomes for any type of crime, we suggest that the effective use of police investigative techniques to achieve these outcomes is particularly important for serious violent crime.

Ineffective investigation or unsolved serious violent crime can have large ramifications on multiple levels: for victims, the general public, the police and the criminal justice system. When serious violent offenders are not apprehended or cases are ineffectively investigated, victims may experience additional trauma (Riedel & Jarvis, 1998), there is a risk for additional serious violent crimes to be committed, or victims may be reluctant to report serious violent crimes in the future (Cole, 2007; Cronin et al., 2007, Turner & Kosa, 2003). These issues have important implications for the criminal justice system. For example, the deterrent effect attached to the apprehension, prosecution and conviction of serious violent offenders may be diminished and citizens may lose confidence in the police (Curry et al., 2013; Regoecezi et al., 2000). Yet despite criminal investigation forming a substantial portion of police work and the critical importance of solving and dealing with serious violent crime, we propose in the next section that the evidence-base for police investigative techniques and for serious violent crime lacks the level of synthesis seen for other areas of policing and general crime and disorder. We argue that this imbalance requires urgent attention.

Importance of Systematic Reviews and the Lack of Research Synthesis for Investigative Techniques and Serious Violent Crime

In recent years there has been a resounding call for evidence-based criminal justice policy and practice (Bullock & Tilley, 2009; Meares & Barnes, 2010; Morgan & Homel, 2013; Sutton & Cherney, 2007). One result of this ‘what works’ movement is the growth of experimental research and systematic reviews aiming to identify best practice in criminal justice (e.g., see Mazerolle & Bennett, 2011; Petrosino et al., 2001; Sherman et al., 2006; Farrington & Welsh, 2005). For example, the Campbell Collaboration Crime and Justice Group – the key body for systematic reviews in the area of criminal justice – was formed in 2000 to facilitate the preparation and dissemination of systematic reviews on the effectiveness of criminal justice interventions in order “to inform criminal justice policies” (Campbell Collaboration, 2013). The push to evidence-based policy has also led to the formation of specialist academies and organisations (e.g., Academy of Experimental Criminology, Centre of Evidence-Based Crime Policy, and Australian Research Council Centre of Excellence in Policing and Security), and the development of innovative web-based tools and repositories (e.g., CrimeSolutions.gov; Higginson et al., 2015; Lum, Koper, & Telep, 2011).

Systematic review methods are at the forefront of evidence-based policy and practice. Systematic reviews provide a concise, yet comprehensive and robust summary of research...
evidence and aim to assist policy-makers and practitioners identify the interventions that are most effective for particular problems (Welsh & Farrington, 2006). In the area of policing, there has been substantial synthesis of empirical literature to ascertain what works to control and prevent general crime and disorder. However, the evidence-base for police investigative techniques, particularly concerning serious violent crime, lacks the level of evaluation and synthesis seen for general crime and disorder and other policing approaches. In line with Weisburd and colleagues who argue that innovative policing approaches (e.g., community, hot spots, problem-oriented, pulling leavers policing) have received far more attention in the systematic review arena than traditional police practices (e.g., see Weisburd et al., 2013; Telep & Weisburd, in press), we argue that serious violent crime has also been neglected in systematic reviews of policing approaches compared to general crime and disorder (see also Puckett & Lundman, 2003).

Specifically, the Campbell Collaboration Crime and Justice Group has 19 systematic reviews registered that focus on policing. The majority of the reviews focus on general crime and disorder and only a five on violent crime outcomes specifically. Only three reviews focus on specific investigative techniques: interrogation techniques (Meissner et al., 2012), Geographical Information Systems (GIS) technologies (Hoover et al., 2010), and the use of DNA testing (Wilson et al., 2011). Meissner and colleagues (2012) examine the relative effectiveness of accusatorial and information-gathering interrogation techniques on the elicitation of confessions. The authors find that both interrogation techniques are effective for eliciting confessions in field studies where the accuracy of offenders’ confessions could not be verified. However, analysis of laboratory experiments reveals that information-gathering interrogation techniques increase the probability of true confessions. Hoover et al.’s (2010) review has not yet been completed, but has reached protocol stage. Wilson, Weisburd and McClure’s (2011) review examines the effectiveness of DNA techniques on case closure and the identification, arrest and convictions of offenders. These authors find that DNA testing is useful for improving the number of suspects identified, arrested and prosecuted across different types of crime. Specifically, the use of DNA databases is effective for closing property crime cases, and the use of DNA testing when investigating serious violent crimes is mainly effective, yet based on weak evidence. Although these reviews provide valuable information about the effectiveness of individual investigative techniques, they still do not allow valid comparisons between investigative techniques and do not focus on serious violent crime.

Although not a complete systematic review, Denning and colleagues (2009) conducted a systematic search of the literature concerning the investigation of serious violent crime (funded by the National Policing Improvement Agency). The search identified 938 pieces of research relating to the investigation of serious violent crime which had been conducted across a number of countries (United States, United Kingdom, Europe, Australia, and New Zealand) and revealed that the amount of research into serious violent crime investigative techniques has steadily increased since 1970. Over a quarter of the research identified used quantitative research designs, close to a third focused on investigation of murder, and smaller proportions examined techniques used to investigate other serious violent crimes such as manslaughter, infanticide, or sexual assault. The search identified research across a range of outcome measures, including arrest, laying of changes, conviction and failure to close cases. Denning and colleagues’ (2009) research demonstrates the breadth and diversity of investigative techniques used in serious violent crime cases, as well as the sophistication of many of the research designs used in the studies identified. However, the research undertaken for the NPIA was for conducting a systematic search only and a subsequent review and synthesis of the evaluation evidence has never been undertaken. From the outset, the Denning et al. (2009) search was designed to scope the breadth of literature only.

Therefore, our examination of the current state of crime and justice systematic reviews reveals that there is currently no systematic review that examines the full range of investigative
techniques for serious violent crime. Without a concise and reliable synthesis of the extant research evidence, practitioners and policy-makers are limited in their ability to make sound evidence-based decisions about the comparative effectiveness of investigative techniques. Therefore, our systematic review aims to redress this evidence gap by assessing and synthesising the full range of police investigative techniques and their impact on identifying offenders, making arrests, eliciting confessions, securing convictions and closing cases in the area of serious violent crime.

Research Objectives

The objective of this review is to systematically evaluate the impact of police investigative techniques on key police outcomes in the context of serious violent crime: offender identification, arrests, elicitation of confessions, convictions and case closure. To achieve this objective, we update Denning et al.’s systematic search and quantitatively synthesise the research evidence to determine the effectiveness of techniques police use to investigate serious violent crime. Specifically, our review addresses the following research questions:

1. What impact do police investigative techniques have on offender identification, eliciting confessions, making arrests, clearing cases and/or securing convictions in relation to serious violent crime?
2. Does the impact of investigative techniques vary by the type of serious violent crime under consideration?
3. Does the impact of investigative techniques vary by the type of technique utilised by police?
Methodology

Criteria for Including Studies in the Review

To be eligible for inclusion in our review, each piece of research must have reported on a quantitative impact evaluation of a police investigative technique in the context of a serious violent crime, and also utilised an eligible case-level outcome measure and an experimental or strong quasi-experimental research design for the impact evaluation. In the subsections that follow, we define the specific eligibility criteria implemented in our review.

Types of interventions

To be eligible for inclusion in this review, each piece of research must have evaluated a police investigative technique. We defined a police investigative technique to be any activity or strategy used by police to gather evidence in order to identify offenders, arrest offenders, elicit confessions, close cases or secure convictions (Newburn, 2007; Palmiotto, 2004; Stelfox, 2013). Examples include: collection and testing of DNA or forensic evidence, line-ups, interrogation and interview techniques, specialised task forces, deception detection techniques, facial composites, surveillance techniques and psychological profiling. We did not limit ‘police’ to sworn officers or detectives, but included any personnel employed by a police department (e.g., crime scene investigators; see Stelfox, 2013).

To include both reactive and proactive criminal investigations, we defined the police investigative period to be from the point that a serious violent crime comes to the attention of police (e.g., suspected, reported or detected) until the point when the case is either closed or transitioned to the judicial arm of the criminal justice system (Newburn, 2007; Palmiotto, 2004; Stelfox, 2013; United Nations Office on Drugs and Crime, 2006). We excluded research that reported on policing techniques for detecting serious violent crime rather than investigating a crime that has occurred or suspected to have occurred (e.g., COMPSTAT or crime mapping for planning preventative police activity).

We excluded omnibus interventions that consisted of departmental restructuring, the management and organisation of the criminal investigation function, and training programs (such as Domestic Violence training), unless the document also specifically reported on an evaluation of a component investigative technique. We further excluded interventions that were measured only as an index or latent variable (e.g., ‘analytical methods’ operationalised as an index of five different analytic techniques, or ‘investigative effort’ as a scale constructed from a Factor Analysis), as it is not possible to assess the impact of specific investigative techniques using these variables.

Finally, whilst we included studies that evaluate the investigative techniques of collecting various forms of evidence, we excluded studies that evaluate only the impact of the presence of evidence on case outcomes. We conceptualise the presence of evidence as the product of a successful investigative technique, and note that such studies do not evaluate the impact of the investigative technique in an unbiased manner. For example, following Wilson et al. (2011), we include studies that evaluate the impact on case outcomes of police testing for DNA, but exclude studies that examine whether arrest or prosecution is more likely in the presence of a positive DNA match.

Types of outcome measures

This review focuses on the impact of police investigative techniques on key serious violence crime case-level outcomes. Specifically, each study must have reported on one of the following
outcomes or an equivalent: offender identification, arrest, confession, conviction, or case closure. We also allowed for inclusion of outcomes relating to unintended effects should they be identified in the literature (e.g., false confession or conviction), but excluded research where the outcomes were based on perceptions of participants (e.g., police perceptions of investigative techniques leading to arrest).

**Types of serious violent crime**

As noted in the introduction, there is variation in the way that ‘serious violent crime’ is operationalised in the literature and we note the conceptual ambiguity between what constitutes violent crime and what constitutes serious violent crime. We adopted an offence-based definition of serious violent crime for this review, which includes the following offences: murder, manslaughter, rape or other sexual assault, aggravated assault and robbery. To account for the subtleties in how serious violent crime is both defined and reported, we include studies that do not specify whether or not the violent crime is explicitly labelled as serious. For example, if a study reported on an impact evaluation of different types of police interrogation techniques for eliciting confessions in violent crime cases, we included the study in our review.

Our review focuses on interpersonal violence and includes violence where the perpetrators or victims are individuals or groups of individuals (e.g., gangs). However, there are specific scenarios that we have excluded from the review because we argue that the crimes are conceptually different and require conceptually different prevention and control efforts than interpersonally driven violent crime (Higginson et al., 2013). The specific violent crimes that we excluded from the review are:

- Violence where the perpetrator is a corporation or organisation;
- Self-directed violence outcomes where acts or omissions are perpetrated by an individual against himself or herself (e.g., suicide or non-suicidal self-harm); and
- Collective violence where acts or omissions are perpetrated by a state or large organised group against another state or large organised group (e.g., terrorist activity, rioting, looting, smuggling, gang warfare, genocide, war, or political conflict).

If a study aggregated violent crimes with other crime types in their impact evaluation, the study was excluded from the review because there is no way of determining the impact of the investigative technique on the portion of the sample that contain violent crime.

**Types of research design**

To be eligible for this review, research must have been quantitative and utilise an experimental or quasi-experimental research design with a valid comparison group (no treatment, wait-list, business-as-usual, alternative treatment). Although randomised experimental designs are the most robust design for determining whether an intervention causes change in outcome measures, we included research across a range of other quasi-experimental designs which permit a counterfactual analysis by controlling for threats to internal validity (see Farrington, 2003; Shadish, Cook, & Campbell, 2002).

Eligible designs include:

- Randomised controlled trials (RCTs)
- Natural experiments
- Regression discontinuity designs
- Matched control group designs with or without pre-intervention baseline measures (propensity score or statistically matched)
- Unmatched control group designs with a pre-intervention baseline measure (difference-in-difference analysis)
• Designs using multivariate controls to account for differences between treatment and control groups (e.g., multiple regression analysis)
• Short interrupted time-series designs with control group (<25 pre- and 25 post-intervention observations (Glass, 1997))
• Long interrupted time-series designs without a control group (≥25 pre- and post-intervention observations)

To be included in the review, evaluations must have reported a standardised effect-size and the standard error of the effect size, or sufficient detail to allow a standardised effect size and its standard error to be calculated.

