The Law and Science of Eyewitness Evidence

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ABSTRACT

Eyewitness testimony is heavily reliant on their memory and visual perception, both of which are highly prone to error. Eyewitness memory's propensity for error has long been shown in instances of wrongful conviction. Currently, decades of scientific studies on memory and visual perception have shown important error sources and strategies for enhancing eyewitness accuracy. Similar to a few other legal fields, eyewitness testimony that involves experimentation in the identification process lends itself to scientific study.

Consequently, eyewitness testimony has evolved into a test bed for applying science to legal interpretation. This article looks at the responses given to this corpus of research by legal players, including state and federal courts, state legislators, and law enforcement organisations.

Although decisions from the Supreme Court have established a constitutional floor, we discover that this largely does not inform first-hand evidence-based law. As we document in a comprehensive fifty-state survey of rulings, state courts have increasingly used eyewitness memory science to reduce misidentifications. In our second examination, we look at what more state legislators have accomplished by examining the twenty-four state statutes that govern the process of eyewitness identification. Third, law enforcement organisations have embraced updated identification procedures, notably through the adoption of a model policy by twenty-nine states.

Introduction

Consider the following situation. As a juror in a protracted criminal trial, you are hearing the prosecution describe horrifying incidents. While strolling a sixteen-year-old student was unexpectedly seized, pulled into wayside bushes, and sexually raped by an unidentified man on his way to a friend's house.1. Following several punches to the attacker's face, the victim was able to release himself and flee. The attacker's face was seen by a bystander in his automobile.

You pay close attention to the evidence of the victim and bystanders later on during the trial. The victim says, "Yes, I'm sure. I will never forget what he looks like," in response to the question of whether or not she is certain that the defendant seated in the courtroom is the guilty party. The identification is confirmed by the witness who drove past.

It is natural for jurors to believe the two witnesses who saw the crime. How were you unable to? One noticed the attacker directly and hit him bravely, whereas the other saw the attacker a few seconds later. How could either of them be mistaken about who the attacker is?

The scenario that was just outlined is real; it concerns a sixteen-year-old San Diego, California, high school student. Six By the time of the criminal trial, the victim was positive of the identification. She was hesitant, though, and told police that although the defendant's photo was the "most similar," she was "[n]to sure" and only had a 60% confidence level.

She exaggerated her confidence during the trial. Uriah Courtney, the defendant, received a sentence of to a life sentence behind bars. Courtney was freed in 2013 following an eight-year sentence after retesting revealed that Courtney's DNA was not present in the victim's blouse or skirt.10 Furthermore, a male who lived nearby was connected to the DNA evidence by a hit in the Combined DNA Index System database. The list of erroneous convictions that includes Uriah Courtney is long and expanding. Approximately 70% of the roughly 370 people in the US who have been cleared thanks to DNA evidence to date were eyewitnesses.

The fundamental forms of police line-up techniques, the substantial corpus of research on eyewitness recollection, and the suggestions arising from that study are all covered in Part Me.

In other words, facial recognition software poses a serious difficulties for specific people.19 Studies have shown that eyewitnesses sometimes struggle greatly to distinguish strangers (and even no strangers) even under the best of viewing conditions.

20 In a seminal 2014 report that summarised research on human visual perception and memory, the National Research Council stated, "It is well known that eyewitnesses make mistakes and that their memories can be affected by various factors, including the very law enforcement procedures designed to test their memories."

THE SCIENCE OF PROCEDURES FOR EYEWITNESS IDENTIFICATION

When applicable scientific research is applied to a legal issue, eyewitness identification serves as the benchmark. Historically, scientists have been investigating the specific query that interests the legal community: What role do memory and visual perception play in the accurate identification of criminal suspects? The understanding of those visual and memory processes has grown over the past thirty years, and with it, so have the guidelines for police procedures. This section first gives an overview of the various police eyewitness identification protocols. Secondly, it offers a summary of studies conducted on the eyesight and memory of eyewitnesses. Thirdly, it makes a connection between the two by examining how police identification processes have been influenced by studies on vision and memory.

