Eyewitness Memory and Mistaken Identifications

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Biographies

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Eyewitness identifications play an important role in the legal system. Correct identifications provide major advances in an investigation while, in the courtroom, identification evidence is compelling and damming (Wells & Loftus, 2013). Yet identifications are often disputed – and inaccurate. A review of DNA exoneration cases demonstrates that eyewitness errors have played some part in nearly 75 per cent of 311 overturned convictions documented to date (Innocence Project, 2013; see Scheck et al., 2000). That mistaken identification is a leading cause of wrongful convictions suggests that decision-makers, from investigators through to jurors, fail to take account of factors which may have influenced the eyewitness, and increased the likelihood of error. Working systematically through the witness’ experience, from the encoding of the original incident to testimony in court, we examine eyewitness performance and consider some of the key factors underpinning mistaken identifications. First, we examine how research can inform our understanding of the causes of identification error and methods for improving the reliability of identification evidence. Second, we discuss how a scientific understanding of the nature of memory highlights problems inherent to current identification practice, and suggest alternative methods for collecting reliable identification evidence, and utilising this evidence appropriately.

**Research on Eyewitness Identification**

For four decades, eyewitness identification research has been conducted primarily by cognitive or social psychologists typically adopting a standard scientific model. Volunteers and/or unsuspecting members of the public are exposed, in the course of an encounter or simulated incident to a selected target (perpetrator) and become eyewitnesses. Careful selection of events and target individuals, and the systematic manipulation of key variables, allows researchers to investigate the nature of witness errors in general, and determine which recall and recognition errors are most likely under forensically relevant conditions. Clearly, an important question for both researchers and practitioners concerns the extent to which these laboratory research findings generalise to the experience of actual witnesses. There are, of course, numerous important differences between the experience of (some) witnesses and those of unsuspecting participants in research. One oft-cited concern is that the witnesses in laboratory-based research are typically drawn from overly homogeneous samples of college students. However, many studies of eyewitness memory have included community-based samples. In fact, a significant body of research has examined the identification performance of different age groups, including young children and the elderly (e.g., Badham, et al., 2013; Dodson & Krueger, 2006). It is also worth noting that research consistently demonstrates that college-age students underestimate the magnitude of eyewitness fallibility. Furthermore, the well-documented role of mistaken eyewitness identification in wrongful convictions demonstrates that any assumed motivational advantage for real-world witnesses does not protect against eyewitness error.

Similarly, the consequences of decisions made in a laboratory as opposed to a police identification suite clearly differ. At present there is little data addressing the effects of legal consequences on identification accuracy. Archival studies of actual witnesses to serious crimes indicate that up to 40% of witnesses taking part in identification parades, where they are presented with a suspect and a number of innocent ‘stand-ins’, select a known-to-be-innocent lineup member (Steblay, et al., 2011). However, these data say nothing about the mistaken identification of innocent suspects and, therefore, likely underestimate actual identification error rates. Nonetheless, these archival data demonstrate that witnesses can be highly prone to error and do not necessarily become extremely cautious when faced with a high-stake identification decision.
Many factors may affect eyewitness identification accuracy and the research literature examining these factors is extensive. A useful distinction between these factors was introduced by Wells (1978) who differentiated between estimator variables and system variables. System variables are (or could be) under the control of the criminal justice system, specifically identification test factors such as pre-lineup instructions, lineup composition, and presentation method. By contrast, estimator variables are not under the control of the criminal justice system. While these factors (e.g. exposure duration, race of witness, or presence of a weapon) can be manipulated in research and their effects on identification accuracy can be established, they cannot be controlled in the actual witnessed incident. Therefore, the impact of such factors on witness accuracy has to be estimated in a post-hoc manner by investigators. This chapter outlines a variety of estimator and system variables which have been empirically demonstrated to affect eyewitness identification accuracy.

