

Improving Eyewitness Memory

Mistaken eyewitness identification is among the leading contributors to wrongful convictions later overturned by DNA evidence. The science of memory cannot make a witness's recollection perfect, but it can identify procedures that protect a memory from contamination and preserve whatever accurate information a witness actually holds. Over more than two decades, researchers working with the American Psychology–Law Society (AP-LS) distilled the experimental literature into a set of practical recommendations for how police should collect and preserve identification evidence — first four recommendations in 1998, then an expanded set of nine in 2020 (Wells et al., 1998, 2020). This paper explains those nine recommendations, the research behind each, and how they connect to the legal standards that govern the admissibility of identification evidence. It assumes no background in psychology, and the science here favors no party.

System Variables and Why They Matter

The recommendations rest on a distinction at the heart of eyewitness science: the difference between estimator variables and system variables. Estimator variables are conditions the justice system cannot control — lighting at the scene, the distance to the perpetrator, the witness's stress, the brevity of the event. System variables are the things the system does control: how a lineup is built, what a witness is told before viewing it, who administers it, and how the result is recorded. Because system variables are within the system's power to manage, they are where reform can actually reduce error. The nine AP-LS recommendations are, in effect, a catalog of best practices for the system variables (Wells et al., 2020). They aim not to eliminate error — an impossibility when memory itself is the evidence — but to keep avoidable error out of the process.

The Nine Recommendations

1. Evidence-Based Suspicion

There should be evidence-based grounds to suspect a person of the specific crime before placing them in an identification procedure. This is arguably the most important recommendation, because a lineup built around an innocent suspect can only produce a mistaken identification. Field data suggest that the suspect is innocent in a substantial share of real lineups (Wixted et al., 2016), and surveys indicate that many U.S. agencies require no more than a “hunch” to place someone in a lineup (Wise et al., 2011). Requiring articulable, documented grounds reduces the chance that a witness ever faces a lineup in which the true perpetrator is absent.

2. Pre-Lineup Interview

Before any identification procedure, and as soon as practicable after the crime, an officer should interview the witness — documenting the description of the culprit, the viewing conditions and attention during the crime, any prior familiarity with the culprit, and instructing the witness not to discuss the event with co-witnesses or attempt an identification on their own. Documenting the initial description early, before memory can fade or be reshaped, preserves a baseline against which later reports can be compared. The recommendation is a safeguard, not a guarantee: initial descriptions are often vague and conform to population norms, so early documentation aids reliability assessment without making the underlying memory complete.

3. Double-Blind Administration

Lineups should be conducted double-blind — neither the administrator nor the witness knowing who the suspect is — or by an equivalent method that prevents the administrator from inadvertently steering the witness. When an administrator knows the suspect, witnesses become more likely to identify that person, even when the suspect is innocent (Charman & Quiroz, 2016; Kovera & Evelo, 2017), and administrators may be less likely to record a pick of a known filler (Rodriguez & Berry, 2014). The influence is typically unintentional — which is precisely why blinding, the gold standard in science generally, is needed.

4. Proper Lineup Fillers

There should be only one suspect per lineup, surrounded by at least five appropriate fillers who do not make the suspect stand out by appearance, clothing, or background. If the suspect is the only lineup member matching a distinctive feature the witness described — a scar, say — a pick may reflect that feature rather than genuine recognition. Properly chosen fillers force the identification to rest on memory of the face (Fitzgerald et al., 2013; Steblay et al., 2003). Research finds no clear advantage between selecting fillers to match the suspect's appearance versus the witness's description (Darling et al., 2008), and the goal is reduction of error, not its impossible elimination.

5. Pre-Lineup Instructions

Before viewing, witnesses should be told that the administrator does not know who the suspect is; that the culprit may not be present, so “not present” or “none of these” can be correct; that “don’t know” is an option; that they will be asked their confidence after deciding; and that the investigation will continue regardless. Most witnesses approach a lineup believing the perpetrator is present (Memon et al., 2004), a belief that pressures them to choose someone even when they recognize no one. Instructions that explicitly permit rejection reduce misidentifications (Clark, 2005). Without them, a witness experiencing mere familiarity — perhaps from a prior mugshot rather than the crime — may misattribute that familiarity to the perpetrator, a source-monitoring error.