Introduction of Police Identification Techniques

The police displayed a classic "six-pack" photo array in Uriah Courtney's case, where the suspect's picture is arranged with five images of innocent people. "Fillers," according to the two witnesses.

The perpetrator, according to the eyewitnesses, was a White man in his mid-twenties with brown hair and a goatee. Out of the five fillers in this line-up, only two possessed any facial hair, with Courtney's goatee being the most noticeable. This line-up arrangement, together with the witnesses' descriptions, led to a high likelihood of picking Courtney, which of course, both eyewitnesses did in other instances, the police may have further biased the witness by using suggestive instructions or remarks in addition to the unjust nature of the line-up itself. In certain instances, law enforcement informed witnesses that the suspect was in the line-up. Of the 161 incidents, just one involved the use of blind administration or blindfolded procedures by the police. The study was based on the testimony provided by witnesses during the trial; further information may have been obtained but was not recorded or mentioned during the trial.

As a result, there are several ways that eyewitness identification processes can and have gone wrong. An overview of the nature and operation of certain police processes is given in this section. Law enforcement personnel employ an array of diverse how to approach an eyewitness to find the offender. When police have a suspect and want to question an eyewitness about their recall, they use three fundamental

procedures: (1) showups, (2) picture arrays, and (3) live line-ups. We also go over a few more techniques, such using composite drawings and mug pictures. Although specific techniques are also mentioned when needed, this article commonly refers to these different processes as "eyewitness identification procedures."

Procedures for Showup

A perpetrator is frequently apprehended in the act or is known to the offender in criminal investigations. It might not be necessary to identify the criminal in some circumstances.

Even if the eyewitness can still be an important witness to explain what happened. Various eyewitness identification processes are set up by police, contingent on the circumstances of the case and frequently on when the inquiry is to begin.

In a showup, where police present a single live suspect to a witness, this normally takes place at or close to the crime scene. Due to their suggestive nature, showup techniques are only allowed soon after the incident. They provide a witness with a single selection. Studies verify that showups present unique accuracy risks. Showups are not nearly as powerful as memory tests because the option is just "yes" or "no," and there are no memory foils, or "fillers," present. A showup is quite suggestive when there are no fillers present, which is why these operations have been "widely condemned." Because the suspect is frequently chosen while wearing clothing, the suspect's attire may also be quite suggestive.

Comparable to the eyewitness's account. Sound policy advises against conducting a show up in a way that adds suggestions beyond what is already included in the process.

Images Arrays

In situations where there is no immediate requirement for police to rule out or identify a probable suspect soon after a crime, they can create an eyewitness identification that makes use of live witnesses or images and a memory test. The method the police employ the most frequently to identify eyewitnesses is photo arrays.68 Officers typically show six or nine photos to an eyewitness, just one of which should be of a suspect and the others being "fillers," or well-known no suspects. Officers usually present their photos in two ways: sequentially, showing each photo one at a time, or in a "six pack," or "simultaneous" presentation, where the images appear simultaneously in a two by three layout. The filler images are chosen to resemble the suspect, frequently based on the description provided by the eyewitnesses and the suspect's appearance in the utilised photo. These days, a growing number of police agencies use picture databases to find stock photos.

Recent Line-ups

Live line-ups are also utilised, where an eyewitness is personally presented with the suspect and fillers. Live line-ups are much less prevalent these days, probably because it can be difficult to obtain adequate live fillers who resemble the suspect, because police may need probable cause to insert a nonconsenting person in such a line-up, and because participation of counsel may be required for a live operation.

Additional procedure

Officers may employ a variety of other, and often problematic, protocols when they have no suspect. Police might display mug books. or groups of images to see whether the witness can recognise a suspect, or they can ask the witness to assist in creating a composite image or sketch of the offender. To verify the identification of a person the witness already knows, they might show them a "confirmatory" photo.

Sometimes, police will bring a witness to observe individuals in the field—possibly in a place the offender is known to frequent. Lastly, witnesses might attempt to identify those not assigned by the police, either in person or through social media, offender registries, or other online image databases. Everybody Police should steer clear of and discourage any of these scenarios.

An eyewitness identifies something. The study of eyewitness memory and vision can begin to provide light on why eyewitness misidentifications happen.