Settings, timeframes, and language

Our review includes interventions executed in any country or region; however we excluded research in languages other than English. We included research conducted between 1970 and 2014, whereby research between 1970 and part of 2009 consists of the 938 relevant documents identified in Denning et al.’s systematic search, and research between 2009 and August 2014 consists of research identified in Higginson et al.’s (2015) Global Policing Database systematic search.

Systematic Search and Extraction Strategy

Search strategy

The corpus of literature for this review is drawn from two systematic searches. The first is the search conducted by Denning et al. (2009) and the second is that search conducted by Higginson et al. (2015) for the Global Policing Database (GPD). The GPD is designed to capture all published and unpublished experimental and quasi-experimental evaluations of policing interventions since 1950 without any restrictions on outcome measures, language of the research, or type of policing intervention. Appendix A summarises the GPD compilation process and progress status, Appendix B summarises Denning et al.’s (2009) systematic search and screening strategy, and Appendix C provides the GPD systematic search methodology.

As evidenced in Appendices A – D, the systematic searches are comprehensive to ensure relevant research has been captured for assessment in our review. To reduce publication and discipline bias, both systematic searches have a wide disciplinary scope and include search locations across a number of disciplines (e.g., criminology, law, political science, public health, sociology, social science and social work). In addition, the searches capture a comprehensive range of published (i.e., journal articles, book chapters, books) and unpublished literature (e.g., working papers, governmental reports, technical reports, conference proceedings, dissertations).

Strategy for extracting and merging the systematic searches

The results of the GPD systematic search were cleaned to remove duplicates and ineligible document types (e.g., book reviews, newspaper articles) and then the citation and abstract fields for all records retrieved from the search were imported into SysReview (systematic review management software; Higginson & Neville, 2014). The initial stages of eligibility screening (see below) were conducted in the GPD SysReview between October 2014 and June 2015. However, because the eligibility criteria for the initial stages of the GPD are broad in nature, the eligible corpus of research from the GPD would be about police, yet only a portion would be focused on police investigative techniques for serious violent crime. Therefore, using Denning et al.’s search strategy as a guide, we devised a search query to identify a corpus of potentially relevant
research within the GPD search results between dated between 2009 and 2014 (see Table 1). The search query combined serious violence, investigative and case-outcome terms with Boolean logic, whereby the search terms listed within each column in Table 1 were combined with OR and then AND was used to combine the sets of terms in each category. Therefore, each record identified in the GPD search results must have contained at least one search term from each category to be extracted and included in this review.

**Table 1. Search strategy for GPD extraction**

<table>
<thead>
<tr>
<th>Violence Search Terms</th>
<th>Investigative Search Terms</th>
<th>Outcome Search Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>murder*</td>
<td>&quot;grievous bodily harm&quot;</td>
<td>&quot;initial response&quot;</td>
</tr>
<tr>
<td>manslaughter*</td>
<td>&quot;shoot&quot;</td>
<td>&quot;interview&quot;</td>
</tr>
<tr>
<td>rapist*</td>
<td>&quot;stabbing&quot;</td>
<td>&quot;investigation&quot;</td>
</tr>
<tr>
<td>rape*</td>
<td>&quot;infanticide&quot;</td>
<td>&quot;line-up&quot;</td>
</tr>
<tr>
<td>assault*</td>
<td>&quot;abuse&quot;</td>
<td>&quot;line-up&quot;</td>
</tr>
<tr>
<td>robber*</td>
<td>&quot;death&quot;</td>
<td>&quot;squad&quot;</td>
</tr>
<tr>
<td>violen*</td>
<td>&quot;lethal&quot;</td>
<td>&quot;suspect&quot;</td>
</tr>
<tr>
<td>&quot;serious crime&quot;*</td>
<td>&quot;crimes*&quot;</td>
<td>&quot;taskforce&quot;</td>
</tr>
<tr>
<td>molest*</td>
<td>&quot;gun crime&quot;</td>
<td></td>
</tr>
<tr>
<td>kill*</td>
<td>&quot;massacre&quot;</td>
<td></td>
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<tr>
<td>wound*</td>
<td>&quot;beating&quot;</td>
<td></td>
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<tr>
<td>attack*</td>
<td>&quot;beater&quot;</td>
<td></td>
</tr>
<tr>
<td>homicide*</td>
<td>&quot;injury&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;sex crime&quot;*</td>
<td>&quot;mug&quot;</td>
<td></td>
</tr>
<tr>
<td>batter*</td>
<td>&quot;burgl*&quot;</td>
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</tbody>
</table>

To combine the GPD search and Denning et al.’s (2009) search, we created a separate SysReview database that replicated the GPD up until the point of the second stage of full-text screen (see below). Denning et al. coded each eligible record according to research design and outcome, however, we did not have access to the coding sheets to enable us to only include documents with eligible research designs and eligible outcome(s). Therefore, we imported all eligible documents listed in Denning et al.’s final report (N = 938) into the replicated SysReview. Following this, all studies identified from the search of the GPD (N = 2,747) were imported into the replicated SysReview for final eligibility screening, coding and data extraction. Figure 1 provides a visual representation of the systematic search merge, as well as the subsequent screening stages.
Assessing Research for Eligibility

To identify eligible studies for the review, each unique record identified from the systematic search was screened. The following subsections describe how the records and were screened for eligibility and Figure 1 provides a visual representation of the process.

**Title and abstract screening**

In this initial stage of assessing eligibility, the title and abstract of each record (document) retrieved is screened for relevancy according to predefined criteria. Following training, research staff screened each title and abstract for relevancy according to the following exclusion criteria (guidelines for criteria described in Appendix D):

- Document not after 1950
- Document not unique (i.e. a duplicate)
- Document not about police or policing
- Document not an eligible document type

All records extracted from the GPD systematic search had already been screened for relevancy prior to the merging of the NPIA and GPD search results. Screeners assessed the title and abstract on these criteria, starting from the first criterion, and excluded a record if the answer was unambiguously ‘No’ and stopped screening at the point of exclusion. For example, if a document was published before 1950, the screener would select this criterion and progress to
the next record (i.e., would not need to assess the record on the other criteria). As another example, if the document was published after 1950, was unique and was not about police or policing, the screener would exclude the document by selecting the policing criterion (see Figure 2).

Figure 2. Screen shot of title and abstract screening record in SysReview.

Because Denning et al. (2009) screened the abstract of their search results for relevancy to police investigations (see Appendix B2), we automated the title and abstract screening stage for their search results by screening all records as eligible upon importing their search into the new SysReview database created for this review. However, if we identified that a record from their search was an ineligible document or contained research prior to 1970, we rescreened the record before progressing the record onto the full-text literature retrieval stage.

Full-Text literature retrieval and full-text eligibility screening

For each record not excluded at the title and abstract stage, we attached the full-text of record (if accessible) to the SysReview database. The full-text of all records was then screened for eligibility across two stages (screening guidelines provided in Appendix E). For Stage 1 full-text eligibility screening, documents were screening according to the following criteria:

- Document not after 1950
- Document not unique (i.e. a duplicate)
- Document does not contain a quantitative statistical comparison (bivariate or multivariate)

All documents screened as eligible from Stage 1 eligibility screening were then screened according to the following Stage 2 criteria:
• Document not about a serious violent crime
• Document does not report on an eligible outcome
• Document does not report on a police investigative technique
• Document does not contain a quantitative impact evaluation of a police investigative technique for eligible outcomes in the context of serious violent crime
• The impact evaluation does not utilise an eligible research design

Figure 3. Screen shot of full-text eligibility screening record in SysReview.

Quality assurance
We implemented several processes to ensure the results of our systematic review are reliable. First, all research assistants and student interns completed standardised title and abstract screening, literature retrieval and Stage 1 full-text eligibility screening training. Second, all students or student interns completing screening were required to complete and obtain ≥95% accuracy on a screening test before beginning screening. Third, we cross-checked the work completed across stages throughout the project. For title and abstract screening and Stage 1 screening, we cross-checked a random sample of 10-15% or each screener’s work for accuracy. For literature retrieval, we checked that all eligible records flowing through from title and abstract screening were (a) the correct document, or (b) documents that truly could not be obtained using available resources. As a final quality assurance measure, only the review leader (Higginson) and review manager (Eggins) completed Stage 2 eligibility screening and full-text coding.
**Full-text coding and data extraction**

Studies were coded in SysReview on the following fields:

- Country of intervention
- Year of publication
- Intervention name, type, and detail
- Crime type
- Participants
- Type of study, control condition, control matching
- Study description
- Outcome/s
- Effect size data

**Statistical Procedures and Conventions**

**Measures of treatment effect**

We calculated standardised effect sizes and their standard errors, using $d$, the Odds Ratio, and the correlation coefficient $r$, depending on the data provided in the original texts. All effect sizes were then translated to the Odds Ratio as a common metric for comparison. All standardised effect sizes were calculated in Stata 13.

**Methods of synthesis**

All syntheses were conducted using the `metan` command in Stata 13 (StatCorp, 2013), using the Log Odds Ratio for calculations, and then converting the results back to the more intuitive Odds Ratio and its 95% Confidence Intervals for interpretation.

When two or more conceptually similar interventions reported on conceptually similar outcomes, we conducted a random-effects meta-analysis using inverse variance weighting to combine the study results.

In some instances, a single study reported overlapping intervention effects which were not synthesised. For example, one study measured the impact of video recorded interrogations on confessions, and a measure of the impact of either video or voice recorded interrogations on either confessions or admissions. In these cases we do not consider the effects to be independent, and so do not conduct a meta-analysis, as this would artificially inflate the sample size and reduce the confidence intervals of the effect. In these instances we report on the individual effects without synthesis. Similarly, solo effect sizes that have no conceptual equivalents are also reported without synthesis.

Whilst we had aimed to conduct moderator analyses to examine the differential impact of investigative techniques on different crime types, there was insufficient data available for such analyses.
Results

Results of the systematic search and screening
Figure 4 shows the eligibility of studies through the various stages of screening. The search yielded a total of 3,686 documents, the titles and abstracts of which were then screened for potential eligibility. Of these documents, 2,280 were eligible for further examination. After extensive searching, a total of 1,900 English-language documents were able to be obtained (the documents that could not be obtained are reported in Appendix F). The full text of each document was then examined for eligibility in two stages: stage 1 assessed the document for date range, uniqueness, and the presence of a quantitative comparison, and stage 2 assessed the document for relevance to the research topic. After full text screening, 27 documents were eligible for coding and data extraction. Of these studies, 12 reported regression coefficients that could not be converted to standardised effect sizes using the data reported, leaving 15 records eligible for synthesis. Two of the documents were meta-analyses, from which the findings of two studies were extracted from each, bringing the total to 19 studies.

Overview of eligible studies
The 15 eligible documents were:


**Characteristics of eligible studies**

The documents were primarily from the United States (n=10), but were also drawn from Australia (n=1), Norway (N=1), and South Africa (n=1), UK (n=2). From the 15 eligible documents we extracted data for 18 studies and 111 standardised effect sizes, relating to six broad crime categories and 13 intervention categories.

One study used a randomised control experiment, three studies controlled for victim, case or organisational characteristics, and in the remaining 11 studies the control group was matched on crime type alone. This introduces the possibility of selection bias to these studies, as certain characteristics of the crime or the victim may correlate both with the use of the intervention and with a particular outcome.

Tables 1 to 3 show the range of crimes, interventions, and outcomes coded, and the number of effect sizes coded for each, and table 4 gives a brief overview of the aims of each eligible study. Table 5 shows the distribution of effect sizes across the various investigative techniques, by study name.

**Findings of eligible studies**

The majority of eligible studies reported positive impacts of the evaluated investigative techniques on serious violent crime outcomes. However, due to the large number of different techniques and outcomes examined, many of the effects are only supported by a small number of studies, making generalisation from these effects less robust. This is compounded by the potential for selection bias from studies where the control group was not matched by randomisation or multivariate matching, and by the fact that some studies only reported statistically significant results in their models.

