

*Identifying the Culprit: An International Perspective on the National Academy of Sciences Report on Eyewitness Identification Evidence*<sup>1</sup>

Tim Valentine\*

Goldsmiths, University of London

and

Ryan J. Fitzgerald

University of Portsmouth

This is the postprint version of the following article: Valentine, T., & Fitzgerald, R. J. (2016). Identifying the Culprit: An International Perspective on the National Academy of Sciences Report on Eyewitness Identification Evidence. *Applied Cognitive Psychology*, 30, 135–138, which has been published in final form at [10.1002/acp.3164](https://doi.org/10.1002/acp.3164). This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

\*Correspondence to: Professor Tim Valentine, Department of Psychology, Goldsmiths, University of London, New Cross, London SE14 6NW. UK. E-mail: [t.valentine@gold.ac.uk](mailto:t.valentine@gold.ac.uk)

---

<sup>1</sup> National Research Council (2014). *Identifying the culprit: Assessing identification evidence*. Washington D.C.: National Academies Press. Retrieved from: <http://www.nap.edu/catalog/18891/identifying-the-culprit-assessingeyewitness-identification>

### **Summary**

The recent National Research Council report on eyewitness identification evidence includes fifteen recommendations intended to improve the procedures used to obtain eyewitness identification evidence, strengthen its value in court, and improve the scientific basis of research. The report includes some important insights on the applied research and makes some novel proposals, which are critically reviewed. It is argued that the report is limited by a lack of international comparison and by its focus exclusively on lineups rather than a wider range of methods available to identify perpetrators from their face.

***Identifying the Culprit: An International Perspective on the National Academy of Sciences Report on Eyewitness Identification Evidence***

Understanding the psychology of eyewitness identification has important applications for the criminal justice system. It has been appreciated for a long time that identification by an eyewitness can provide compelling but unreliable evidence in court. Yet until recently, the scale of the problem has been less widely appreciated. Analysis of more than 300 wrongful convictions uncovered by the Innocence Project in New York has exposed mistaken eyewitnesses as a factor in three-quarters of these miscarriages of justice.

Some eyewitness researchers have advocated the use of a sequential lineup procedure, in which witnesses make a decision to one face at a time and are unable to compare lineup members simultaneously. The strong initial claim was that sequential presentation reduced the number of mistaken identifications without reducing the likelihood of identifying the real culprit if present in the lineup. The more recent and modest claim is that identifications from sequential lineups are more diagnostic of guilt. As a result, some jurisdictions in the USA have recommended use of a sequential procedure. However, the latest research, using analysis based on signal detection theory, has supported the view that people are merely more conservative when choosing from a sequential lineup. Witnesses not only make fewer mistakes but also identify fewer culprits because they are less likely to identify anybody from a sequential lineup. Therefore, the benefit for justice of sequential presentation comes with a cost. There is still a respectable argument to be made that sequential presentation of lineups is beneficial for criminal justice because a conservative criterion is a good thing when there is a risk that an innocent person may be wrongly convicted. Whether the argument is accepted depends upon the relative

weight of concern to convict the guilty compared with concern to avoid convicting the innocent. Ultimately, this is a value judgment rather than a scientific question.

A report from the highly respected US National Academy of Sciences on eyewitness identification provides a welcome, timely and authoritative intervention in the field. *Identifying the Culprit* reviews the literature from both scientific and legal perspectives. The aims of the report are to review the scientific literature; identify gaps in research; assess what can be learnt from other fields; and make recommendations of best practice in police procedures and jury instructions. Introductory chapters cover eyewitness identification procedures and legal procedures. There follows a review of basic research on vision and memory, before research applied to eyewitness identification is reviewed. A final chapter outlines the findings and recommendations.

Eyewitness identification procedures and the legal framework are very different in the USA from those used in the UK. In the USA, there is no formal, federal identification procedure. Evidence is often collected by the officer investigating the case, using an array of six photographs following a local protocol. In the UK, formal identification evidence is now collected using video and computer technology to access a national database of video images of foils and build a video lineup. The procedure is run under a national code of practice required by statute. An investigating officer cannot take part in the procedure, and the video lineup must include at least eight foils. While reform in the USA has mainly been concerned with the advantages of sequential presentation, reform in the UK has made available a substantial pool of suitable foils from which to construct a fair lineup. It is unfortunate that *Identifying the Culprit* is restricted to consideration of procedures in the USA. The committee missed the opportunity to evaluate a wider range of international experience.