**When and why do eyewitnesses make identification errors?**

**The Witness and the Witnessed Event**

*Witness Age*

Although most stable witness characteristics (e.g. gender, race, intelligence) are not, on the whole, useful predictors of identification performance, the age of the witness has been consistently associated with identification accuracy. When the originally encoded perpetrator is present in the lineup (a perpetrator present lineup), research generally suggests that both young children and the elderly do not differ significantly from young adults in their ability to identify the correct individual (cf. Keast et al., 2007). However, when the perpetrator is not in the lineup (a perpetrator absent lineup), both young children and elderly witnesses are more likely than young adults to make a false identification of an innocent foil or filler (Pozzulo & Lindsay, 1998). No unifying theory has emerged to fully account for this finding across both age groups. Research suggests that young children’s identification performance is hampered by a propensity to choose from a lineup (Brewer et al., 2005, Keast et al., 2007). This perhaps reflects their developmental stage, effects of social demand pressure and/or a failure to consider that the true perpetrator may not be in the lineup. For older adults, reduced cognitive capacity associated with aging may increase reliance on more ‘automatic’ feelings of familiarity, rather than more effortful recollective processes (Jacoby, 1999).

*Witness Intoxication*

A more malleable witness factor at the time of encoding is blood alcohol level and memory performance tends to be impaired by intoxication – although the precise nature of the impairment is not particularly well understood and results are somewhat mixed. In terms of identification performance, research shows that moderate to high levels of alcohol intoxication are associated with increased false identifications from perpetrator absent lineups, but that intoxication tends not to affect correct identifications from perpetrator present lineups (Dysart et al., 2002; Hilliar et al., 2010).

*Perpetrator Appearance and Disguise*

While the age or gender of the perpetrator has little effect on witnesses’ ability to make a correct identification, other contextual factors can affect recognition performance. For instance, distinctive faces are far more likely to be correctly identified than non-distinctive
faces (Semmler & Brewer, 2006). Similarly, and perhaps due to their distinctiveness, attractive faces are also more easily identified than less attractive or more typical faces.

Given that identification decisions should result from a process whereby the witness compares presented lineup members to a memorial image of the previously-viewed perpetrator, it is unsurprising that disguises usually negatively affect identification ability. Simple changes, such as covering the head, wearing glasses, growing facial hair or even altering hair style slightly, can significantly impair face recognition (Narby et al., 1996) and identification accuracy tends to decrease with degree of disguise (Mansour et al., 2012). Natural changes in appearance over time (such as ageing, changes in weight, etc.) also have a negative impact on identification performance.

**Perpetrator Race**

An extensive literature on own-race (also known as cross-race) bias typically demonstrates that witnesses are less accurate when attempting to identify a target from another race or ethnic group than when tasked with identifying a member of their own race (see meta-analysis by Meissner & Brigham, 2001). Specifically, research documents a higher correct identification rate from perpetrator present lineups and a lower false identification rate from perpetrator absent lineups when the witness and perpetrator are from the same race. This bias has been demonstrated in both laboratory and field studies (e.g. Wright et al., 2001) and has been observed across various combinations of ethnic groups (e.g. whites identifying blacks, blacks identifying whites, etc.).

**Distance and Exposure Duration**

The length of the exposure duration (i.e. the length of time the witness had to observe the perpetrator) has been shown to affect identification performance. Predictably, as the time spent viewing the target increases so does the likelihood of a correct recognition decision (e.g. Bornstein et al., 2012). The effect of distance on identification performance and the ability of eyewitnesses to correctly estimate their distance from an incident or perpetrator are also important considerations. Obviously, a correct identification is somewhat unlikely if the witness was unable to see the perpetrator, so research has tended to focus on identifying a useful ‘rule of thumb’ with respect to distance. Wagenaar and van der Schrier (1996) suggested that identification performance was optimal when the viewing distance was less than 15 metres from the target. However, research by Lindsay et al. (2008) revealed that the 15-metre rule may not be useful – or accurate – for two reasons. Firstly, it is naive to assume that all (or even most) identifications made when the original viewing distance was less than 15 metres will be correct – or that all identifications made when the original viewing distance was greater than 15 metres will be incorrect. Secondly, if witnesses are unable to estimate distance reliably then they are unlikely to be able to report accurately whether they were less than 15 metres from the target. In Lindsay et al. (2008), over 1300 mock witnesses observed a live target at various distances, estimated the distance to the target, generated a description and attempted an identification of that target from either a perpetrator present or absent lineup. Mock witnesses were generally poor at accurately estimating the distance between themselves and the target (particularly when required to make this estimate from memory). While the reliability of target descriptions was unimpaired up to distances of approximately 50 metres, identification performance declined for both perpetrator present and absent lineups as distance between the witness and target at encoding increased. However, Lindsay et al. (2008) did not observe any dramatic drop-off in identification accuracy at 15 metres, noting that many participants made correct identifications beyond this distance, and suggesting that a 15-metre rule is not a particularly diagnostic.
Stress and Fear