In the following section, we summarise the impact of the various interventions across the range of outcomes, presenting Odds Ratios (OR) and 95% Confidence Intervals (CI) and using forest plots for illustration of the overall effect where more than one study is included.
Figure 4. Prisma flowchart for systematic search results (Moher et al., 2009).
**Table 1. Crime category coded in eligible studies**

<table>
<thead>
<tr>
<th>Crime category</th>
<th>Effect sizes</th>
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<tbody>
<tr>
<td>Carjacking</td>
<td>1</td>
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<tr>
<td>Homicide</td>
<td>46</td>
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<tr>
<td>Robbery</td>
<td>12</td>
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<tr>
<td>Serious assault</td>
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</tr>
<tr>
<td>Serious violent crime (aggregate)</td>
<td>11</td>
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<tr>
<td>Sexual assault</td>
<td>39</td>
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</table>

**Table 2. Intervention category coded in eligible studies**

<table>
<thead>
<tr>
<th>Intervention category</th>
<th>Effect sizes</th>
</tr>
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<tbody>
<tr>
<td>Collection or testing of DNA</td>
<td>15</td>
</tr>
<tr>
<td>Collection or testing of physical evidence</td>
<td>26</td>
</tr>
<tr>
<td>Computer or file checks</td>
<td>6</td>
</tr>
<tr>
<td>Crime scene visits</td>
<td>2</td>
</tr>
<tr>
<td>Crime scene visits by medical professional</td>
<td>2</td>
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<tr>
<td>Detective present at post-mortem</td>
<td>1</td>
</tr>
<tr>
<td>Interviews recorded</td>
<td>11</td>
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<tr>
<td>Interviews conducted</td>
<td>5</td>
</tr>
<tr>
<td>Line-ups</td>
<td>6</td>
</tr>
<tr>
<td>Medical examiner qualifications</td>
<td>6</td>
</tr>
<tr>
<td>SANE trained detectives</td>
<td>3</td>
</tr>
<tr>
<td>Sex offence unit</td>
<td>2</td>
</tr>
<tr>
<td>Sexual assault screening (including SANE)</td>
<td>25</td>
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</table>

**Table 3. Outcome category coded in eligible studies**

<table>
<thead>
<tr>
<th>Crime category</th>
<th>Effect sizes</th>
</tr>
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<tbody>
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<td>Admission / confession</td>
<td>3</td>
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<tr>
<td>Arrest</td>
<td>8</td>
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<tr>
<td>Case cleared or closed</td>
<td>10</td>
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<tr>
<td>Charged</td>
<td>21</td>
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<tr>
<td>Convicted</td>
<td>26</td>
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<tr>
<td>Dismissed</td>
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<tr>
<td>Exceptional closure</td>
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<td>Felony charge</td>
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<tr>
<td>Guilty plea</td>
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<td>Hung jury</td>
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<tr>
<td>Plea bargain</td>
<td>3</td>
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<tr>
<td>Police drop / unfound case</td>
<td>7</td>
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<tr>
<td>Presented to prosecution</td>
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<tr>
<td>Prosecuted</td>
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<tr>
<td>Sentence length</td>
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<td>Suspect identified</td>
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<tr>
<td>Victim withdraws</td>
<td>5</td>
</tr>
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</table>
Table 4. Overview of eligible document aims

<table>
<thead>
<tr>
<th>Study Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abrahams et al., 2011.</strong> This retrospective national study of homicides used data from mortuary files, autopsy reports and police interviews to explore the epidemiology of female murder in South Africa (by partners), and to describe and compare autopsy findings, forensic medical management of cases and the contribution of these to legal outcomes.</td>
</tr>
<tr>
<td><strong>Alderden &amp; Ullman, 2012.</strong> Study used police case and investigatory files on criminal sexual assault cases involving adult female victims reported to a large Midwestern police department in 2003. Examined the impact of victim, suspect, incident and detective characteristics on arrest.</td>
</tr>
<tr>
<td><strong>Alderden, 2008.</strong> Examined criminal sexual assaults and aggravated criminal sexual assault cases reported to the Chicago PD, to determine whether various evidence-based and extralegal factors influenced case outcomes. Investigative technique examined was the use of a sexual assault screening kit.</td>
</tr>
<tr>
<td><strong>Bouffard, 2000.</strong> Examined the effect of individual and case characteristics on police outcomes in a sample of felony sexual assault cases from a US suburban/urban county. Investigative technique was victims consenting to undergo sexual assault exam. Study controlled for case and individual characteristics.</td>
</tr>
<tr>
<td><strong>Clark &amp; Tunnicliff, 2001.</strong> This study examines the impact of the control line-up condition used in lab-based experimental studies of eyewitness identification. The study examined the differential impact of selecting a perpetrator-absent line-up where foils were selected based on their similarity to the real perpetrator, vs where the foils are selected based on a match to an innocent suspect.</td>
</tr>
<tr>
<td><strong>Davis et al., 2014.</strong> This study examined the differential effectiveness of three forms of suspect identification - mugshots, street identification, and video line-ups - using robbery data from three English police forces.</td>
</tr>
<tr>
<td><strong>Greenberg et al., 1977.</strong> Study undertaken in Oakland, USA to determine the elements of investigation leading to offender identification and case solution by investigative personnel, and assess the validity of decision models.</td>
</tr>
<tr>
<td><strong>Hagemann et al., 2011.</strong> This study assesses the impact of the medical documentation and biological trace evidence in rape cases on the legal process, using police and hospital data from police reported cases of rape in Norway.</td>
</tr>
<tr>
<td><strong>Heenan &amp; Murray, 2007.</strong> Using Australian police data and corresponding case narratives from Sexual Offences and Child Abuse Unit &amp; Criminal Investigation Unit members, this study examined rape investigations and the factors that appeared to influence the outcomes.</td>
</tr>
<tr>
<td><strong>Kelley, 2008.</strong> Examined case &amp; investigative factors predicting outcomes of sexual assault cases in a Midwestern town with an operating Sexual Assault Nurse Examiner (SANE) program.</td>
</tr>
<tr>
<td><strong>Knight, 2009.</strong> This study investigates the effect of video recording custodial interrogations on legal outcomes. The police department in a small city in Michigan was the pilot site for the study and data was collected for 3 months before and after implementation.</td>
</tr>
<tr>
<td><strong>LaFree, 1981.</strong> Analyses forcible sex offences reported to police in a large Midwestern city over 6 years. Amed to determine the most important determinants of arrest, charge seriousness, and felony screening.</td>
</tr>
<tr>
<td><strong>Schroeder &amp; White, 2009.</strong> Study examines NYPD case files for Manhattan homicides to investigate how often detectives used DNA evidence in the course of their investigations, as well as how its use influenced the likelihood of case clearance.</td>
</tr>
<tr>
<td><strong>Toon &amp; Gurusamy, 2014.</strong> Systematic review and meta-analytic synthesis of Sexual Assault Nurse Examiner program impacts. For this review we extract the effect sizes from the two included studies that reported on eligible outcomes.</td>
</tr>
<tr>
<td><strong>Wilson et al., 2011.</strong> Systematic review and meta-analysis to synthesise existing evidence on the effectiveness of DNA testing as part of routine police investigative practice, compared to other more traditional forms of investigation. Effect sizes from three studies that analysed DNA testing in serious violent crime cases were extracted.</td>
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</table>
Table 5. Distribution of effect sizes by investigative technique and study

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<tr>
<td>SANE trained detective</td>
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<tr>
<td>Sex offender unit</td>
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<td>Sexual assault screening</td>
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</table>
Collection or testing of DNA

Five studies evaluated the impact of the collection or testing of DNA evidence on homicide, sexual assault, robbery, and serious assault cases (Abrahams et al., 2011; Hagemann et al., 2011; Wilson et al., 2011 – 3 studies from meta-analysis). Overall, the collection or testing of DNA was associated with a significant increase in conviction and sentence length; charges laid, prosecution and plea bargains were not significantly impacted by the use of DNA; and the use of DNA was associated with a significant decrease in case clearance outcomes.

Case clearance

One study reported on the impact of collecting DNA prior to the arrest of a suspect on case clearance in homicide cases (Wilson et al., 2011 – data from Schroeder, 2007)), and demonstrates a reduction in case clearance in the treatment group (OR: 0.100; CI: 0.060 – 0.167). Wilson et al. (2011) report that this impact was most likely due to methodological weaknesses, as this study did not control for factors influencing the use of the intervention, which was only conducted in a small, select, number of cases. This finding may demonstrate the limited applicability of DNA testing to homicide.

Charge

Two studies examined the impact of collecting or testing DNA on the charging of suspects; one in the case of homicide (Abrahams et al., 2011) and the other in robbery (Hagemann et al., 2011). There was a significant negative impact on charges in homicide cases (OR: 0.44; CI: 0.36 – 0.54) and a non-significant positive impact on robbery cases (OR: 3.18; CI: 0.97 – 10.43). As figure 5 demonstrates, in the synthesis these effects cancel one another out to show an effect that is not significantly different from null (OR: 1.08; CI: 0.16 – 7.43), although once again, if we examine the impact on homicide separately, there is evidence that DNA collection and testing is related to a lessened likelihood of charges being laid.

Prosecuted

One study provided effect sizes for the impact of collecting or testing of DNA on the prosecution of suspects in sexual assault and homicide (Wilson et al., 2011 – data from Briody, 2004). As figure 6 shows, there was a positive, but not statistically significant, increase in prosecution in sexual assault cases (OR: 2.10; CI:0.90 – 4.90) and a significant positive increase for homicide
cases (OR: 14.70; CI: 1.70 – 127.11), but again, when synthesised we see that the impact is not significantly different from null (OR: 4.27; CI: 0.68 – 26.78).

**Figure 6.** Meta-analysis of the impact of collection or testing of DNA on prosecution

**Convicted**

Three studies reported six effect sizes for suspect conviction after collecting or testing of DNA, in sexual assault, homicide, and serious assault cases (Abrahams et al., 2011; Wilson et al., 2011 – data from Briody, 2004 & Tully, 1998). As figure 7 shows, five of the six effect sizes were positive, and the overall synthesised effect is an estimated threefold increase in the odds of conviction when DNA was collected or tested (OR: 3.24; CI: 1.50 – 6.98).

**Figure 7.** Meta-analysis of the impact of collection or testing of DNA on conviction

**Plea bargain**

One study reported effect sizes for the impact of collection or testing of DNA on the odds of a plea bargain being made, in homicide or sexual assault cases (Wilson et al., 2011 – data from
There was no significant impact in homicide cases (OR: 1.20; CI: 0.50 – 1.60), but in sexual assault cases, use of DNA was associated with almost four times the odds of a plea bargain being made (OR: 3.90; CI: 1.20 – 12.67). As figure 8 shows, when synthesised over offence type there was no significant impact of the use of DNA on plea bargains (OR: 1.87; CI: 0.81 – 5.74).

**Figure 8.** Meta-analysis of the impact of collection or testing of DNA on plea bargain

**Sentence length**

One study reports on the impact of collection or testing of DNA on sentence length in sexual assault, and homicide cases (Wilson et al., 2011 – data from Tully, 1998). The effect sizes reported in this document were the same for both plea bargain and sentence length outcomes. As figure 9 shows, there was no significant impact in homicide cases (OR: 1.20; CI: 0.50 – 1.60), but in sexual assault cases, use of DNA was associated with almost four times the odds of increased sentence length (OR: 3.90; CI: 1.20 – 12.67). When synthesised across offence type there was no significant impact of the use of DNA on sentence length (OR: 1.87; CI: 0.81 – 5.74).

**Figure 9.** Meta-analysis of the impact of collection or testing of DNA on sentence length
Collection or testing of physical evidence

Three studies provided effect sizes of the impact of collecting or testing physical evidence in homicide, robbery, and sexual assault cases. The studies assessed the impact of these evidence types on case closure, arrest, charge, and conviction outcomes.

Crime technicians at the scene was associated with three times the odds of clearance in robbery cases, and almost double the odds of arrest. Taking fingerprints was associated with an increased odds of arrest in robbery cases.

There were mixed findings on the impact of collecting or testing physical evidence in homicide cases. Collecting toxicology specimens was associated with decreased odds of charge and conviction. Collecting genital swab, nail scrapings, or head hair specimens was associated with decreased odds of charge, but an increased odds of conviction. Performing an autopsy at an academic centre was associated with decreased odds of charge but had no significant impact on conviction, whilst having a full autopsy performed had no significant impact on charge but decreased the odds of conviction. Collecting histology or clothes specimens had no significant impact on either charge or conviction. Taking crime scene or forensic photos, or victim blood alcohol increase the odds of both charge and conviction.

Case cleared

One study (Greenberg et al., 1977) found that the odds of case clearance were more than three times higher in cases where the crime technician attended the scene (OR: 3.10; CI: 2.29 – 4.20).

Arrest

One study examined the impact on robbery arrests of two different types of physical evidence collection or testing – taking fingerprints and having a crime technician at the scene (Greenberg et al., 1977). As figure 10 demonstrates, both interventions show a significant positive impact on arrest (fingerprints OR: 1.46; CI: 1.09 – 1.95; crime technician OR: 1.90; CI: 1.42 – 2.56), and the averaged effect of these interventions shows a 66% increase in the odds of arrests (OR: 1.66; CI: 1.28 – 2.16).