6. Immediate Confidence Statement

A confidence statement should be taken from the witness at the moment the identification decision is made. The relationship between confidence and accuracy was long disputed, but researchers across fields have converged on the view that confidence recorded at the time of an initial identification, under proper conditions, is informative when a witness picks someone (Roediger et al., 2012). Crucially, confidence measured later — at trial — is far more malleable and much less trustworthy, and confidence in a rejection is relatively unreliable (Sauer et al., 2010). Capturing confidence immediately preserves a meaningful number before it can inflate.

7. Video Recording

The entire identification procedure — including pre-lineup instructions and the confidence statement — should be video recorded. As with recorded interrogations (Kassin et al., 2009), an objective record lets courts and experts review what actually occurred, removes disputes about incomplete records, and encourages administrators to adhere to best practice because they know the procedure is documented.

8. Avoid Repeated Identifications

An identification procedure should not be repeated with the same witness and the same suspect, regardless of the first outcome. Repeated exposure breeds familiarity with the suspect's image that the witness may misattribute to the crime — the same mechanism behind the laboratory “false fame effect,” in which repeated exposure leads people to judge non-famous names and faces as famous (Jacoby, Kelley, Brown, & Jasechko, 1989; Bartlett & Fulton, 1991). A meta-analysis also documents a commitment effect: a witness who mistakenly picks an innocent suspect once tends to repeat that error in later procedures, whether to appear consistent or because the first identification rewrote the memory of the perpetrator (Deffenbacher et al., 2004; Steblay & Dysart, 2016).

9. Avoid Showups

A showup — presenting a single suspect and asking whether they are the perpetrator — should be avoided whenever a lineup is feasible; where probable cause to arrest already exists, a showup should not be used. Showups lack the protection of fillers and often occur near the scene with a suspect detained for matching a description, so a positive identification may rest on clothing or a distinctive feature rather than recognition of the face. Showups are used frequently (Flowe et al., 2001) and produce more false identifications than lineups (Dysart & Lindsay, 2007). When a showup is unavoidable, it should carry the same safeguards recommended for lineups — no

suggestive cues, a warning that the detained person may not be the culprit, video recording, and an immediate confidence statement.

Improving Eyewitness Memory and the Law

These recommendations describe how to protect memory before trial; the law supplies the framework for what happens when they are ignored. Under the governing federal standard, a court asked to exclude an identification first decides whether the police procedure was impermissibly suggestive and, if so, weighs a set of reliability factors to decide whether the identification is nonetheless admissible (*Manson v. Brathwaite*, 1977). The Supreme Court later clarified that this due-process screening is triggered only by improper state action: where suggestiveness arises from circumstances rather than police arrangement, the safeguard is cross-examination and the jury, not exclusion (*Perry v. New Hampshire*, 2012).

Some state courts, finding the Manson factors out of step with the science, have restructured their approach around the very system variables the AP-LS recommendations address. New Jersey's Supreme Court, after an extensive review of the memory research, replaced the older test with a framework that accounts for both system and estimator variables and provides for expanded jury instructions on the factors affecting reliability (*State v. Henderson*, 2011). Whether an expert may explain these recommendations and the underlying science to a court is governed by the usual standards for expert evidence — *Daubert v. Merrell Dow Pharmaceuticals* (1993), as extended by *Kumho Tire Co. v. Carmichael* (1999), or the Frye general-acceptance test still used in some jurisdictions (*Frye v. United States*, 1923). Such testimony informs the court about the conditions under which an identification was obtained and what those conditions imply for its reliability; it does not decide whether a particular identification is correct, which remains for the trier of fact.

Special Issues in Legal Practice

The principles described above apply with equal force to every party in a legal proceeding. Memory operates the same way regardless of who is asking the questions, and the science summarized here favors no side. What differs between the parties is not the science but the vantage point — the particular places where memory issues tend to surface, and the particular errors each party is best positioned to guard against. The two summaries below identify those recurring issues. They are offered for orientation, not as litigation strategy; in every case the controlling question is what the evidence in that case will, and will not, support, and the expert's role is to inform the trier of fact rather than to advocate for either side.