The level of stress or fear a witness experiences, and the effect that such emotional reactions will have on subsequent identification performance, will vary according to the nature of the incident and the individual witness. Research inducing realistic levels of stress is, for obvious methodological and ethical reasons, difficult to conduct. However, in a field training scenario, Morgan et al. (2013) tested identification accuracy across 800 military personnel during a stressful prison camp phase of Survival School training. When asked to identify the person who had interrogated them, 50% of personnel who viewed a perpetrator absent lineup made an incorrect identification. Impaired identification performance has also been observed among police officers placed in challenging physical contexts (e.g. physical exertion; see Hope et al., 2012). The presence of a weapon has also been shown to impair identification performance: the so-called “weapon focus effect”. Fawcett et al.’s (2013) meta-analytic review of the weapon focus effect confirmed a small to moderate negative effect of weapon presence on identification accuracy but, noted that this effect was also moderated by situational factors (such as exposure duration, retention interview, level of threat etc.).

It is important to note that these estimator variables (i.e. distance, exposure duration, race, intoxication etc.) do not operate in isolation. Rather, they interact with other estimator variables to influence identification accuracy. For example, a viewing distance of 20 metres with an exposure duration of 3 minutes may produce a stronger memorial image of the perpetrator and, consequently, a more reliable identification decision, than a viewing distance of 10 metres with an exposure duration of 10 seconds. When estimating the reliability of an identification decision, investigators and jurors must consider these interactions between variables.

Between the Witnesed Event and Identification Task

Retention interval

In the delay between an individual witnessing a crime and making an identification attempt, the witness’ memory is prone to both decay and the influence of post-event information from numerous sources (e.g. investigative interviewers, other witnesses and media reports). Research consistently demonstrates that increased delay between the event and the identification test is associated with poorer identification performance (Deffenbacher, et al., 2008).

Post-event misinformation

The misinformation effect – a powerful phenomenon resulting in memory distortion – was first demonstrated by Elizabeth Loftus in the 1970s (for a review see Loftus, 2005; see also Frenda et al., 2011). Several hundred experiments since have demonstrated the misinformation phenomenon, explored boundary conditions of the effect, and served the development of theoretical explanations. Pertinent to eyewitness identification accuracy is an emerging body of work on the impact of co-witness influence on memory. A majority of witnesses to real incidents (86%, see Paterson & Kemp, 2006) admit to discussing what they saw with a co-witness who was present at the scene. Although witnesses may share the same experience, their individual perceptions of and memory for the event may differ for many reasons, including naturally occurring differences in attention paid to various details of the event, differences in spatial or temporal location at the scene, or perceived differences in
memory ability (Gabbert et al., 2006). When two witnesses discuss their memories, their individual descriptions of what they saw increase in similarity. This effect is strongest, but certainly not reliant on, the co-witness being a prior acquaintance, such as a friend or partner (Hope et al., 2008). Few studies have explored the impact of co-witness information, and specifically misleading co-witness information, on subsequent identification performance. However, if a witness has information about the identification decision made by a co-witness, either because they have been deliberately given this information or encountered it inadvertently, their own identification decision may be influenced. For example, Levett (2013) observed that witnesses who simply overheard that their co-witness had chosen from the lineup were more likely to choose themselves than those who heard no information about the co-witness decision or heard the co-witness had rejected the lineup. Witnesses who heard co-witness decisions were also influenced by the confidence expressed by their co-witness in that decision. In light of these findings (and the wider literature in this field) it is clear that identification decisions should be made independently.