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Odds Ratio (95% CI)</th>
</tr>
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<tbody>
<tr>
<td>Fingerprints taken</td>
<td>1.46 (1.09, 1.95)</td>
</tr>
<tr>
<td>Crime technician at scene</td>
<td>1.90 (1.42, 2.56)</td>
</tr>
<tr>
<td>Overall (I-squared = 38.2%, p = 0.203)</td>
<td>1.66 (1.28, 2.16)</td>
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</table>

NOTE: Weights are from random effects analysis

Figure 10. Meta-analysis of the impact of collection or testing of physical evidence on robbery arrest
Charged

Two studies examined the impact of collecting or testing physical evidence on the likelihood of a charge being laid in cases of homicide (Abrahams et al., 2011) and sexual assault (Hagemann et al., 2011). As figure 11 shows, the findings were varied, depending on the type of evidence gathered.

For homicide cases, three of the eleven types of evidence analysed were significantly associated with higher odds of charges being laid: crime scene photos (OR: 1.24; CI: 1.06 – 1.45); forensic photos during autopsies (OR: 1.53; CI: 1.22 – 1.92); and victim blood alcohol (OR: 1.56; CI: 1.34 – 1.82).

Five types of evidence were associated with a significant reduction in the odds of homicide charges being laid: toxicology collection (OR: 0.16; CI: 0.07 – 0.37); collection of genital swabs (OR: 0.41; CI: 0.33 – 0.51); collection of head hair (OR: 0.60; CI: 0.43 – 0.82); collection of nail scrapings (OR: 0.73; CI: 0.53 – 0.996); and having an autopsy done at an academic centre (OR: 0.76; CI: 0.63 – 0.91).

Three interventions showed no significant impact on charges in homicide cases: histology specimen collection (OR: 0.94; CI: 0.49 – 1.79); clothes specimens collection (OR: 1.32; CI: 0.79 – 2.21); and having a full autopsy performed (OR: 0.88; CI: 0.74 – 1.03).

In cases of sexual assault (Hagemann, et al., 2011), there was a strong positive relationship between the odds of charges being laid and the analysis of trace evidence (OR: 9.71; CI: 2.37 – 39.79).

---

**Figure 11.** Meta-analysis of the impact of collection or testing of physical evidence on charges

Convicted

One study (Abrahams et al., 2011) examined the impact of eleven types of physical evidence on homicide convictions. Figure 12 shows the effect sizes.

Six of the eleven types of evidence analysed were significantly associated with higher odds of conviction: crime scene photos (OR: 1.32; CI: 1.03 – 1.70); forensic photos during autopsies (OR: 1.42; CI: 1.01 – 2.00); victim blood alcohol collected (OR: 1.37; CI: 1.08 – 1.72); collection of
genital swabs (OR: 2.15; CI: 1.36 – 3.41); collection of head hair (OR: 2.83; CI: 1.43 – 5.61); and collection of nail scrapings (OR: 4.15; CI: 1.88 – 9.18).

Having a full autopsy performed was associated with a significant reduction in the odds of homicide charges being laid (OR: 0.64; CI: 0.49 – 0.83).

Four interventions showed no significant impact on charges in homicide cases: toxicology collection (OR: 0.19; CI: 0.04 – 1.00); histology specimen collection (OR: 0.48; CI: 0.18 – 1.29); clothes specimens collection (OR: 1.11; CI: 0.45 – 2.72); and having an autopsy done at an academic centre (OR: 1.27; CI: 0.94 – 1.71).

**Figure 12.** Meta-analysis of the impact of collection or testing of physical evidence on homicide conviction
Computer or file checks

Two studies examined the impact of performing computer or file checks on persons, vehicles, decedents, witnesses or suspects (Greenberg et al., 1977; Schroeder & White, 2009). On average, running computer checks on the deceased, witnesses or suspects in homicide cases was associated with more than three times the odds of case clearance, while running file checks on persons, vehicles or vehicle registrations had no significant association with arrest in robbery cases.

Case cleared

One study (Schroeder & White, 2009) examined the impact of three types of computer checks on the clearance of homicide cases. As figure 13 shows, all three types were significantly associated with increased crime clearance, with an average effect showing an increase of more than three times the odds of clearance compared to cases where these checks were not run (OR: 3.68; CI: 1.76 – 7.69). Running a computer check on the deceased was associated with almost doubling the odds of clearance (OR: 1.88; CI: 1.11 – 3.21); a computer check on witnesses was associated with almost four times the odds of clearance (OR: 3.97; CI: 2.27 – 6.96); and running a computer check on a suspect was associated with almost a seven-fold increase in the odds of homicide case clearance (OR: 6.86; CI: 3.79 – 12.42).

Arrest

One study (Greenberg et al., 1977) reported the impact of three different types of file checks on arrests in robbery cases, the average effect of which was not significant (OR: 0.91; CI: 0.43 – 1.90). As figure 14 shows, there was significant heterogeneity in the results, according to the subject of the check. Running a crime file on a person of interest was associated with a halving of the odds of arrest (OR: 0.51; CI: 0.38 – 0.68); running a crime file on a vehicle had no significant impact on arrest (OR: 0.80; CI: 0.60 – 1.07); whilst running a vehicle registration check almost doubled the odds of arrest in robbery cases (OR: 1.84; CI: 1.37 – 2.47).
Figure 14. Meta-analysis of the impact of file checks on arrests in robbery
**Crime scene visits by detectives or medical practitioners**

One study (Abrahams et al., 2011) examined the impact of crime scene visits by detectives or medical examiners on the outcomes in homicide cases. They found that whilst detective visits to the crime scene increased the odds of charges and conviction, there was no significant effect of having medical practitioners attend the crime scene.

**Charged**

Homicide crime scene visits by detectives was associated with almost double the odds of charges being laid (OR: 1.84; CI: 1.39 – 2.42). In contrast, crime scene visits by a medical practitioner were not significantly associated with charges laid, (OR: 1.69; CI: 0.70 – 4.06).

**Figure 15.** Meta-analysis of the impact of conducting interviews on homicide case clearance

**Convicted**

Crime scene visits by detectives were associated with almost five times the odds of homicide charges being laid (OR: 4.92; CI: 2.83 – 8.57). The effect of homicide crime scene visits by medical practitioners was not significant (OR: 0.48; CI: 0.14 – 1.68).

**Figure 16.** Meta-analysis of the impact of conducting interviews on homicide case clearance
**Detective present at post-mortem**

One study (Schroeder & White, 2009) examined the impact on homicide case clearance of having a detective attend a post-mortem exam, and found a positive association.

**Case cleared**

Detective attendance at post-mortems was associated with a 75% increase in the odds of a homicide case being cleared (OR: 1.75; CI: 1.03 – 2.98).
Interview recording
One study (Knight, 2009) examined the effect of video and voice recording of investigative interviews on serious violent crime outcomes. Interview recordings were not significantly associated with any of the following outcomes: admission, confession, prosecution, dismissal, guilty pleas, plea bargains, hung juries, or conviction.

Admissions or confessions
Knight (2009) examined three variations on the relationship between recorded interviews and confession or admission, none of which were individually significant. As the measures contained significant overlap from the same sample, we do not conduct a meta-analysis on these effects. Figure 17 shows that recorded interrogation (video or voice) was not significantly associated with confession (OR: 0.55; CI: 0.08 – 3.92), or with a combined measure of admission or confession (OR: 1.40; CI: 0.31 – 6.24), and video recorded interrogations were not significantly associated with nolle prosequi confessions (OR: 1.02; CI: 0.05 – 23.04).

![Figure 17. Meta-analysis of the impact of interview recording on admissions or confessions in serious violent crime cases](image)

Prosecution
Two highly correlated measures of recorded interrogation were examined for their impact on prosecution. Figure 18 shows that neither video recorded interrogation (OR: 3.17; CI: 0.61 – 16.41), nor a measure combining video or voice recording (OR: 3.44; CI: 0.87 – 13.52) were significantly associated with prosecution of serious violent crime cases. Due to the significant overlap of the intervention measures on the same sample, we do not present a meta-analysis of these effect sizes.
Figure 18. Meta-analysis of the impact of interview recording on prosecution in serious violent crime cases

Dismissed
One study (Knight, 2009) showed no significant effect of video recorded interrogations on the dismissal of serious violent crime cases (OR: 0.30; CI: 0.04 – 2.14).

Guilty plea
One study (Knight, 2009) showed no significant effect of video recorded interrogations on the guilty pleas in serious violent crime cases (OR: 2.78; CI: 0.52 – 14.80).

Plea bargain
One study (Knight, 2009) showed no significant effect of video recorded interrogations on the guilty pleas in serious violent crime cases (OR: 0.26; CI: 0.04 – 1.82).

Hung jury
One study (Knight, 2009) showed no significant effect of video recorded interrogations on the guilty pleas in serious violent crime cases (OR: 1.02; CI: 0.05 – 23.04).

Conviction
Two effect sizes were identified for the impact of video recorded interrogations on conviction in serious violent crime cases. As figure 19 shows, the overall effect on conviction was not significant (OR: 4.36; CI: 0.22 – 86.59). Video recording of interviews had no significant impact on the odds of being found guilty at a bench trial (OR: 0.98; CI: 0.04 – 21.97) or being convicted by a jury (OR: 20.62; CI: 0.82 – 515.75).
**Figure 19.** Meta-analysis of the impact of interview recording on conviction in serious violent crime cases

<table>
<thead>
<tr>
<th>OutcomeDetail</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guilty in bench trial</td>
<td>0.98 (0.04, 21.97)</td>
</tr>
<tr>
<td>Convicted by jury</td>
<td>20.62 (0.82, 515.75)</td>
</tr>
<tr>
<td>Overall (I-squared = 43.9%, p = 0.182)</td>
<td>4.36 (0.22, 86.59)</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis.

The figure shows a meta-analysis of the impact of interview recording on conviction in serious violent crime cases. The analysis includes outcomes such as guilty in bench trial and convicted by jury, with odds ratios and 95% confidence intervals provided for each.
**Interviews conducted**

Two studies examined the impact of conducting interviews on case outcomes. Schroeder & White (2009) demonstrated that interviewing family members or attending physicians more than doubled the odds of homicide case clearance. Effect sizes from Kelley (2008) showed that interviewing suspects in sexual assault cases was associated with: a borderline statistically significant reduction in the odds of police dropping or unfounding a case; four-fold increase in the odds of police presenting a case to prosecution; and a 65% reduction in the odds of victims withdrawing from a sexual assault case.

**Case cleared**

Schroeder & White (2009) contributed two effect sizes that measured the impact of interviewing victim’s family members and the attending physicians in hospital on homicide case clearance. As figure 20 shows, both of these interventions are associated with significant increases in case clearance: interviewing family members is associated with nearly double the odds of case clearance OR: 1.94; CI: 1.14 – 3.31), whilst interviews with the attending physician at hospital are associated with nearly a three-fold increase in the odds of case clearance (OR: 2.75; CI: 1.60 – 4.75). The overall effect on average is more than double the odds of case clearance (OR: 2.30; CI: 1.58 – 3.37).

![Figure 20: Meta-analysis of the impact of conducting interviews on homicide case clearance](image)

**Police drop or unfound case**

Keeley (2008) examined the impact of interviewing suspects on the police decision to drop or unfound a sexual assault case. The effect is bordering on a statistically significant halving of the odds of cases being dropped (OR: 0.51; CI: 0.26 – 1.00).

**Case presented to prosecution**

There was a significant association between interviewing suspects and the police decision to present a sexual assault case to the prosecution. One study from Keeley (2008) showed that cases where the suspect was interviewed had nearly four times the odds that the case would be presented to the prosecutors (OR: 3.97; CI: 2.36 – 6.70).

**Victim withdraws**

One effect size was calculated for the relationship between suspects being interviewed by police in sexual assault cases, and the victim withdrawing cooperation for the case. This study
demonstrated a significant negative association, whereby cases where the suspects were interviewed had a 65% reduction in the odds of the victim withdrawing from the case (OR: 0.35; CI: 0.21 – 0.58).
**Line-ups**

Two studies examined the impact of police line-up techniques on suspect identification. Clarke and Tunnicliff (2001) compare two different line-up compositions for suspect identification in carjacking cases, whilst Davis et al. (2014) examine the impact of video line-ups, mugshots and street identifications using police data on robbery cases. Clarke and Tunnicliff (2001) demonstrate that a perpetrator-matched lineup (with foils matched to the perpetrator) achieves a lower false positive suspect identification than a suspect-matched line-up (where the foils were matched to an innocent suspect). Davis et al., (2014) showed that video line-ups were more effective than either street identification or mugshots, and that street identification was more effective than mugshot viewing. They further demonstrated that video line-ups were more successful where the witness had previously performed a street identification, and that there was no significant difference in suspect identification where the identification occurred more than a week after the offence, compared to identifications that happened less than a week after.