Research on Eyewitness Memory and Vision

Why did the two eyewitnesses in Uriah Courtney's case like the picture of a suspect who, despite having the same goatee as the offender, was a man without guilt? The victim rated "her confidence level at 60%" and said, "Not sure, but the most similar is number," which was Courtney's photo, when detectives showed her the photo array at the police station. Courtney and the non-Latin White images displayed in the array were not Latin, but the second witness was. People who experience the well-documented phenomena of own-race bias find it more difficult to distinguish between faces that belong to a different race than their own. There is evidence to imply that this kind of prejudice happens when People mostly interact with members of their own race.

The Latin witness in the Courtney case may have, thus, "had an experience-dependent predisposition that could have severely limited his ability to perceive, memorise, recall, and discriminate among faces similar to that of the culprit."

In that regard, the Courtney case was not unique. In these kinds of misidentification cases, it is not unusual for the witnesses to change their initial uncertainty into confidence during the trial. Examining DNA exoneration cases showed that as follows:

Erroneous convictions, such as the one in the Courtney case, have alarmed the public and spurred fresh scientific investigation. How can an eyewitness mistakenly identify an innocent person in such a confident manner? This the section discusses the corpus of studies on eyewitness vision and recall that have been conducted during the previous thirty years. It starts by outlining the fundamental tasks that eyewitnesses must perform throughout a criminal investigation, outlining the key terms and the fundamental mechanisms of visual perception and memory. This Section then goes on to discuss the variables that may affect how accurately eyewitness identifications and testimony are made.

Identifying the Issue

What causes eyewitness errors? An eyewitness is, to put it simply, an observer who notices something. Later, the witness is asked to confirm the same thing in a different setting with like objects. In reality, except from the extremely high stakes, the overall task is quite similar to many recognition challenges that are common to human experience, such as attempting to locate one's car in the parking lot, one's luggage on the airport carousel, or one's dog in the Historically, studies have started there, examining how the probability of choosing the correct option connected with a range of variables, including particular viewing circumstances, and with different methods for carrying out a line-up "Estimator" and "system" variables are those that influence the probability that an eyewitness will identify something correctly.

 The viewing environment and the witness's perception and cognitive state at the moment of the crime are described by estimator variables. When evaluating eyewitness testimony, several factors (such as lighting, viewing distance, stress, and terror) should be taken into account.

However, law enforcement cannot exert control over these circumstances after the fact. This research has benefited from a plethora of knowledge understanding the mechanics of vision and memory that underpin object recognition, even if it still mostly relies on visual memory tests performed in a lab. This treasure trove of fundamental scientific Findings have been mainly disregarded throughout the lengthy history of practical eyewitness identification. The processing of visual memory information is the focus of eyewitness memory research, which is increasingly being studied using methods based on cognitive and neurological neuroscience studies. The goal of this research is to pinpoint the mechanical ideas that underpin how our brains interpret what we see and recall in order to make identification decisions.

How the Human Brain Makes Decisions

Although it may seem strange to consider humans as instruments, a first-hand observer serves as a measurement, categorization, and storing. As with any such device, the sensitivity, storage capacity, and susceptibility to bias or interference all affect how well an individual does. For many years, the study communities in psychology and neuroscience have investigated these traits in great detail.

Three fundamental aspects influence how well human observers perform when tasked with identifying objects, such eyewitness identification: Three things: (1) bias, (2) ambiguity, and (3) overconfidence Specifically, the likelihood of accuracy for an identification originating from a strong signal and a conservative choice criterion is significantly higher than that of an identification originating from a weak signal and a highly liberal criterion; nonetheless, both are typically expressed by the same claim that "that's the guy."

Line-ups in the Laboratory

To assess protocols in the field of eyewitness identification, laboratory studies that replicate real-world situations have emerged as a human decision-making framework. In these kinds of investigations, the experimenter knows the truth, which is the only way to categorise identification choices as right or wrong. Additionally, they are inevitably predicated on performance metrics gathered from big cohorts of participants. The reasoning behind this is that elements that boost performance in lab settings, such the arrangement of a line-up, are probably going to boost performance in actual casework.