**Interpolated Identification Tasks**

*Mugshots and Show-ups*

It is not unusual, during the course of an investigation, for witnesses to attempt an identification decision prior to viewing a lineup. Witnesses may search through a set of mugshots (usually photographs of potential suspects), or attempt an identification from a show-up. However, jurisdictions that permit intermediate identification tasks may require that any identification evidence gained from these procedures be supported by an identification from a formal lineup. Unsurprisingly, previous exposure to the suspect increases the likelihood that the suspect will be identified in a subsequent lineup (Deffenbacher, et al., 2006). Crucially, repeated exposure to an innocent suspect increases mistaken identifications. Research suggests that commitment effects (i.e. commitment to a prior mugshot or showup choice) may be a leading source of identification error when witnesses have been previously exposed to mugshots and showups (see Goodsell et al. 2009). Memory distortion (whereby the witness’ memory becomes contaminated by the interpolated identification task) may also play a role. Importantly, although a second identification attempt (i.e. from a lineup) conceivably allows a witness to correct an error from the intermediate identification task, research suggests that these errors often carry over, and are rarely corrected (Steblay, et al., 2013).

*Composite production*

In an investigation where no suspect has emerged, police may work with a witness to produce a facial composite of the perpetrator. While research demonstrates that the quality of composites is often rather poor, with little likeness to the appearance of the actual perpetrator (see Wells & Hasel, 2007, for a review), a more important question concerns the extent to which generating a composite might impair identification accuracy. In two studies, Wells et al. (2005) found that building a composite significantly impaired identification performance for the original target face. In light of these results, where multiple witnesses are available, one might be used to build a composite while other witnesses should be saved for any subsequent lineup identification attempt.

**The Lineup Identification Task**
Witness expectations and pre-lineup instructions

Often witnesses assume that the suspect apprehended by the police and presented to them in a lineup must have a high probability of being the perpetrator. Memon et al. (2003) found that over 90 per cent of mock witnesses expected the perpetrator to be present in a lineup even under unbiased conditions (i.e. after being explicitly warned that the perpetrator may not be in the lineup). Nonetheless, this bias is likely to be exacerbated if witnesses are presented with the task in a misleading manner (i.e. ‘Take a good look at the lineup and see if you can identify the offender’). Therefore, it is vital that witnesses are informed that the person they saw ‘may or may not be present in the lineup’. Malpass and Devine (1981) demonstrated that a simple warning that the perpetrator may not be in the lineup halved the number of mistaken identifications made. Such warnings may not completely attenuate the biasing effects of witnesses’ expectations, but can significantly reduce incorrect identifications from target absent lineups (see also meta-analyses by Steblay, 1997; Clark, 2005). Importantly, the negative effect of biased lineup instructions holds true for identifications made from video images (Thompson & Johnson, 2008).

Why is lineup composition important?

Perpetrator descriptions, gleaned in the course of an interview, are often used in the preparation of lineups. Eliciting high quality, reliable descriptions is critical as the reliability of an identification depends on the validity of the lineup presented to the witness. The purpose of the lineup is to provide a fair identification task in which the suspect does not ‘stand out’ inappropriately from the other foils. Notably, there is a sharp distinction between the nominal size of a lineup (i.e. the number of people appearing in the lineup) and the functional size of a lineup (i.e. the number of plausible lineup members) (Wells et al., 1979). If an eyewitness describes a perpetrator as a male, in his early 20s with long, dark hair, but views a lineup in which two of the foils have short dark hair and another foil is in his 40s, the functional size of the lineup is reduced by three members, as these foils will be automatically discarded by the witness as they do not match the original description provided. Reducing the functional size of the lineup significantly increases the chance that plausible but innocent suspect will be falsely identified (Tredoux, 2002). Thus, the selection of appropriate foils is critical for the production of a fair lineup, and for obtaining reliable and informative identification evidence. A ‘match to description’ strategy (as opposed to ‘match to suspect’ strategy) is generally preferable. In a ‘match to description’ strategy, foils are selected based on their match to the witness’ description of the perpetrator, highlighting the critical role of the interviewer in eliciting accurate and reliable descriptions (Clark & Tunnicliff, 2001).