Special Issues for Prosecutors

For the State, these recommendations are most relevant as a measure of the quality of the identification evidence it intends to rely on. The issue most likely to surface is a defense challenge to an identification obtained without the recommended safeguards — a non-blind administrator, a suggestive filler array, missing pre-lineup instructions, a showup used where a lineup was feasible, or a repeated procedure. The error best guarded against is treating an identification as strong simply because the witness is confident, when confidence expressed for the first time at trial carries little of the value of confidence recorded at the initial procedure. Identifications collected under double-blind, properly instructed, recorded conditions, with confidence captured immediately, are far more robust to challenge and more probative of guilt.

Understood this way, the science reinforces sound investigative practice: an identification produced by procedures that follow the AP-LS recommendations is both more reliable and more defensible, and attention to how the identification was obtained strengthens the case the State ultimately presents.

Special Issues for Defense

For the defense, the recommendations supply a checklist against which to examine how an identification was obtained. The issue most likely to surface is an identification produced under conditions the science flags as error-prone — a suspect placed in a lineup on a hunch, a non-blind administrator, a lineup in which the suspect stood out, omitted instructions that the culprit might be absent, a repeated procedure, or a showup — any of which may have shaped the witness's memory or inflated later confidence. The error best guarded against is overclaiming: a departure from best practice shows a risk of contamination, not proof that the identification is wrong. The constructive course is to document precisely which safeguards were and were not followed, to seek the recording where one exists, and, where admissible, to offer expert explanation or request jury instructions addressing the relevant system and estimator variables.

The corresponding safeguard is to ensure the trier of fact understands the science: that identification procedures can contaminate the very memory they test; that confidence is informative chiefly when recorded immediately and under proper conditions; and that repeated viewings and showups carry particular risks of false familiarity and misattribution. Where admissible, expert testimony and instructions grounded in the AP-LS recommendations can help the factfinder weigh an identification in light of how it was collected rather than by the witness's certainty alone.

References

- Bartlett, J. C., & Fulton, A. (1991). Familiarity and recognition of faces: The factor of age. *Memory & Cognition*, 19(3), 229–238. <https://doi.org/10.3758/BF03211147>
- Charman, S. D., & Quiroz, V. (2016). Blind sequential lineup administration reduces both false identifications and confidence in those false identifications. *Law and Human Behavior*, 40(5), 477–487. <https://doi.org/10.1037/lhb0000197>
- Clark, S. E. (2005). A re-examination of the effects of biased lineup instructions in eyewitness identification. *Law and Human Behavior*, 29(5), 575–604. <https://doi.org/10.1007/s10979-005-7121-1>
- Darling, S., Valentine, T., & Memon, A. (2008). Selection of lineup foils in operational contexts. *Applied Cognitive Psychology*, 22(2), 159–169. <https://doi.org/10.1002/acp.1366>
- Deffenbacher, K. A., Bornstein, B. H., & Penrod, S. D. (2004). Mugshot exposure effects: Retroactive interference, mugshot commitment, source confusion, and unconscious transference. *Law and Human Behavior*, 28(3), 287–307. <https://doi.org/10.1023/B:LAHU.0000029140.07719.14>
- Dysart, J. E., & Lindsay, R. C. L. (2007). Show-up identifications: Suggestive technique or reliable method? In R. C. L. Lindsay, D. F. Ross, J. D. Read, & M. P. Toglia (Eds.), *The handbook of eyewitness psychology, Vol. 2: Memory for people* (pp. 137–153). Lawrence Erlbaum.
- Fitzgerald, R. J., Price, H. L., Oriet, C., & Charman, S. D. (2013). The effect of suspect-filler similarity on eyewitness identification decisions: A meta-analysis. *Psychology, Public Policy, and Law*, 19(2), 151–164. <https://doi.org/10.1037/a0030618>
- Flowe, H. D., Ebbesen, E. B., Burke, C., & Chivabunditt, P. (2001). At the scene of the crime: An examination of the external validity of published studies on lineup identification accuracy. Paper presented at the American Psychology–Law Society Conference.
- Jacoby, L. L., Kelley, C., Brown, J., & Jasechko, J. (1989). Becoming famous overnight: Limits on the ability to avoid unconscious influences of the past. *Journal of Personality and Social Psychology*, 56(3), 326–338. <https://doi.org/10.1037/0022-3514.56.3.326>
- Kassin, S. M., Drizin, S. A., Grisso, T., Gudjonsson, G. H., Leo, R. A., & Redlich, A. D. (2010). Police-induced confessions: Risk factors and recommendations. *Law and Human Behavior*, 34(1), 3–38. <https://doi.org/10.1007/s10979-009-9188-6>
- Kovera, M. B., & Evelo, A. J. (2017). The case for double-blind lineup administration. *Psychology, Public Policy, and Law*, 23(4), 421–437. <https://doi.org/10.1037/law0000139>
- Lane, S. M., & Houston, K. A. (2021). *Understanding eyewitness memory: Theory and applications*. New York University Press.