Data from laboratory line-up studies can be further evaluated and interpreted in a number of ways. The field of sensory science offers a framework for analysing and revealing the most promising. Components that make up an identity. Using a framework called Signal Detection Theory, it is possible to measure two things independently: (1) the culprit's discriminability based on how well an eyewitness remembers what happened, and (2) the decision-making criteria the eyewitness used to identify the culprit. The choice criterion for line-up identifications can be conservative, requiring a strong recognition memory, or liberal, requiring a lesser recognition memory. It is influenced by a number of variables, such as verbal instructions and witness confidence. The decision criterion and eyewitness performance have a complicated relationship.

When utilising in civil society, it is highly prized when an innocent suspect is identified. However, a cautious decision criterion can also reduce the chance of identifying anyone in the line-up, including the offender. On the other hand, memory strength should be positively connected with the capacity to distinguish the guilty from innocent ones.

Therefore, any element that enhances a witness's capacity to retrieve memories from the crime scene ought to raise the accuracy of identification. The overarching theoretical takeaway from this is that, absent the

ability to analyse the relative contributions of decision criteria and memory strength, every identification judgement has uncertain relevance.

Finally, it's critical to understand that patterns only become apparent from average subject behaviour, not from laboratory trials and analysis tools. These patterns provide potentially useful information for policy planning. For the way line-ups are run. Furthermore, it is reasonable for legal judgements regarding the significance of identifications based on line-up conditions to take into account experimentally derived knowledge regarding the efficacy of particular conditions.

However, this information does not prove that a particular eyewitness identification is accurate in the actual world.

Bias, Uncertainty, and Self-Belief in the Real World in Uriah Courtney's case, the Eyewitnesses had good intentions and were attempting to identify the victim correctly. They weren't familiar with Courtney and weren't purposefully biased in his favour. However, their decisions might have been influenced by a variety of unidentified sources of bias and uncertainty that surfaced to fill in narrative gaps at multiple stages of the process: from identifying and perceiving the crime to remembering it, to analysing faces in a line-up, and, ultimately, to playing the dramatic role of identifying the perpetrator in court.

The two witnesses in Uriah Courtney's case were very certain of their testimony during the trial, however they were mistaken. Studies on recognition memory tasks showed no association between accuracy and confidence for many years. However, legal requirements for The confidence of an eyewitness was used as proof of dependability even when the methodologies utilized were suggestive and may have been expected to produce misleading results. Eyewitness identification did not adhere to this scientific foundation.

Assurance. Additionally, courtroom identifications and statements of confidence have always been permitted. Courtney's story serves as an example of why one should not have faith in the legal system. Proposal line-ups and Suggestions of suggestive corroboration, such as the fact that an additional eyewitness made the same identification, might have easily led to the

Courtney witnesses' entire confidence in court, even though one of them struggled to make an identification in the line-up.

Confidence levels stated at later times [(in court, for example)] are subject to recall bias, enhancements stemming from opinions voiced by law enforcement, counsel, and the press, and to a host of other factors that render confidence statements less reliable, according to the National Research Council Report.

Recommendations for Line-up Procedures

As we've seen, while unrelated circumstances might occasionally result in incorrect identifications, poor police procedures can also lead to misidentifications can make determining the veracity of an identification challenging.

It's possible that these actions contributed to Uriah Courtney's situation. When Courtney was found guilty in 2006, a lot of law enforcement organisations did not closely monitor the line-up process. His line-up photo stood out, the line-up was not blind, and we are unsure of the precise method used to administer the line-up to the two case witnesses in the absence of a recording.

Regarding the worry that line-ups have frequently been held with procedures that are ill-regulated and untrustworthy, the National Research Council offered the following five suggestions for law enforcement: (1) providing instruction to all law enforcement cops on factors that may influence eyewitness identifications; (2) implementing photo array and blind line-up techniques; (3) giving officers who conduct

the procedures witness instructions that are standardised; (4) recording witnesses' expressed degree of confidence at the time of an identification; and (5) recording the witness identification process on video. We address each one separately in the context of the scientific studies covered in Section I.B.