**Suspect identified**

Clark and Tunnicliff (2001) performed a laboratory experiment examining the effectiveness of different forms of foil matching in line-ups for carjacking. The results demonstrate that in the absence of the actual perpetrator, the false positive identification rate is significantly lower when the foils in the line-up are selected to match the absent perpetrator, rather than when they are selected to match an innocent suspect (OR: 0.15; CI: 0.04 – 0.54).

Davis et al. (2014) compared suspect identification in robbery cases using video line-ups to two control conditions: street identification and mugshots. As figure 21 shows, the overall effect shows that video line-ups are a more effective method of suspect identification (OR: 8.21; CI: 3.16 – 21.33). Video line-ups showed more than five times the odds of identification than street identification (OR: 5.32; CI: 2.47 – 11.43) and over 14 times the odds of identification than mugshots (OR: 14.17; CI: 5.20 – 38.63).

**Figure 21.** Meta-analysis of the impact of video line-ups on suspect identification

Davis et al. (2014) also compared the effectiveness of street identification vs mugshot viewing in robbery cases, and found that street identification was more effective in identifying suspects (OR: 2.67; CI: 1.11 – 6.38).
Davis et al. (2014) found a significantly higher likelihood of a witness identifying the suspect at a second video identification, if the witness having previously identified a suspect in a street identification (OR: 4.65; CI: 1.88 – 11.50).

Finally, Davis et al. (2014) examined the impact of the timing of identification procedures, and showed that there was no significant difference in the likelihood of suspect identification where the procedure took place less than one week after the offence, compared to more than one week after (OR: 4.50; CI: 0.97 – 20.83).
Medical examiner qualifications

One study (Abrahams et al, 2011) examined the impact of different levels of medical examiner qualification on homicide case outcomes in South Africa. They found that although specialist qualification (compared to 'some training') is associated with increased odds of charges being laid, this condition was conversely associated with a lower likelihood of conviction. Whilst having some training (vs no training) had no impact on charges, it was associated with significantly higher odds of conviction.

Charged

One study (Abrahams et al., 2011) considered the impact of three forms of medical examiner qualification on charges laid in homicide cases. As figure 22 shows, there was a significant increase in the odds of charges laid if the medical examiner had specialist training, compared to no training (OR: 1.31; CI: 1.02 – 1.69). There was no significant difference in charges laid for specialists compared to no training (OR: 1.17; CI: 0.96 – 1.43), nor for some training vs no training (OR: 0.89; CI: 0.73 – 1.10).

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some training vs no training</td>
<td>0.89 (0.73, 1.10)</td>
</tr>
<tr>
<td>Specialist vs no training</td>
<td>1.17 (0.96, 1.43)</td>
</tr>
<tr>
<td>Specialist vs some training</td>
<td>1.31 (1.02, 1.69)</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis

Figure 22. The impact of medical examiner qualification on homicide charges

Convicted

Abrahams et al., 2011 examine the impact of three forms of medical examiner qualification on conviction in homicide cases. As figure 23 shows, there was a significant increase in the odds of charges laid if the medical examiner had some training, compared to no training (OR: 1.50; CI: 1.04 – 2.16). There was no significant difference in charges laid for specialists compared to no training (OR: 0.93; CI: 0.70 – 1.25). For cases where the medical practitioner was a specialist there was a significant decrease in the odds of conviction, compared to cases where the medical practitioner had no training (OR: 0.62; CI: 0.41 – 0.95).
**Figure 23.** The impact of medical examiner qualification on homicide convictions

<table>
<thead>
<tr>
<th>Intervention/Detail</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialist vs some training</td>
<td>0.62 (0.41, 0.95)</td>
</tr>
<tr>
<td>Specialist vs no training</td>
<td>0.93 (0.70, 1.25)</td>
</tr>
<tr>
<td>Some training vs no training</td>
<td>1.50 (1.04, 2.16)</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis.
Specialised sexual offence interventions

Eight studies examine the impact of specialised sexual offence interventions, including: sexual assault screening (Alderden, 2008; Alderden & Ullman, 2012; Bouffard, 2000; Heenan & Murray, 2007; Kelly, 2008); the Sexual Assault Nurse Examiner program (Kelly, 2008; Toon & Gurusamy, 2014 – data from Kelly, 2004 & Campbell, 2012); and specialist police sex offence units (LaFree, 1981).

Kelley (2008) examined the impact of police involvement in the SANE program or on the use of SANE trained detectives. There was no significant impact on the police decision to drop or unfound a case, police decision to present a case for prosecution, or victim withdrawal.

The effects from studies that examined the impact of sexual assault examinations on case outcomes were highly heterogeneous across, and at times within, outcomes. Sexual assault screening exams were not significantly associated with the police decision to drop or unfound a sexual assault case, or with case clearance or closure. Sexual assault screening exams did significantly increase the odds of arrest and charges being laid, and had a marginally significant increase in the likelihood of cases being presented to prosecution, but no significant impact on prosecution, conviction, or exceptional closure. Finally, whilst overall there was no significant effect on victims withdrawing from sexual assault case, there is evidence to suggest that standard forensic examinations produce a higher rate of victim withdrawal than that seen in SANE exams.

One study (LaFree, 1981) found that specialist sex offence units had no significant impact on arrests, or whether felony charges were laid in sexual assault cases.

Police drop or unfound case

One study (Kelley, 2008) examined two measures of police involvement in the SANE program and their effect on police decisions to drop or unfound a sexual assault case. As figure 24 shows, there was no significant effect of SANE trained (OR: 1.08; CI: 0.51 – 2.29), or of police involvement in the SANE program (OR: 1.00; CI: 0.52 – 1.93) on the police decision to drop or unfound a sexual assault case. Overall, there was no significant impact of either of these measures (OR: 1.03; CI: 0.63 – 1.70).

<table>
<thead>
<tr>
<th>InterventionName</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law enforcement involved in SANE</td>
<td>1.00 (0.52, 1.90)</td>
</tr>
<tr>
<td>SANE trained detective</td>
<td>1.08 (0.51, 2.29)</td>
</tr>
<tr>
<td>Overall (I-squared = 0.0%, p = 0.881)</td>
<td>1.03 (0.63, 1.70)</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis

Overall (I-squared = 0.0%, p = 0.881)

Figure 24. Meta-analysis of the impact of police involvement in the SANE program on police decisions to drop or unfound a case
Three studies (Alderden, 2008; Bouffard, 2000; Kelley, 2008) examined the impact of sexual assault screening exams on the police decision to drop or unfound a case. As figure 25 shows, the overall impact was not significant (OR: 0.75; CI: 0.25 – 2.22), although the individual effect sizes were highly heterogeneous (I²: 91.7%, p<0.001).

**Figure 25.** Meta-analysis of the impact of sexual assault screening on police decisions to drop or unfound a case

**Case cleared or closed**

Two studies examined the impact of sexual assault screening exams on case clearance or closure. As seen in figure 26, Bouffard (2000) showed a significant decrease in the closure of sexual assault when a sexual assault exam was conducted (OR: 0.59; CI: 0.40 – 0.88), whilst Alderden (2008) showed a significant increase in sexual assault case clearance when a criminal sexual assault kit was available (OR: 1.81; CI: 1.23 – 2.67). Overall, there was no significant impact on case clearance or closure by sexual assault screening (OR: 1.04; CI: 0.35 – 3.10).

**Figure 26.** Meta-analysis of the impact of sexual assault screening on case clearance or closure
**Arrest**

One study (LaFree, 1981) showed no significant effect of a specialist sex offence unit on arrests in sexual assault cases (OR: 1.00; CI: 0.75 – 1.32).

Two studies examined the impact of sexual assault examinations on arrest (Alderden & Ullman, 2012; Bouffard, 2000). As figure 27 shows, on average these exams are associated with more than double the odds of an arrest in a sexual assault case (OR: 2.55; CI: 1.78 – 3.65).

![Figure 27. Meta-analysis of the impact of sexual assault screening on arrests](image)

**Charged**

One study contributed two effect sizes to examine the impact of sexual assault medical examinations on whether charges were laid (Heenan & Murray, 2007). As figure 28 shows, on average these exams are associated with nearly than double the odds of charges being laid in a sexual assault case (OR: 1.96; CI: 1.38 – 2.78).

![Figure 28. Meta-analysis of the impact of medical examination on sexual assault charges](image)
Felony charge
One study (LaFree, 1981) showed no significant effect of a specialist sex offence unit on the laying of felony charges in sexual assault cases (OR: 1.39; CI: 0.88 – 2.19).

Presented to prosecution
One study (Kelley, 2008) examined two measures of police involvement in the SANE program and their effect on police decisions to present a sexual assault case for prosecution. As figure 29 shows, there was no significant effect of SANE trained detectives (OR: 0.82; CI: 0.47 – 1.42), or of police involvement in the SANE program (OR: 0.79; CI: 0.48 – 1.28) on the police decision to drop or unfound a sexual assault case. Overall, there was no significant impact of either of these measures (OR: 0.80; CI: 0.56 – 1.15).

![Figure 29. Meta-analysis of the impact of police involvement in the SANE program on the decision to present a sexual assault case for prosecution](image)

Two studies (Alderden, 2008; Kelly, 2008) examined the impact of SANE and non-SANE forensic sexual assault exams on the likelihood of a sexual assault case being presented to prosecution. As seen in figure 30, sexual assault cases are significantly more likely to be presented to prosecution if there was a criminal sexual assault kit available (OR: 2.03; CI: 1.16 – 3.54) or a forensic examination (OR: 19.15; CI: 8.61 – 42.56), whereas a SANE exam has no significant impact on presentation to prosecution (OR: 2.26; CI: 0.77 – 6.65). On average, these effects cancel one another and sexual assault screening has a marginally significant positive effect on the odds of presenting a case to prosecution (OR: 4.45; CI: 0.11 : 1.00 – 19.88), but this is a highly heterogenous set of effects.
**Figure 30.** Meta-analysis of the impact of sexual assault screening on police presenting a case to prosecution

**Prosecuted**

Three studies contributed effect sizes to examine the impact of SANE sexual assault screening on prosecution of sexual assault cases (Alderden, 2008; Toon & Gurumasy, 2014 – data from Kelly, 2014 & Campbell, 2012). As figure 31 shows, none of the component effect sizes showed a statistically significant impact on prosecution, and the overall impact is also not statistically significant (OR: 1.14; CI: 0.71 – 1.83).

**Figure 31.** Meta-analysis of the impact of Sexual Assault Nurse Examiner sexual assault screening on prosecution
**Convicted**

Two studies contributed effect sizes to examine the impact of SANE sexual assault screening on conviction in sexual assault cases (Toon & Gurumasy, 2014 – data from Kelly, 2014 & Campbell, 2012). As figure 32 shows, none of the component effect sizes showed a statistically significant impact on prosecution, and the overall impact is also not statistically significant (OR: 0.97; CI: 0.46 – 2.02).

![Figure 32. Meta-analysis of the impact of Sexual Assault Nurse Examiner sexual assault screening on conviction](image)

**Exceptional closure**

One study (Bouffard, 2000) contributed two effect sizes that examined the impact of sexual assault examination on exceptional closure of cases. As figure 33 shows, sexual assault exams were associated with an 80% reduction in the odds of exceptional closure due to lack of victim cooperation (OR: 0.21; CI: 0.14 – 0.32), but had no significant impact on exceptional closure due to lack of prosecutorial merit (OR: 1.24; CI: 0.84 – 1.85). Overall, there was no significant impact on exceptional closure (OR: 0.51; CI: 0.09 – 2.93) but these outcomes can be considered highly heterogeneous.

NOTE: Weights are from random effects analysis

<table>
<thead>
<tr>
<th>Study Name</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toon &amp; Gurumasy, 2014 - Kelly, 2004</td>
<td>0.62 (0.27, 1.39)</td>
</tr>
<tr>
<td>Toon &amp; Gurumasy, 2014 - Campbell, 2012</td>
<td>1.33 (0.79, 2.23)</td>
</tr>
<tr>
<td>Overall (I-squared = 58.6%, p = 0.120)</td>
<td>0.97 (0.46, 2.02)</td>
</tr>
</tbody>
</table>
Figure 33. Meta-analysis of the impact of sexual assault exams on exceptional closure of cases

**Victim withdraws**

One study (Kelley, 2008) examined two measures of police involvement in the SANE program and their effect on the likelihood of victim withdrawal from the case. As figure 34 shows, there was no significant effect of SANE trained detectives (OR: 1.30; CI: 0.74 – 2.29), or of police involvement in the SANE program (OR: 1.31; CI: 0.78 – 2.18) on victim withdrawal from sexual assault cases. Overall, there was no significant impact of either of these measures (OR: 1.30; CI: 0.89 – 1.91).