Investigator bias

Ideally, lineups should take place under double-blind administration where both the witness and lineup administrator are unaware of the suspect’s identity. A lineup administrator who knows which lineup member is the suspect may unintentionally transmit this knowledge to the witness (Harris & Rosenthal, 1985), increasing false identification rates if the suspect is innocent (Phillips et al., 1999). Greathouse and Kovera (2009) noted that administrators displayed more biasing behaviours (such as inviting the witness to ‘take another look’, providing overt cues as to the identity of the suspect, and exerting greater pressure on witnesses to choose) during single-blind administration procedures (i.e. when they knew the identity of the suspect) than under double-blind procedures. Research also demonstrates that (a) witnesses may be unaware of the influence exerted by a lineup administrator (Clark et al., 2009), and (b) administrators may be unaware of the influence they are exerting (Garrioch & Brimacombe, 2001; see also Dysart et al., 2012).
Why does lineup procedure matter?

In the traditional lineup (involving photographs or live participants), the suspect and foils are presented simultaneously. Given witnesses’ tendency to assume that the perpetrator will be present in the lineup, the opportunity to examine all lineup members at once encourages witnesses to adopt a relative judgement strategy (i.e. to compare lineup members with each other and select the lineup member who best matches their original memory; Wells, 1984; Wells & Seelau, 1995). Lindsay and Wells (1985) proposed an alternative method of lineup presentation, known as the sequential lineup. The sequential lineup method presents each lineup member in isolation. The witness must make an identification decision for each lineup member (Is this the perpetrator you saw? Yes or No) before seeing the next lineup member. In the optimal version of the sequential method, the witness does not know how many faces will be presented and the lineup terminates when a choice is made (the witness is not permitted to see any further photos, review previously presented photos or change their identification decision). Sequential presentation promotes an absolute identification decision as, unlike the simultaneous lineup, witnesses cannot easily engage in relative comparisons between lineup members. Instead, witnesses are implicitly encouraged to base their decisions on a comparison of each presented lineup member with their memory for the perpetrator (and the absolute, rather than relative, degree of match between each lineup member and their memory of the perpetrator). Research has consistently demonstrated that sequential presentation significantly reduces false identifications (see Steblay et al., 2011 for a meta-analysis). However, this reduction in false identifications (from perpetrator absent lineups) is often accompanied by a (albeit smaller) reduction in correct identifications (from perpetrator present lineups). Steblay et al. (2011) estimated that, in comparison to the simultaneous procedure, the sequential lineup procedure resulted in 22% fewer false identifications and 8% fewer correct identifications. As the loss of correct identifications is outweighed by the reduction in false identifications, there is an overall gain in accuracy under the sequential procedure (Clark et al., 2008; Goodsell, et al., 2010; Steblay, et al., 2011). The meaning and value of these ‘lost’ identifications has been the topic of robust debate (Clark et al., 2012). While the loss of correct identifications initially seems unpalatable, these lost identifications may essentially reflect “best guesses” rather than genuine recognition, and such identifications may have limited diagnostic value (i.e. such evidence should not be considered strong enough to support a conviction).

Post-identification feedback

Investigators, lawyers, juries and judges all find confidence persuasive when assessing the credibility and reliability of eyewitness testimony (Douglass et al., 2010). However, mistaken eyewitnesses can be accompanied by high levels of confidence (Wells & Bradfield, 1999), and eyewitness confidence can be highly malleable in the period following an identification. Wells and Bradfield (1998) found that witnesses who were given positive feedback (e.g. ‘Good, you identified the suspect’) reported higher confidence and better viewing conditions than those who received no feedback (see meta-analysis by Douglass & Steblay, 2006). Conversely, witnesses given negative feedback were less confident and reported worse witnessing conditions. Importantly, the effects of post-identification feedback not only inflate confidence, but also affect other potential indices of reliability (e.g. reported distance or view quality). These feedback effects have been shown to occur for both perpetrator present and perpetrator absent lineups (Bradfield et al., 2002), when there are long delays between identification and feedback (Wells et al., 2002), and even extend to witness willingness to testify (Wells & Bradfield, 1998, 1999). The effects of post-identification feedback are robust, far reaching, and have serious implications for the reliability of eyewitness
identifications and for investigators’ and jurors’ ability to assess the reliability of identification evidence (Palmer, et al., 2010). In light of these findings, identification policy and procedure should prohibit the provision of feedback to witnesses relating to their lineup decisions.