The committee's review of applied research on eyewitness identification draws some unexpected insights that will be of great interest to the research community. First, due to the possibility of 'unintended biases', the committee questions the credibility of conclusions generated from meta-analyses of eyewitness research. To those familiar with published meta-analyses on eyewitness identification, the suggestion of bias may come as no surprise. Within a 2-year span, three meta-analytic comparisons of simultaneous and sequential procedures were published, and each led to distinct conclusions (Clark, 2012; Palmer & Brewer, 2012; Steblay, Dysart, & Wells, 2011). The committee's recommendation to conduct meta-analyses as systematic reviews should help to resolve the simultaneous versus sequential debate and increase the credibility of meta-analyses in the area more generally.

No published guidelines for conducting systematic reviews have been developed specifically for synthesizing eyewitness identification data. The standards cited in the report are specific to healthcare intervention outcomes, which do not always transfer without complication to eyewitness research. In the former, there may be large unpublished studies funded by corporations with a commercial interest in, say, a drug trial. Exclusion of unpublished studies of this nature would undoubtedly bias the conclusions. However, the courts have made clear that expert testimony should be based on the conclusions of peer-reviewed articles that are generally accepted by researchers in the field. If unpublished studies are to be included in a meta-analysis of lineup data, the influence of publication status needs to be rigorously examined. Methods for assessing the quality of clinical trials in medical research have been established (e.g. the Jadad Scale), but it is unclear whether judges would consider these standards appropriate or sufficient for eyewitness research. In the absence of standard methods of assessing the quality of

eyewitness identification research, meta-analysts need to carefully consider the implications of including unpublished studies.

The report discusses the outcome of a lineup as a binary classifier problem. If the perpetrator is present, the witness may make a correct identification or a miss; if the perpetrator is absent, the witness may correctly reject the lineup or make a mistaken identification. The committee endorses the recent innovation of using receiver operating characteristic (ROC) analysis based on signal detection theory, but points out some problems with its use. ROC analysis is based on using reported confidence levels as a proxy for response bias. This relationship is made noisier because different data points come from different individuals, who may use the confidence scale differently. Furthermore, it is only possible to measure a partial area under the ROC curve because data ranging from 0 to 100% false alarms are not usually available. The committee points out that the cost of an error (e.g. failing to identify the culprit) may be considered more important in a murder case than for a stolen car, although this variable is seldom manipulated in eyewitness experiments. They recommend that eyewitness researchers consider using the ‘H measure’ that enables performance of binary classifiers to be compared using a common metric that is independent of the cost distribution for different types of classification errors.

The report notes that eyewitness researchers have focused on the positive predictive value (PPV) of an identification given by the diagnosticity ratio (hit rate/false alarm rate). The committee recommends that researchers give more consideration to the negative predictive value (NPV) of a witness not identifying anyone from the lineup. NPV is used to evaluate human classification performance in medical diagnosis. The committee suggests its use may provide additional value for the evaluation of lineup procedures.

The report reviews the literature on some estimator and system variables. There are significant gaps that are inevitable in a brief report. For example, identification evidence from children or vulnerable witnesses is not considered. The system variable of whether foils should be selected to resemble the suspect or to match the witness' description of the culprit is also omitted. The report calls for more research on the interaction between variables. Whilst entirely laudable, the study space of possible interactions is very large. An ambitious and well-funded research programme would be required to make a substantial impact.

The review of applied research did not comment on some issues we expected to see. First, there is no discussion of the inherent low power in the eyewitness paradigm. In laboratory tests of memory for words or faces, researchers typically collect tens or even hundreds of data points from each participant. Conversely, researchers collect only a single data point from each participant in a typical eyewitness identification experiment, thus requiring large samples for reliable results. Collection of data via the internet is one way to make recruitment more feasible, but at a cost of control over the participants' engagement with the procedure. Second, the report does not consider archival reports of real cases. Archival research may have been overlooked because the ground truth of the suspect's guilt is not available. Notwithstanding such issues, converging evidence from real-world cases and laboratory studies does increase confidence in the external validity of the laboratory science of eyewitness identification. Such convergence is particularly important, as the external validity of the experimental approach to eyewitness memory is often questioned, especially by practitioners (e.g. police, lawyers and judges). Finally, the review did not emphasize the value of a clear theoretical understanding of eyewitness identification outcomes. As a field of study, eyewitness identification is not noted for the sophistication of its theoretical models. Systematic reviews have shown that lineup research

findings are consistent with the broader theoretical constructs of human memory (e.g. Deffenbacher, Bornstein, McGorty, & Penrod, 2008). The study of eyewitness identification would benefit from greater integration of existing theoretical knowledge.

## RECOMMENDATIONS

The report sets out eleven recommendations that span three areas: recommendations to establish best practices in eyewitness identification procedures; recommendations to strengthen the value of eyewitness identification evidence in court; and recommendations to improve the scientific understanding of identification evidence. We review the recommendations for each of these areas in turn.