Figure 34. Meta-analysis of the impact of sexual assault screening on victim withdrawal from cases

Kelly (2008) also examines the impact of sexual assault exams – both SANE and non-SANE forensic exams. As seen in figure 35, sexual assault victims are significantly more likely to withdraw from the case if they have had a forensic examination (OR: 5.24; CI: 3.07 – 8.94), whereas a SANE exam has no significant impact on victim withdrawal (OR: 0.37; CI: 0.13 – 1.07).
On average, these effects cancel one another out to show that sexual assault screening has no overall effect on victim withdrawal (OR: 1.45; CI: 0.11 – 19.45); however, this is a highly heterogenous set of effects.

**Figure 35.** Meta-analysis of the impact of sexual assault screening on victim withdrawal from cases
Summary of findings

This systematic review evaluated 13 types of interventions, grouped into 10 main categories, and examined their impact on one or more of 17 outcome types. We briefly summarise the findings below.

Collection or testing of DNA was evaluated in five studies that looked at the impact on case outcomes in homicide, sexual assault, robbery and serious assault. Overall, collecting or testing DNA was associated with:

- increased conviction and sentence length,
- no significant association with charges, prosecution, or plea bargains, and
- decreased case clearance.

Collection or testing of physical evidence was evaluated in three studies that looked at the impact on case outcomes in homicide, robbery, and sexual assault cases. Eleven different types of evidence were assessed. Overall, the findings showed:

- crime scene technicians were associated with increased clearance and arrest in robbery,
- taking fingerprints was associated with increased arrest in robbery,
- collecting toxicology specimens was associated with decreased charge and conviction,
- collecting genital swabs, nail scrapings, or head hair specimens was associated with decreased charge, but increased conviction,
- performing an autopsy at an academic centre was associated with decreased charge but had no significant impact on conviction
- performing a full autopsy had no significant impact on charge but was associated with decreased conviction,
- collecting histology or clothes specimens had no significant impact on either charge or conviction, and
- taking crime scene or forensic photos, or victim blood alcohol was associated with an increase in charge and conviction.

Computer or file checks were evaluated in two studies examining the impact on homicide and robbery cases. Results showed:

- running computer checks on the deceased, witnesses or suspects in homicide cases was associated with higher homicide case clearance,
- running file checks on persons, vehicles or vehicle registrations had no significant association with arrest in robbery cases.

Crime scene visits by detectives or medical practitioners in homicide cases were evaluated in one study, which showed:

- detective visits to the homicide scene increased charges and conviction, and
- there was no significant association between having medical practitioners attend the homicide scene and the likelihood of charges or conviction.

Detective presence at post-mortem was associated with increased case clearance in one study of homicide outcomes.

Interview recording was evaluated by one study, which showed that in serious violent crime cases, video or voice recordings were not significantly associated with admission, confession, prosecution, dismissal, guilty pleas, plea bargains, hung juries, or conviction.

Interviews conducted with family members, attending physicians, or suspects were evaluated in two studies of homicide or sexual assault. The analyses found that:
• interviewing family members or attending physicians was associated with increased homicide case clearance, and
• interviewing suspects in sexual assault cases was associated with a borderline significant reduction in police dropping or unfounding a case, and increase in police presenting a case to prosecution; and a reduction in victims withdrawing from sexual assault cases.

**Line-ups** were evaluated in two studies that looked at suspect identification in carjacking and robbery cases. The results showed that:
  • perpetrator-matched line-ups (with foils matched to the perpetrator) give less false positive suspect identifications than suspect-matched line-ups (where the foils were matched to an innocent suspect) in a lab experiment,
  • video line-ups were more effective for suspect identification than street identification or mugshots, and street identification was more effective than mugshots,
  • video line-ups were more successful if the witness had previously identified the suspect in a street line-up,
  • there was no significant difference in suspect identification between line-ups that occur within a week of the offence and those that occur later.

**Medical examiner qualifications** were evaluated in one study of homicide, which found:
  • specialist qualification (compared to ‘some training’) is associated with increased odds of charges being laid, but lower odds of conviction, and
  • some training (vs no training) had no impact on charges, but was associated with significantly higher odds of conviction.

**Specialised sexual offence interventions** were evaluated in eight studies, looking at sexual assault screening, the Sexual Assault Nurse Examiner program, and specialist police sex offence units. The analyses found that:
  • police involvement in the SANE program or the use of SANE trained detectives had no significant impact on the police decision to drop or unfound a case, police decision to present a case for prosecution, or victim withdrawal,
  • sexual assault screening exams were not significantly associated with the police decision to drop or unfound a sexual assault case, or with case clearance or closure,
  • sexual assault screening exams were associated with an increase in arrest and charges being laid, and a marginally significant increase in cases presented to prosecution,
  • sexual assault screening exams showed no significant associations with prosecution, conviction, or exceptional closure,
  • overall, sexual assault exams showed no significant effect on victims withdrawing from cases, but some evidence suggests that standard forensic exams have a higher rate of victim withdrawal than SANE exams, and
  • specialist sex offence units had no significant impact on arrests, or felony charges.
Discussion

In the introduction, we argued that the level of research synthesis seen for street-level policing approaches and general crime and disorder far outweighs the research synthesis for police investigative techniques, particularly in the area of serious violent crime. We also argued that a systematic review on the effectiveness of police techniques for investigating serious violent crime was required so that researchers, practitioners and policy makers can determine the relative effectiveness of techniques police use to investigate serious violent crime. The results of this systematic review highlights the fact that there is also only a small body of primary research that empirically evaluates investigative techniques for serious violent crime in a manner that can be synthesised using meta-analytic techniques.

This systematic review identified 3,686 studies to be screened and located, examined the full text of 1,900 documents, yet yielded only 15 documents containing 18 eligible studies from which standardised effect sizes could be calculated. These studies each examined the impact of a police investigative technique on case outcomes in serious violent crime, including homicide, robbery, carjacking, serious assault, sexual assault, and an aggregate measure of serious violent crime. We synthesised the results of 13 intervention types, in 10 broad categories, on 17 case outcomes. Whilst the eligible studies produced 111 standardised effect sizes for synthesis, in many instances there were few studies examining the same issue for synthesis. Due to the small number of studies, there was insufficient power to perform moderator analyses by crime type to determine if certain interventions work best for certain crime types. We therefore caution that these results should be seen as a preliminary exploration of the effectiveness of investigative techniques for serious violent crime.

It is important to recognise that even within this small set of quantitative evaluations, that there remain issues of selection bias. Only one study used a randomised control experiment design, and only three studies controlled for victim, case or organisational characteristics. In the remaining 14 included studies the control and treatment conditions were matched only on crime type. As a result, it is possible that crime or victim characteristics may have led to the allocation of treatment, and also to the results seen. Thus it is important to recognise that in the majority of instances, there is the possibility of confounded effects and that these results can only speak to association, and not causation.

During the course of the search we identified a large amount of empirical research that evaluated investigative police techniques, but as we have shown, a much smaller corpus that evaluates them in the context of serious violent crime. We would encourage further research to explore the differential impact of techniques across crime type, and would particularly encourage randomised control experiments where appropriate and ethical, or well-balanced quasi-experiments that control for selection assignment factors.
References


Riedel, M., & Jarvis, J. (1998). The decline of arrest clearances for criminal homicide: Causes,


StatCorp. (2013). Stata statistical software: Release 13. College Station, TX: StataCorp LP.


Telep, C., & Weisburd, D. (in press). What has been learned from systematic reviews in policing? In D. Farrington & D. Weisburd (Eds.), Systematic reviews in criminology: What have we learned? New York: Springer Verlag.


Appendix A1: Global Policing Database Compilation Overview

SYSTEMATIC SEARCH OF PUBLISHED & UNPUBLISHED LITERATURE

EXPORT SEARCH RESULTS
Bibliographic data and abstracts exported into EndNote
Data cleaned and duplicate records removed

IMPORT SEARCH RESULTS INTO SYSREVIEW

SCREEN TITLES AND ABSTRACTS FOR ELIGIBILITY
1. Not a duplicate document?
2. Between 1950 – present?
3. About police or policing?
4. Eligible document type?
   *If not clearly excluded on any criteria...*

DOCUMENT RETRIEVAL
Retrieve electronic and hard copies of all eligible documents
Attach electronic versions to records in SysReview

SCREEN FULL-TEXT OF DOCUMENTS FOR FINAL ELIGIBILITY
1. Not a duplicate document?
2. Between 1950 – present?
3. Quantitative statistical comparison?
4. Policing intervention?
5. Quantitative impact evaluation?
6. Eligible research design?
   *If 'Yes' to all...*

CONDUCT HANDSEARCHES
1. Contact Global Policing Database List of Experts
2. Reference harvesting
   *Potential studies...*

CATEGORISE ELIGIBLE DOCUMENTS
1. Research design
2. Intervention location
3. Publication date
4. Problem targeted
5. Evaluation outcome measure(s)
6. Type of policing intervention

GLOBAL POLICING DATABASE (GPD)
Web-based
Searchable
Updated biennially
Appendix A2: Global Policing Database Compilation Progress

The Beta Version of the Global Policing Database (GPD) was launched at the Mayor's office for Policing and Crime (MOPAC) in June 2015 and contains a sample of eligible studies from 2014. Figure A2.1 outlines the status of the database as of June 2015. (see https://www.london.gov.uk/media/mayor-press-releases/2015/07/new-database-brings-together-65-years-of-policing-research-from)

<table>
<thead>
<tr>
<th>Systematic Search of Published &amp; Unpublished Literature Between 1950 – 2014</th>
<th>N = 365,720</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncleaned Search Results 2008 – 2014</td>
<td>N = 119,010</td>
</tr>
<tr>
<td>Cleaned Search Results Imported into SysReview 2008 – 2014</td>
<td>N = 71,971</td>
</tr>
<tr>
<td>Titles and Abstracts Screened for Eligibility</td>
<td>N = 71,217</td>
</tr>
<tr>
<td>Document Retrieval for Eligible Records</td>
<td>N = 26,163 searched (99.09%)</td>
</tr>
<tr>
<td></td>
<td>N = 22,048 accessible and attached to SysReview</td>
</tr>
<tr>
<td>Stage 1 Full-Text Screening for Initial Eligibility</td>
<td>N = 9,609</td>
</tr>
<tr>
<td>Stage 2 Final Eligibility &amp; Coding</td>
<td>N = 306</td>
</tr>
<tr>
<td>Eligible Studies Included in Beta Version of GPD</td>
<td><a href="http://www.gpd.uq.edu.au">www.gpd.uq.edu.au</a></td>
</tr>
<tr>
<td></td>
<td>N = 80</td>
</tr>
</tbody>
</table>
Appendix B1: NPIA Systematic Search and Screening Process

Denning et al. (2009) conducted a staged search strategy using the search terms list in Table B1.1 across the search locations listed in Table B1.2:

1. Tier 1 AND Tier 2 AND Tier 3
2. Tier 1 AND Tier 2 AND Tier 4


<table>
<thead>
<tr>
<th>Tier</th>
<th>Terms</th>
<th>Search Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Research OR empirical OR evaluation OR study</td>
<td>Abstract</td>
</tr>
<tr>
<td>2</td>
<td>Policing OR law enforcement</td>
<td>Abstract</td>
</tr>
<tr>
<td>3</td>
<td>Investigation OR Investigative OR detection OR interview</td>
<td>Abstract</td>
</tr>
<tr>
<td>4</td>
<td>Solvability OR first response OR initial response OR call handling OR initial contact OR crime screening OR scene OR composites OR intelligence OR informant OR surveillance OR evidence OR house-to-house OR suspect OR interrogation OR identification OR proactive OR taskforce OR squad</td>
<td>All Fields</td>
</tr>
</tbody>
</table>

Table B1.2 Denning et al.’s (2009) systematic search locations

<table>
<thead>
<tr>
<th>ACADEMIC DATABASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Platform</td>
</tr>
<tr>
<td>CSA</td>
</tr>
<tr>
<td>Informit</td>
</tr>
<tr>
<td>ProQuest</td>
</tr>
<tr>
<td>Ovid</td>
</tr>
<tr>
<td>Web of Knowledge</td>
</tr>
<tr>
<td>Standalone Databases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GREY LITERATURE SOURCES AND LIBRARY CATALOGUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scottish Institute for Policing Research</td>
</tr>
<tr>
<td>Association of Police Authorities</td>
</tr>
<tr>
<td>Association of Police Authorities</td>
</tr>
<tr>
<td>Cambridge University Library and Dependent Libraries Catalogue</td>
</tr>
</tbody>
</table>
Appendix B2: NPIA Systematic Screening Process

Denning et al. (2009) conducted abstract screening of their search results according to the criteria outlined in Table B2.1. Eligible records from the abstract screening stage were then coded according to the criteria outlined in Table B2.2.