**Identifications from Closed-circuit television (CCTV) footage**

Intuitively, identification performance should improve significantly when the ‘witness’, be that the original witness, a CCTV operator or police officer reviewing the evidence, has access to a video recording of the perpetrator and photographs of the suspect. However, the identification of individuals from CCTV footage is, like other identification tasks, prone to error – even under optimal conditions. For example, Kemp et al. (1997) examined whether credit cards bearing a photograph of the cardholder might serve to reduce credit card fraud. Real shoppers presented a credit card bearing a photograph of themselves to pay for half the transactions while for other transactions they presented a card bearing the photograph of another individual. Experienced checkout cashiers were required to either accept or decline the card depending on their verification of the cardholder’s identity, and rate their confidence that the photograph appearing on the card was, in fact, that of the shopper. More than 50 per cent of the fraudulent cards were accepted by the cashiers – despite the fact that cashiers were aware that a study was under way and indicated that they had both spent longer examining cards and been more cautious than usual.

Research also documents high error rates in the ability to match a target from CCTV footage. Bruce and colleagues (1999) examined how well people were able to match faces extracted from a high-quality video-recording against high-quality photographic images. Overall accuracy was relatively poor (averaging only 70 per cent across trials). Performance was further degraded when the target expression or viewpoint was altered. Furthermore, the use of colour target images (as opposed to black-and-white images) did not appear to lend any particular advantage (or disadvantage) to performance on the matching task. Thus, it would appear that our ability to identify an unfamiliar face – even in the presence of a reference image (such as a CCTV still or a photograph) - is surprisingly error-prone.

**Preventing Mistaken Identifications**

Forty years of empirical research on eyewitness identification has produced hundreds of articles and thousands of eyewitness identification data-points. Clark et al. (2008) conducted a meta-analysis of 94 comparisons between perpetrator present and perpetrator absent lineups to establish what general conclusions can be gleaned from these eyewitness experiments. The most pertinent conclusions emerging from their analysis were as follows: (1) witnesses do mistakes (both incorrect identifications and failures to identify the perpetrator when they are in the lineups; however (2) an identification of the suspect is diagnostic of the suspect’s guilt but the identification will be less informative if any of the identification procedures are biased; and (3) non-identifications are diagnostic of the suspect’s innocence, while ‘don’t know’ responses are, unsurprisingly, non-diagnostic with respect to guilt or innocence.

It is clear that even though eyewitnesses make mistakes, the criminal justice system must often rely on identification evidence (Brewer, et al., 2002). Efforts by both researchers and practitioners must, therefore, be directed at identifying and implementing methods for collecting, interpreting and presenting identification evidence that maximise the reliability and informativeness of that evidence. Clark et al. (2008) suggest as a basic principle that ‘a suspect identification has greater probative value to the extent that it is based on the
witness’s memory, and less probative value to the extent that it is due to lineup composition or an increase in the witness’s conformity, willingness, or desire to make an identification’ (p.211). Thus, when assessing the reliability and likely accuracy of an identification, investigators, legal practitioners and juries must consider the extent to which these factors played a role in the identification process (see also Brewer & Wells, 2011). To that end, below we outline recommendations for best practice – based on established scientific literature – that are intended to increase the extent to which identification decisions reflect the underlying memory basis for those decision.

**Best Current Practice**

Identification evidence is informative when it indexes the quality of a witness’ memory for the perpetrator, and the degree of match between presented lineup members and the witness’ memory of the perpetrator. However, the reliability of identification evidence is compromised when procedural variables introduce sources of social and environmental influence. Below we outline well-established, and easily implementable, methods for reducing common sources of non-memory, biasing influence (see also Wells *et al.*, 1998).