### **Recommendations to establish best practices in eyewitness identification procedures**

Five recommendations are made on identification procedures:

- 1. Train all law enforcement officers in eyewitness identification.*
- 2. Implement double-blind lineup and photo array procedures.*
- 3. Develop and use standardized witness instructions.*
- 4. Document witness confidence judgments.*
- 5. Videotape the witness identification process.*

The recommendation to provide all law enforcement officers with some level of eyewitness identification training is seldom articulated but seems long overdue. One approach, adopted in England and Wales, is to train specialist staff to run identification procedures. It has the advantage that frontline officers receive basic training for procedures that are often administered immediately after the witnessed event (e.g. obtaining a description, administering a

street identification or show-up). However, the more sophisticated training required for constructing and administering lineups could be restricted to officers or staff with a specialist identification role.

The double-blind recommendation is well advised and uncontroversial amongst eyewitness researchers. Use of a double-blind procedure is an established scientific procedure. It has the advantage of protecting the police from accusations of bias by ensuring that the administrator cannot influence the witness. However, Clark (2012) pointed out that the experimental evidence suggests that double-blind administration reduces the number of correct identifications. The extra identifications that arise from non-blind administration are likely to be unreliable. There are some practical difficulties involved in administering double-blind live lineups. For example, the suspect may need to be detained in custody or bailed. The report does not consider the possibility of administering a lineup using computer and video technology, which is now standard practice in England and Wales. Video lineups may provide the best compromise between a practical procedure that can easily be run double-blind and providing a larger, more dynamic image than a photograph.

The committee provided specific guidance on the content of instructions (i.e. witnesses should be warned that the culprit may or may not be present and it should be explained that the investigation will proceed regardless of whether or not an identification is made). Although there is some evidence that these instructions lead to a cost in correct identifications (Clark, 2005; Clark, 2012), we support the committee's recommendation.

We agree that a confidence judgment should be elicited and documented, but implementing this recommendation as specified by the committee could have unintended consequences. The committee recommends obtaining a confidence judgment in the witness' own

words, which seems like a sensible approach. However, it could invoke issues that complicate how confidence is interpreted. Witnesses will differ in the way they express confidence, which may lead to a potential misinterpretation. To our knowledge, there is no empirical research to substantiate the ‘own-words’ approach. Most eyewitness researchers collect a numerical index of confidence, which of course comes with its own set of problems (e.g. a witness reporting 90% certainty could be criticized for not having complete certainty).

We support the recommendation to video-record the entire identification procedure. Video-recording is widely used in specialist identification facilities in England and Wales. Although video-recording is only compulsory if the suspect’s legal representative is not present, in most identification suites, all identification procedures are video-recorded. This recommendation might benefit from more specification about what aspects of the procedure need to be recorded. A typical set-up in England is to use four cameras to record the lineup composition and presentation as well as the behaviour of all parties (the lineup administrator, the witness and the suspect’s lawyer).

### **Recommendations to strengthen the value of eyewitness identification evidence in court**

The committee made four recommendations on the use of identification evidence in court:

- 6. Conduct pretrial judicial inquiry.*
- 7. Make juries aware of prior identifications.*
- 8. Use scientific framework expert testimony.*
- 9. Use jury instructions as an alternative means to convey information.*

Taken together, these four recommendations provide some important safeguards to improve the use of identification evidence in court. Pretrial enquiries would normally only be initiated by the judge if one side objected to the eyewitness evidence. The committee recommended that when eyewitness identification evidence is to form part of the evidence, judges should routinely initiate inquiries prior to the trial. The reason for the recommendation is that the parties may not have sufficient knowledge to recognize some threats to the reliability of identification evidence (e.g. suitability of instructions, double-blind administration.) We strongly endorse the recommendation to make juries aware of prior identification attempts. The report included the proposal that juries should be made aware of the method used (e.g. mugshot search, live showup), delays between the crime and between identification attempts and the confidence level expressed by the eyewitness at the time. Many cases of wrongful conviction reported by the Innocence Project involved multiple identification attempts, including the case of Ronald Cotton, which is described in detail in the introduction. Repeated identification procedures are probably the most powerful cause of mistaken identification and are routinely used in police investigations (Davis, Valentine, Memon, & Roberts, 2015; Valentine, Davis, Memon, & Roberts, 2012). Without detailed information on the first procedure, a subsequent lineup can make the identification evidence appear to be of better quality, and therefore more compelling, than it is in reality.