Table B2.1. Denning et al.’s (2009) abstract screening criteria

<table>
<thead>
<tr>
<th>Exclusion Code</th>
<th>Details</th>
</tr>
</thead>
</table>
| Not serious crime | Publications that did not relate to the investigation of the following crimes were excluded from the search:  
  - Murder  
  - Manslaughter  
  - Attempted Murder  
  - Infanticide  
  - Wounding  
  - Rape  
  - Serious Sexual Assault  
Where the abstract did not state a particular crime type, publications were included. |
| Serious crime, but excluded | The following serious crimes were excluded from the search:  
  - Arson  
  - Robbery  
  - Murder or Manslaughter as a result of a motor vehicle  
  - Corporate Manslaughter  
  - Domestic violence  
  - Gang-related offences  
  - Terrorist offences. |
| Not investigative process | Publications that did not relate to the investigative process were excluded. |
| Investigative process, but excluded | The following components of the investigative process were excluded from this review:  
  - Forensic Science, including to all forensic science aspects of criminal investigation, e.g. DNA, fingerprinting, ballistics etc.  
  - Profiling - refers to offender profiling, also called behavioral, psychological, personality, criminal profiling. Profiling processes of case linkage or linkage analysis are also to be excluded, as are modus operandi, signature, victimology, and crime scene reconstruction. Databases that assist with managing offence/offender information such as VICLAS and VICAP are also excluded.  
  - Witness Management - refers to interviewing of witnesses and witness protection programs. This includes interviewing victims.  
  - Post-charge Management - refers to the way records are managed once charges have been laid.  
  - Trial Preparation - exclude all literature discussing how law enforcement prepare for trial. |

Table B2.1. Denning et al.’s (2009) coding fields

<table>
<thead>
<tr>
<th>Coding Field</th>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
</table>
| Design       | Qualitative  
  Quantitative  
  Mixed Methods  
  N/A | What research design has been used? Choose one. Where it is a theoretical piece, N/A would be appropriate. Mixed Method is defined as studies using a combination of qualitative and quantitative. Unless otherwise specified in the abstract, make the following assumptions about design: (1) survey or experimental indicate a quantitative design, and (2) case studies or interviews indicate a qualitative design. |
<table>
<thead>
<tr>
<th>Primary method</th>
<th>Experimental Survey</th>
<th>Observations</th>
<th>Interviews</th>
<th>Case Studies</th>
<th>Other</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary method</td>
<td>Experimental Survey</td>
<td>Observations</td>
<td>Interviews</td>
<td>Case Studies</td>
<td>Other</td>
<td>N/A</td>
</tr>
<tr>
<td>Research question</td>
<td>Process</td>
<td>Outcome</td>
<td>Both</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offence type</td>
<td>Murder</td>
<td>Manslaughter</td>
<td>Attempted Murder</td>
<td>Infanticide</td>
<td>Wounding</td>
<td>Rape</td>
</tr>
<tr>
<td>Outcome</td>
<td>Charge</td>
<td>Arrest</td>
<td>Conviction</td>
<td>Failure</td>
<td>Other, specify multiples.</td>
<td>N/A</td>
</tr>
<tr>
<td>Region</td>
<td>USA</td>
<td>Canada</td>
<td>North American Other</td>
<td>South America</td>
<td>United Kingdom</td>
<td>Europe</td>
</tr>
<tr>
<td>Population</td>
<td>Offender</td>
<td>Criminal justice officials</td>
<td>Civilians</td>
<td>Other, specify multiples.</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Global Policing Database Search Strategy

Higginson et al. (2015) combined the search terms listed in Table B1 to capture research that contained at least one policing term and one evaluation term within either the title, abstract, keywords or indexing term search fields across the search locations listed in Table B2. Specifically, the terms within each category were separated by OR and the then the grouped policing and evaluation terms were combined with AND (e.g., (police* OR policing OR...) AND (analy* OR experiment* OR...). Higginson et al. include a much larger list of search locations in their GPD protocol, however at the time of compiling this review, Version 1.0 of GPD contained the locations listed in Table B2.

Table B1. Global Policing Database Search Terms

<table>
<thead>
<tr>
<th>Policing Search Terms</th>
<th>Evaluation Search Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>police*</td>
<td>data</td>
</tr>
<tr>
<td>policing</td>
<td>“dependent variable”**</td>
</tr>
<tr>
<td>“law”enforcement”</td>
<td>measure*</td>
</tr>
<tr>
<td>ANCOVA</td>
<td>“meta-analysis”</td>
</tr>
<tr>
<td>ANOVA</td>
<td>“meta analysis”</td>
</tr>
<tr>
<td>“ABAB design”</td>
<td>“odds#ratio”</td>
</tr>
<tr>
<td>“AB design”</td>
<td>“outcome variable”**</td>
</tr>
<tr>
<td>baseline</td>
<td>“outcome”</td>
</tr>
<tr>
<td>causa*</td>
<td>“paramet”</td>
</tr>
<tr>
<td>“chi#square”</td>
<td>“post-test”</td>
</tr>
<tr>
<td>“comparison condition”</td>
<td>“predict”</td>
</tr>
<tr>
<td>“comparison group”**</td>
<td>“pre-test”</td>
</tr>
<tr>
<td>“control condition”**</td>
<td>pretest</td>
</tr>
<tr>
<td>“control group”**</td>
<td>“propensity score”**</td>
</tr>
<tr>
<td>correlat*</td>
<td>quantitative</td>
</tr>
<tr>
<td>covariat*</td>
<td>“quasi#experiment”**</td>
</tr>
<tr>
<td>“cross#section”**</td>
<td>questionnaire</td>
</tr>
</tbody>
</table>

Table B2. Global Policing Database Version 1.0 Search Locations

<table>
<thead>
<tr>
<th>SEARCH LOCATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACADEMIC DATABASES</td>
</tr>
<tr>
<td>ProQuest</td>
</tr>
<tr>
<td>Criminal Justice</td>
</tr>
<tr>
<td>Dissertation and Theses Database (Social Sciences)</td>
</tr>
<tr>
<td>Index Islamicus</td>
</tr>
<tr>
<td>Political Science</td>
</tr>
<tr>
<td>Periodical Archive Online</td>
</tr>
<tr>
<td>Research Library (Social Science)</td>
</tr>
<tr>
<td>Social Science Journals</td>
</tr>
<tr>
<td>CSA Illumina</td>
</tr>
<tr>
<td>Applied Social Sciences Index and Abstracts (ASSIA)</td>
</tr>
<tr>
<td>International Bibliography of the Social Sciences</td>
</tr>
<tr>
<td>Public Affairs Information Service (PAIS International)</td>
</tr>
<tr>
<td>Social Services Abstracts</td>
</tr>
<tr>
<td>Sociological Abstracts</td>
</tr>
<tr>
<td>Worldwide Political Sciences Abstracts</td>
</tr>
<tr>
<td>EBSCO</td>
</tr>
<tr>
<td>Academic Search Premier</td>
</tr>
<tr>
<td>Criminal Justice Abstracts</td>
</tr>
<tr>
<td>EconLit</td>
</tr>
<tr>
<td>MEDLINE with Full-Text</td>
</tr>
<tr>
<td>OVID</td>
</tr>
<tr>
<td>PsyckARTICLES</td>
</tr>
<tr>
<td>PsyckEXTRA</td>
</tr>
<tr>
<td>PsyckINFO</td>
</tr>
<tr>
<td>World of Knowledge</td>
</tr>
<tr>
<td>Current Contents – Social and Behavioural Sciences Edition</td>
</tr>
<tr>
<td>Web of Science</td>
</tr>
<tr>
<td>Book Citation Index (Social Sciences and Humanities)</td>
</tr>
<tr>
<td>Conference Proceedings Citation Index (Social Sciences and Humanities)</td>
</tr>
<tr>
<td>Humanities</td>
</tr>
<tr>
<td>Social Science Citation Index</td>
</tr>
<tr>
<td>Informit</td>
</tr>
<tr>
<td>AGIS Plus Text</td>
</tr>
<tr>
<td>Australian Criminology Database</td>
</tr>
<tr>
<td>Australian Federal Police Database</td>
</tr>
<tr>
<td>Australian Public Affairs Information Service Full-Text</td>
</tr>
<tr>
<td>DRUG</td>
</tr>
<tr>
<td>Health &amp; Society Database</td>
</tr>
<tr>
<td>Humanities and Social Sciences Collection (Law, Social Sciences subsets)</td>
</tr>
<tr>
<td>Standalone Databases/Open Access Databases</td>
</tr>
<tr>
<td>African Journals Online</td>
</tr>
<tr>
<td>Alcohol and Alcohol Problems Science Database</td>
</tr>
<tr>
<td>Cochrane Library</td>
</tr>
<tr>
<td>DrugPolicy Alliance Library</td>
</tr>
<tr>
<td>Evidence-Based Policing Matrix</td>
</tr>
<tr>
<td>HeinOnline</td>
</tr>
<tr>
<td>International Initiative for Impact Evaluation Database (3ie)</td>
</tr>
<tr>
<td>JSTOR</td>
</tr>
<tr>
<td>Sage Journals Online and Archive (Sage Premier)</td>
</tr>
<tr>
<td>ScienceDirect</td>
</tr>
<tr>
<td>SCOPUS</td>
</tr>
<tr>
<td>SpringerLink</td>
</tr>
<tr>
<td>Taylor &amp; Francis Online</td>
</tr>
<tr>
<td>Wiley Online Library</td>
</tr>
</tbody>
</table>
Appendix D: Title and Abstract Screening Guidelines

Title and Abstract Screening Overview

1. Use your Title and Abstract decision-making tree to help you navigate through the different screening scenarios that may arise.

2. Please read the title and abstract of the document in enough detail to be able to address the exclusion criteria with certainty.

3. Remember: it is always better to include rather than exclude documents at this stage!

4. After reading the title and abstract, select the first exclusion criterion that applies (if any) and then complete the screening.

5. Make sure you work through the screening criteria from top to bottom and only select one criterion if you are excluding the record.

6. When you select an exclusion criterion, it will become highlighted and the text at the bottom of the form will read ‘Title is NOT eligible’.

7. If you do not select any exclusion criteria the text at the bottom of the form will read ‘Title is eligible’ and the document will proceed to the full-text eligibility screening stage.

8. When you have finished screening the document, click the ‘Complete Screening’ button at the bottom of the form. Your name and today’s date should appear beside ‘Screened by’. To move to the next document, click on the ‘Go to First Unscreened Title’ button at the top of the form.

Screening Criteria

Criterion 1: Document is not after 1950

Select this criterion if:

- The document is dated before 1950
- The document is published after 1950, but only contains research that was conducted prior to 1950 (e.g., historical research).

If you think the research could include data collected or material dated after 1950, do not exclude the document.

Criterion 2: Document is not unique

Only select this criterion if you are certain that the document is an exact duplicate of another record in the database. For example, a conference paper and a journal article with the same authors reporting on the same study is two unique documents. However, when there are two copies of the same journal article, one document is not unique.

Criterion 3: Document is not about police or policing
Select this criterion if the document is clearly NOT about police or policing. For a document to be ‘about’ police or policing, there needs to be more than just a tangential link to police or policing. The core subject matter of the document or what looks to be a substantial portion of the document must be directly related to police or policing.

For the purposes of the GPD, we will only include public police or personnel employed by the public police. In general, a practitioner would be considered to be police if they have police-like powers (e.g., arrest/detainment, search and seizure). We will also include support staff working in a police agency (e.g., forensic investigators).

Other words for police include (but are not limited to):

- Campus police
- Constabulary
- Crime Scene / Forensic Investigator
- Detective
- Drug Enforcement Agency (DEA)
- FBI
- Interpol / Europol
- Law-enforcement
- Military police
- Secret service
- Sheriff / sheriff department
- SWAT

Remember: if you cannot categorically decide if the document is NOT about police or policing, it should be included. If you are conceptually unsure if the type of participants or subject of the document meets our definition of police, you can mark the record as ‘Tricky’ (make sure you also select the police criterion as well) and the Review Managers can mediate the record (e.g., do forensic investigators count as police?).

SOME TIPS

The following points are important to consider when deciding if a document does not relate to police.

1. Documents that are only about private police or policing are not eligible for the Global Policing Database (if the document is about public AND private police, it may be included).