First, the instructions given to the witness must explicitly remind the witness that “the perpetrator they saw may or may not be present in the lineup”. Instructions that fail to provide this explicit warning, or that implicitly encourage the witness to select a lineup member (e.g., “Take your time, we don’t want to lose this guy”) serve only to increase the likelihood that the witness will pick, not that they will pick *correctly*. Second, the lineup must be constructed so that the suspect does not stand out as the only plausible candidate for selection (or one of small subset of plausible candidates). Although the empirical literature is unresolved regarding the best method for selecting foils, the use of a ‘match-to-description’ strategy allows for (a) a quantifiable basis for selection (rather than subjective impressions of physical similarity), (b) some degree of confidence that all lineup members will match the most salient aspects of the witness’ memory for the culprit, and (c) a reasonable test of the witness’ recognition memory, and ability to discriminate between a previously seen lineup member and previously unseen lineup members. Third, to avoid social influence on the decision making process itself, and on the level of confidence a witness expresses in the accuracy of their decision, the lineup should be administered under double-blind conditions. This may be accomplished using either computerised lineup presentation software (to minimise witness-administrator interactions during the identification process), or a lineup administrator who does not know the identity of the suspect. Fourth, to further avoid social influences on the identification process and witness confidence, in cases where there are multiple witnesses, interaction between these witnesses should (as much as possible) be limited. Fifth, the witness should receive no feedback about their decision (i.e., whether or not they identified the suspect) prior to providing any indication of their confidence in the accuracy of their decision. Finally, an issue of regular applied interest is the effect of lineup format (e.g., using live, photo-array, or video-array lineups) on identification accuracy. Direct comparisons of these techniques are few. However, based on the extant literature, provided that the above-mentioned recommendations are implemented there seem to be no systematic differences in the reliability of identification evidence obtained using these different presentation formats. Nonetheless, compared to live lineups, photo- and video-array lineups offer the advantage of being easily computerised – thereby facilitating double-blind administration.

**Limitations of Current Practice**
Unfortunately, the scientific literature clearly demonstrates that even adherence to best practice guidance does not eliminate identification error. For example, meta-analyses comparing identification accuracy rates generated by sequential and simultaneous lineup presentation methods, using ostensibly fair lineups and unbiased instructions, routinely demonstrate error rates as high as 40% (Steblay et al., 2011).

This glass ceiling is, at least partly, due to the nature of contemporary identification practice. Presenting a witness with a lineup, and asking him or her to either select a lineup member as the perpetrator or reject the lineup as a whole, forces the witness to assess the degree of memory evidence available to support an identification, and compare this to some pre-set criterion (which is vulnerable to various, non-diagnostic social and environmental cues) to decide whether or not to identify a lineup member. Thus, a continuous variable (memory strength) is forced into a categorical response (identification of a lineup member or rejection of the lineup). Why do researchers and practitioners persist with this method of assessing witness recognition memory, despite the wealth of (a) theoretical support for the notion that recognition is a continuous, not categorical state, and (b) empirical support for the notion that this procedure cannot attain the levels of reliability required?

A number of plausible explanations present themselves. First, the categorical nature of an identification - either the witness recognised the suspect (indicating guilt) or s/he did not (not indicating guilt) - may be reassuring in a high-stakes decision-making environment plagued by ambiguity. However, although the outcome produced by conventional practices is clear, the evidential value of the outcome is not. Second, practitioners in the criminal justice system may believe that anything other than a categorical identification decision is of no value: that anything less than a clear statement that the witness identified the suspect would be easily undermined in court. Finally, perhaps it is assumed (contrary to the available evidence) that witnesses would not identify a lineup member unless they were certain of their recognition, and thus a categorical decision adequately captures the nature of the identification evidence. Interestingly, this adherence to the “all or nothing” representation of identification evidence is at odds with the treatment of other forms of identifying evidence (finger prints, DNA, etc.). What is needed is a shift in the way identification evidence is interpreted. Recognition is a continuous variable, and identification evidence should be collected in a way that allows it to be sensibly interpreted as such. The level of confidence expressed by a witness following the identification can be of assistance in this regard.

Is confidence related to accuracy?