- Memon, A., Hope, L., Bartlett, J., & Bull, R. (2002). Eyewitness recognition errors: The effects of mugshot viewing and choosing in young and old adults. *Memory & Cognition*, 30(8), 1219–1227. <https://doi.org/10.3758/BF03213404>
- Memon, A., Hope, L., & Bull, R. (2003). Exposure duration: Effects on eyewitness accuracy and confidence. *British Journal of Psychology*, 94(3), 339–354. <https://doi.org/10.1348/000712603767876262>
- Rodriguez, D. N., & Berry, M. A. (2014). The effect of lineup administrator blindness on the recording of eyewitness identification decisions. *Legal and Criminological Psychology*, 19(1), 69–79. <https://doi.org/10.1111/j.2044-8333.2012.02058.x>
- Roediger, H. L., Wixted, J. T., & DeSoto, K. A. (2012). The curious complexity between confidence and accuracy in reports from memory. In L. Nadel & W. Sinnott-Armstrong (Eds.), *Memory and law* (pp. 84–118). Oxford University Press.
- Sauer, J., Brewer, N., Zweck, T., & Weber, N. (2010). The effect of retention interval on the confidence–accuracy relationship for eyewitness identification. *Law and Human Behavior*, 34(4), 337–347. <https://doi.org/10.1007/s10979-009-9192-x>
- Stebly, N., Dysart, J., Fulero, S., & Lindsay, R. C. L. (2003). Eyewitness accuracy rates in police showup and lineup presentations: A meta-analytic comparison. *Law and Human Behavior*, 27(5), 523–540. <https://doi.org/10.1023/A:1025438223608>
- Stebly, N. K., & Dysart, J. E. (2016). Repeated eyewitness identification procedures with the same suspect. *Journal of Applied Research in Memory and Cognition*, 5(3), 284–289. <https://doi.org/10.1016/j.jarmac.2016.06.010>
- Wells, G. L., Small, M., Penrod, S., Malpass, R. S., Fulero, S. M., & Brimacombe, C. A. E. (1998). Eyewitness identification procedures: Recommendations for lineups and photospreads. *Law and Human Behavior*, 22(6), 603–647. <https://doi.org/10.1023/A:1025750605807>
- Wells, G. L., Kovera, M. B., Douglass, A. B., Brewer, N., Meissner, C. A., & Wixted, J. T. (2020). Policy and procedure recommendations for the collection and preservation of eyewitness identification evidence. *Law and Human Behavior*, 44(1), 3–36. <https://doi.org/10.1037/lhb0000359>
- Wise, R. A., Safer, M. A., & Maro, C. M. (2011). What U.S. law enforcement officers know and believe about eyewitness factors, eyewitness interviews, and identification procedures. *Applied Cognitive Psychology*, 25(3), 488–500. <https://doi.org/10.1002/acp.1717>
- Wixted, J. T., Mickes, L., Dunn, J. C., Clark, S. E., & Wells, W. (2016). Estimating the reliability of eyewitness identifications from police lineups. *Proceedings of the National Academy of Sciences*, 113(2), 304–309. <https://doi.org/10.1073/pnas.1516814112>

Legal Authorities

- Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).
- Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).
- Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999).
- Manson v. Brathwaite*, 432 U.S. 98 (1977).
- Perry v. New Hampshire*, 565 U.S. 228 (2012).
- State v. Henderson*, 208 N.J. 208, 27 A.3d 872 (2011).

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