2. There are no limits on the type of police interventions or outcomes, so this means that a document may be eligible:

   - If police are the research participants
   - If police directly implement an intervention
   - If police implement an intervention in partnership other agencies
   - If a police practice is the subject matter of the document
   - If the document is evaluating technology that police use (e.g., breathalysers, forensic testing)
   - If the document is about something that could impact police or their practice in a substantive way (e.g., change in legislation, key legal ruling)
• If the research involved simulated police practices (e.g., interrogation techniques with ‘mock’ suspects)

3. Just because an abstract or title mentions police and/or a synonym for police/policing, that does not mean the document is necessarily about police. For example:

• An author may have spelled ‘policies’ as ‘polices’ and so may have been identified in the search, yet not relate to police or policing at all and would need to be excluded.
• An abstract may refer to the use of police data, yet use of police data does not necessarily mean the document is about police or policing. The issue to consider in this situation is how the authors are using the data. For example, a document that appears to be using police data to examine an aspect of police practice would be included. However, a record that uses police-recorded crime data to examine patterns of crime without any reference to police practice would most likely be excluded.
• An abstract may refer to crime but not mention police. Just because police deal with crime does not mean that this document relates to police.
• You can also refer to your training materials for more examples on this point.

If a document does not mention police, policing and/or a synonym for police, it does not necessarily mean that the document should be excluded. Titles and/or abstracts can be suggestive of police or policing without using the term(s) explicitly. For example, an abstract may refer to emergency services personnel during a natural disaster or discuss something that would ordinarily fall in the purview of police practice (e.g., investigation of crimes, gathering evidence, controlling/preventing crime problems).

Criterion 4: Tricky / needs mediation

Select this criterion if you are conceptually unsure whether a particular aspect of the title / abstract is eligible. For example, you may not be sure whether a particular type of practitioner is considered public police (e.g., Homeland Security) or you may not know if a document is a duplicate.

When you select this criterion, please also select the criterion which makes the record ‘tricky’ and also complete the screening.

Criterion 5: Not an eligible document type

Only select this criterion if you are certain that the document is one of the following ineligible types of documents. Use the abstract/title to make this decision – do not trust the ‘Reference Type’ field.

Because this criterion is last, you must first determine whether the document is about police or policing. If the document is about police or policing, but is an ineligible document type, select this criterion. However, if the document is not about police or policing – even if it is an ineligible document type – exclude the document on the police criterion.

If you identify a type of document that you think may not be eligible, but that is not in this list, please select the ‘Tricky’ criterion and the ‘Not an eligible document type’ criterion so that the eligibility of the document type can be verified by the Review Managers.

• Advertisement (e.g., of upcoming conferences)
• Newspaper article
• Book review or book notes
• Editorial
• Erratum
• Epilogue or prologue
• Music, audio-visual material, movie or television show reviews
• Poetry
• Letters or letters to the editor, obituary
• Table of contents
• Pieces of original legislation
• Index, front matter, back matter, glossary
• Document listing publications received or abstracts that have been withdrawn
• Email interviews or radio/television transcripts
Appendix E: Full-Text Eligibility Screening Guidelines

Full-Text Eligibility Screening Overview

1. Please read the document in enough detail to be able to address the exclusion criteria with certainty.

2. Work through the screening criteria from top to bottom and select the FIRST exclusion criterion that applies and then complete the screening. Do not select more than one exclusion criterion.

3. When you select an exclusion criterion, it will become highlighted and the text at the bottom of the form will read ‘Title is NOT eligible’. If you do not select any exclusion criteria the document will proceed to the full-text eligibility screening stage and the text will at the bottom of the form will read ‘Title is eligible’.

4. When you have finished screening the document, click the ‘Complete Screening’ button at the bottom of the form. Your name and today’s date should appear beside ‘Screened by’. To move to the next document, click on the ‘Go to First Unscreened Title’ button at the top of the form.

5. If you are having difficulty deciding on a particular criterion, please select the ‘This is tricky/Requires mediation’ button and then select the criterion that is making the screening difficult.

6. If you are unsure whether you understand any of the criteria, please speak with the Review Managers to obtain further training or direction.

Stage 1 Screening Criteria

<table>
<thead>
<tr>
<th>Screening Criteria</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document is not dated after 1950</td>
<td>Select this criterion if the document is dated before 1950 or contains research that was conducted prior to 1950. Note: if a document contains research that only uses historical material dated before 1950, you can exclude the document on this criterion.</td>
</tr>
<tr>
<td>Document is not unique</td>
<td>Only select this criterion if you are certain that the document is an exact duplicate of another record in the database.</td>
</tr>
<tr>
<td></td>
<td>For example, a conference paper and a journal article with the same authors reporting on the same study are two unique documents. However, when there are two copies of the same journal article, one article is not unique.</td>
</tr>
<tr>
<td>Document does not report a quantitative comparison</td>
<td>Select this criterion if the document does not contain a bivariate or multivariate quantitative comparison. Exclude documents that only contain univariate quantitative comparisons. A univariate quantitative comparison is one that makes a comparison within one variable or describes individual variables separately. For example: a frequency table of the answers to one question; the description of a sample in terms of one variable at a time; the</td>
</tr>
</tbody>
</table>
description of the pattern of responses to variables exploring each variable on its own. The document should be excluded if it only contains univariate comparisons.

Do not exclude time series analyses or spatial analyses. These are in fact bivariate as they are examining one variable over time (so time or space is the second variable).

A **bivariate** quantitative comparison is one that compares two variables, to determine the empirical relationship between them.

For example: a frequency table of the values of one variable against the values of another; \( \chi^2 \); before-and-after group means, counts or percentages; correlation coefficient; bivariate regression; independent or repeated measures t-test; time-series analyses; spatial analyses.

A **multivariate** quantitative comparison is one that explores the association between more than two variables.

For example: a frequency table of the values of one variable against the values of multiple variables; \( \chi^2 \); ANOVA; multiple regression.

**Please note:**

- **For simplicity**, include documents that include numerical data and symbols that represent particular statistical analyses. For example: \( p \) values, \( b, r, d, g, t, f, \chi^2 \).
- Eligible comparisons can be in the form of raw numbers, percentages, counts, or the results of statistical tests. These can be reported in tables, figures with numerical labels, or in text.
- There does not need to be a ‘Results’ section reported.
- Include documents that do not contain statistical symbols, but contain numerical data that is represented in a way that suggests comparisons between conditions (e.g., time periods, groups, locations, categories, levels of an IV). Examples include: frequency tables; contingency tables; before-after or between-group means; counts; or percentages.
- If the eligible quantitative comparison reported is taken from another piece of research and the authors do not provide their own results, the document is still eligible.

The following examples are excluded, but this is not an exhaustive list:

- Univariate descriptive statistics only.
- Documents that only report a number or percentage of one variable under one condition at one time-point. These are univariate analyses. For example, a document that merely states that 5% of police departments use tasers in 2014 would be excluded, as there is no comparison between different police stations or over time.
- Documents that contain formulae or equations that are *proposed* for
modelling, but no modelling is performed using actual data.

- Simulations using ‘real’ data are included; simulations using simulated data are excluded.

Reference harvesting
[checkbox]

Select this checkbox if you think that the document may be useful for harvesting research that may be eligible for the GPD.

Stage 2 Screening Criteria

<table>
<thead>
<tr>
<th>Screening Criteria</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document is not about serious violent crime</td>
<td>Select this criterion if the document is not about serious violent crime. For the purposes of this review, a serious violent crime includes the following offence types and victims/perpetrators can be individuals or groups of individuals (e.g., gangs):</td>
</tr>
<tr>
<td></td>
<td>- Murder</td>
</tr>
<tr>
<td></td>
<td>- Manslaughter</td>
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<tr>
<td></td>
<td>- Rape or other sexual assault</td>
</tr>
<tr>
<td></td>
<td>- Aggravated assault</td>
</tr>
<tr>
<td></td>
<td>- Robbery</td>
</tr>
<tr>
<td></td>
<td>- Aggregate violent crime with no specification of the type of crime</td>
</tr>
<tr>
<td></td>
<td>- Other (specify in the textbox provided)</td>
</tr>
</tbody>
</table>

**Remember:**

- To be ‘about’ serious violent crime, the document must either focus on one of the crimes or contain a substantive portion that is about serious violent crime (i.e., one or two sentences or mere mention of serious violent crime is not sufficient for inclusion).

- Different jurisdictions may call these crimes something different (e.g., grievous bodily harm, homicide, stabbing), so please keep this in mind during your screening (e.g., don’t just search the article on these terms and exclude if the document doesn’t contain them).

**Excluded types of violent crime:**

- Violent crimes where the perpetrator is a corporation or organisation should be excluded.

- Documents where the violent crime is use-of-force by police should be excluded, unless the actions by police are being treated like a crime (i.e., investigation of officers, charging of officers etc).

- Self-directed violence outcomes (i.e., acts or omissions perpetrated by an individual against himself or herself). Examples include suicide and non-suicidal self-harm.

- Collective violence outcomes (i.e., acts or omissions perpetrated...
by a state or large organized group against another state or large organised group). Examples include: terrorist activity, rioting, looting, smuggling, gang warfare, genocide, war, or political conflict.

| Document does not report on an eligible type of outcome | Select this criterion if the document does not report on an eligible type of outcome. For the purposes of this review, we are interested in case-level type outcomes. The following outcomes are eligible for the review:
| --- | --- |
| | • Offender identification (this includes recall of information that could assist officers to identify an offender)\(^1\).
| | • Arrest or apprehension
| | • Confession
| | • Conviction
| | • Case closure/clearance (includes laying charges)

**Excluded types of outcomes:**

- Perceptions of case outcomes (e.g., police perceptions of arrest)
- Measures of victim satisfaction
- Perceptions of police or police practices
- Crime rates

| Document is not about a police investigative technique | Select this criterion if the document does not report on one or more police investigative techniques. For the purposes of this review, a police investigative technique includes any activity or strategy used by police to: identify offenders, arrest offenders, elicit confessions, close cases, or secure convictions.

The police investigative period begins from the point at which a serious violent crime comes to the attention of the police (e.g., suspected, reported or detected) until the point when the case is closed or transitioned to another arm of the criminal justice system (e.g., judicial sector). A technique is not **investigative** if it comes before the detection of report of a crime.

Examples include, but are **not limited** to:

- Collection or testing of DNA or other physical evidence
- Line-ups
- Facial composites
- Specialised task forces

\(^1\) An example would be where the document deals with the accuracy of offender details to aid in the identification of an offender.
<table>
<thead>
<tr>
<th>Deception detection techniques</th>
<th>Surveillance techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological profiling</td>
<td>Interrogation and interview techniques</td>
</tr>
</tbody>
</table>

Document does not report on a quantitative impact evaluation of a police investigative technique for serious violent crime case-level outcomes

Select this criterion if the document does not contain:

1. A quantitative impact evaluation AND
2. The impact evaluation is of a police investigative technique AND
3. The technique is used to investigate serious violent crime AND
4. The technique is evaluated using at least one of the eligible case-level outcomes.

Research design

Specify the type of research design used to evaluate the policing intervention by selecting one of the following options (see Appendix A for a definition of each of these designs):

- Randomised experimental design
- Regression discontinuity design
- Matched control group design with pre-intervention baseline measures
- Matched control group design without pre-intervention baseline measures
- Unmatched control group designs with pre-intervention measures
- Unmatched control group designs without pre-intervention measures
- A design using multivariate controls that is not covered by other listed research designs (e.g., multiple regression)
- Long interrupted time-series designs with or without a control group (≥25 pre- and post-intervention observations (Glass, 1997))
- Short interrupted time-series designs with control group (less than 25 pre- and 25 post-intervention observations (Glass, 1997))
- Meta-analysis
- Cross-over design (counterbalanced/randomised)
- Raw correlational design
- Other (use the textbox to specify the design)

**Note:** A control group can receive no treatment, ‘business-as-usual’ or an alternative treatment.
Appendix F: Inaccessible Documents


Anonymous. (2014). A survey of some well-known cases in which young people were convicted of very serious crimes based on false confessions. Juvenile Justice Update, 20(2), 3-16.


Exposing the dangers of strangers online (2013). Blueprint (3), 32-33.


Masip, J., Garrido, E., & Herrero, C. (2004). When did you conclude she was lying? The impact of the moment the decision about the sender’s veracity is made and the sender’s facial appearance on police officers’ credibility judgments. *Polygraph, 33*(3), 156-189.


Tape recordings. (1978, April). In *Conference of Commissioners of Police of Australasia and South Pacific Region: Record of proceedings* (pp. 302-307). Sydney, Australia: Commissioners of Police of Australasia and South Pacific Region.


**References in Denning et al.’s (2009) that were not locatable**