There is compelling theoretical support for a positive relationship between witness confidence and identification accuracy. Further, research examining the degree of ‘calibration’ between identification accuracy and ratings of confidence in the accuracy of that identification, shows that when witnesses identify a lineup member as the perpetrator, there is a generally linear, positive relationship between confidence and accuracy (Brewer & Wells, 2006; Palmer, et al., 2013; Sauer, et al., 2010). Thus, confidence can provide useful information about the reliability of an identification decision. However, this finding is accompanied by four important caveats. First, this relationship typically displays overconfidence. Second, consequently, very high levels of confidence do not guarantee accuracy (Brewer & Wells, 2009). Third, the linear confidence-accuracy relation observed for identifications does not hold for witnesses who reject the lineup. Finally, confirming post-identification feedback inflates confidence and undermines the confidence-accuracy relationship (Semmler, et al., 2004; Wells & Bradfield, 1998. Therefore, if confidence is to be informative about the reliability of an identification decision, it must be assessed immediately following the decision, and prior to any witness interaction with lineup
administrators or co-witnesses. Further, it must be recorded in a way that permits meaningful interpretation (e.g., on a 0-100% scale, rather than vague terms like “fairly confident”). The current absence in many jurisdictions of established, systematic protocols for collecting witness confidence ratings represents a significant hurdle to the effective use of confidence ratings as an index of identification accuracy and, therefore, to the effective evaluation of identification reliability.

If the confidence of the witness is not considered when evaluating identification accuracy, it means that all identifications are treated as equally certain. Clearly, this is not the case. More importantly, variations in confidence can be viewed as indicating qualitatively different degrees of recognition. Thus, although confidence is related to identification accuracy, it should be viewed as an important additional source of information about the quality of the witness’ memory (and the reliability of the identification evidence), rather than solely as a potential index of accuracy. Further, only the confidence given immediately after the decision is made can be informative.

Moving away from the presentation of identification evidence as a witness either conclusively picking or rejecting a suspect may encounter strong resistance from the police and courts (see Brewer & Wells, 2011). However, there is considerable merit in searching for opportunities to abandon the problematic conceptualisation of identification evidence as some absolute indication of guilt, in favour of a more scientific consideration of identification evidence as yet another piece of probabilistic evidence which must be considered alongside the available corroborating evidence when evaluating the likely guilt of a suspect/defendant.

Presenting Eyewitness Evidence in Court

Courts in many jurisdictions acknowledge that there is a risk that eyewitness evidence may be unreliable and jurors are typically instructed to scrutinise the circumstances under which the witness encountered the suspect. However, jurors are not particularly sensitive to potential eyewitness error – or responsive to judicial instructions on the matter (Kassin & Sommers, 1997). In fact, over a quarter of a century of research has demonstrated that lay understanding of eyewitness psychology is limited – and often mistaken (for a comprehensive review see Benton et al., 2006). Jurors tend to be unaware of the implications of biased procedures used by law enforcement, such as poorly constructed lineups, misleading feedback or biased instructions (Shaw et al., 1999). Potential jurors also find it difficult to distinguish between accurate and inaccurate witnesses (e.g. Lindsay et al., 1989, 1981). Even legal professionals are typically rather limited in their understanding of factors affecting eyewitness accuracy (Granhag et al., 2005; Wise & Safer, 2004). Furthermore, convictions which originally relied heavily on eyewitness testimony, but are now known to have been in error, illustrate quite clearly that jurors are often unable to either generate or apply the common sense expected of them by the courts. In light of established contaminating effects of social influence on identification behaviour and confidence, jurors should only be presented with the witness’ decision and accompanying confidence estimate as recorded at the time of the lineup. In-court identifications and expressions of confidence although theatrical are likely to be corrupted and misleading. Given jurors’ inability to appreciate the frailty of eyewitness identification evidence, those charged with presenting identification evidence must reflect on the dangers of misrepresenting identification evidence in order to avoid miscarriages of justice.

Conclusions
Although a substantive body of research evidence offers practical guidance about how to optimize current identification practice, the efficacy of contemporary practices will always be limited by the unreasonable demands that the task places on eyewitness memory. Further, the credence given to eyewitness identification evidence by triers of fact increases the risk that this sub-optimal, and relatively coarse memory evidence will contribute to wrongful convictions. To maximise the informational value of witness identifications and reduce the risk of wrongful conviction, we need a combined effort on the parts of researchers and practitioners, to develop and implement more scientific methods for collecting and interpreting identification evidence.

References