The committee recommends, appropriately in our view, that judges should have the discretion to allow expert testimony on relevant aspects of eyewitness memory and identification. Expert evidence on eyewitness memory is usually not admitted in the UK, unless it pertained to some special aspect of a particular witness (e.g. a witness who is a child, or vulnerable because of some other attribute). UK courts assume that knowledge of eyewitness

memory is within the ordinary experience of the jury. This approach leaves the jury with no guidance on how to evaluate eyewitness identification evidence. An expert can give the jury some guidance on the psychological science of how some factor can affect memory. For example, the folklore that a victim will never forget the face of a perpetrator who inflicted an extreme attack is not supported by science. Indeed, high stress leads to less accurate memory for a face (Deffenbacher, Bornstein, Penrod, & McGorty, 2004). The final recommendation in this group is for the use of clear and concise jury instructions as an alternative means of conveying information regarding the factors that the jury should consider. Currently, courts in both the USA and the UK rely heavily on this approach. More high quality research would be useful to evaluate the efficacy of such warnings. The large proportion of wrongful convictions attributable to mistaken eyewitness identification suggests that jury warnings are not always heeded.

### **Recommendations to improve the scientific foundation of research on eyewitness identification**

The committee made two recommendations on methods to improve the scientific understanding of the psychology of eyewitness identification:

*10. Establish a national research initiative on eyewitness identification.*

*11. Conduct additional research on system and estimator variables.*

The committee recommended that a national research initiative on eyewitness identification should be funded. The research should employ a wide range of statistical methods to evaluate eyewitness performance and explore methods that can lead to more conservative decisions by eyewitnesses. A further recommendation was that caution should be exercised when considering changes to any existing lineup procedure. These recommendations leave the reader

with the impression that, like the Devlin committee before them (Devlin, 1976), the committee has not found a ‘silver bullet’ or any particularly promising new avenue of research with the prospect of substantially improving the reliability of eyewitness identification. The lesson from history is that we need to accept the fragility of eyewitness memory and learn to evaluate eyewitness identification evidence in the criminal justice system so that a mistake by an eyewitness does not result in the wrongful conviction of the innocent.

### **A FINAL REMARK**

The focus of the report, exclusively on lineups, appears somewhat narrow in the context of the modern literature on face identification in forensic settings. Identification from mug shots, facial composites, street identifications (live showups) and CCTV images are all excluded. In contrast to the literature on lineups, there have been some dramatic innovations in these aspects of forensic facial identification. Modern computational and image processing methods have revolutionized composite production and the methods for showing composites to witnesses. The Metropolitan Police in London has recently exploited the natural abilities of gifted face recognizers (‘super-recognisers’) amongst their staff to identify hundreds of perpetrators from CCTV images taken during the 2011 London riots. The Metropolitan Police now strategically deploys ‘super recognisers’ to identify prolific offenders, with some notable success. Up-to-date reviews by leading experts in a wide range of topics in forensic facial identification can be found in Valentine and Davis (2015).

**REFERENCES**

- Clark, S. E. (2005). A re-examination of the effects of biased lineup instructions in eyewitness identification. *Law and Human Behavior, 29*, 395–424. DOI:10.1007/s10979-005-5690-7
- Clark, S. E. (2012). Costs and benefits of eyewitness identification reform: Psychological science and public policy. *Perspectives on Psychological Science, 7*, 238–259.  
DOI:10.1177/1745691612439584
- Davis, J. P., Valentine, T., Memon, A., & Roberts, A. J. (2015). Identification on the street: A field comparison of police street identifications and video line-ups in England. *Psychology, Crime & Law, 21*, 9–27. DOI:10.1080/1068316X.2014.915322
- Deffenbacher, K. A., Bornstein, G. H., McGorty, E. K., & Penrod, S. D. (2008). Forgetting the once-seen face: Estimating the strength of an eyewitness's memory representation. *Journal of Experimental Psychology: Applied, 14*, 139–150. DOI:10.1037/1076-898X.14.2.139
- Deffenbacher, K. A., Bornstein, B. H., Penrod, S. D., & McGorty, K. (2004). A meta-analytic review of the effects of high stress on eyewitness memory. *Law and Human Behavior, 28*, 687–706. DOI:10.1007/s10979-004-0565-x
- Devlin, P. (1976). *Report to the Secretary of State for the Home Department on the Departmental Committee on Evidence of Identification in Criminal Cases*. London: HMSO.
- Palmer, M. A., & Brewer, N. (2012). Sequential line-up presentation promotes less-biased criterion setting but does not improve discriminability. *Law and Human Behavior, 36*, 247–255. DOI:10.1037/h0093923

- Stebly, N. K., Dysart, J. E., & Wells, G. L. (2011). Seventy-two tests of the sequential lineup superiority effect: A meta-analysis and policy discussion. *Psychology, Public Policy, and Law*, *17*, 99–139. DOI:10.1037/a0021650
- Valentine, T., & Davis, J. P. (Eds) (2015). *Forensic facial identification: Theory and practice of identification from eyewitnesses, composites and CCTV*. Chichester: Wiley Blackwell.
- Valentine, T., Davis, J. P., Memon, A., & Roberts, A. (2012). Live showups and their influence on a subsequent video lineup. *Applied Cognitive Psychology*, *26*, 1–23.  
DOI:10.1002/acp.1796