Policy Training for Police

Historically, police regulations lacking specific guidelines have not guided eyewitness identification methods. Instead, this was the kind of assignment that Officers would pick up informal skills while working. There were no established guidelines or protocols for agencies.

The urgency of this issue is still present because some still lack established policies. The steps involved in gathering eyewitness testimony Witnesses should be able to clearly and simply understand the identification. Even if unintentional, standard operating procedures guarantee consistency and prevent misinterpretation by or suggestions to the eyewitness.

Shouldn't draw attention to the suspect in an obscene way. In any line-up operation, there should only be one suspect. Agencies should be provided with resources so they can access an adequately large collection of images for use in picture arrays. Policies should also discourage multiple viewings, as this can increase the chance of inaccuracy by creating fresh memories of the line-up faces that have already been viewed. In Part III, we go over ways to enhance the line-up construction process even further so that line-ups aren't based on officers' differing opinions about what constitutes justice.

Science and Justice Implications

The evolving law of eyewitness evidence shows how accuracy and science can play a role in our legal system. The implications are largely quite positive and suggest reason for optimism. If one focuses on the Supreme Court, one might have the misimpression that our criminal system does not take seriously the insights of decades of scientific research. Constitutional precedent changes slowly; federal courts still follow the 1976 Manson ruling. Nevertheless, we have experienced a paradigm shift at the local level, informed by scientific research and not by judicial precedent. Local police agencies can build upon the constitutional floor and can far more readily take research into account. As described, almost every state, through legislation, model policy, police policy, and state court rulings, has embraced scientific research regarding eyewitness evidence. State court rulings are also illustrative; they have mostly departed from precedent not by modifying constitutional tests but rather by focusing on discretionary areas of state evidence law.

the ability of evidence law to adapt to research, just as law enforcement can adapt their policies and training, provides a counterpoint to constitutional procedure. The framework local and state actors have adopted uses a functional approach. The policies resemble a checklist of features that a sound eyewitness procedure should include.

Thus, state court rulings, statutes, and model policies do not hinge on judicial "tests" designed to apply in appellate settings. Instead, they set out a process for conducting a line-up, identify factors to be considered at a pre-trial hearing or set out jury instructions. Those lists can be updated and processes modified based on new research. They are not reduced to fixed legal language. They consist of a scientific framework. In the eyewitness area, the Supreme Court should revisit the Manson test and reconsider its hands-off attitude towards evidentiary questions. Courts should generally be receptive to scientific legal frameworks. In the eyewitness area, that said, evidence-informed reforms have been very slow in coming,

even in other police investigation-related areas like forensic evidence, in which the scientific community has sharply and repeatedly weighed in.

Whether legislation or courts will ultimately provide a backstop to such efforts, as in the eyewitness area, remains to be seen. Scientific research continues to progress and greater improvements are needed. Had post-conviction DNA testing not brought errors to light, and scientists not responded to that pressing legal need by bringing their research to bear on this problem, we would not have experienced the dramatic change already seen.

The National Research Council Report provided an important capstone to the first generation of law and science research that has informed a remarkable shift in practices. Similar work would benefit other areas in pressing need of reform. The new generation of law and science research awaits.

CONCLUSION

Law and science are more compatible than many commonly suppose in both the legal and scientific communities. Some judges have expressed concern, as the Georgia Supreme Court did, that "[t]he law will always lag behind the sciences to some degree because of the need for solid scientific consensus before its lessons are included into the law. Even if the description is correct, this delay shouldn't be used as an excuse for a courtroom that is closed to science. The consensus among scientists will, of course, occasionally shift. The "rule Science's "teachings" should be continuously incorporated. Nor does "the law" have to wait for "finished" science. We think that criteria used by the legal system should be sufficiently flexible to take into account the way science is understanding the world we live in.Our story offers a more upbeat assessment of the possible relationship between science and law. The developments discussed represent an approach to law that is open to scientific inquiry. Each is made up of a collection of beliefs and customs. That enables better assessment of the calibre of eyewitness testimony by law enforcement, attorneys, juries, and judges. Rather than being a set of precedent-fixed legal requirements, the doctrine is a collection of best practices that can be modified.

It is a framework based on scienceIt goes without saying that not all legal topics involve scientific knowledge, and when they do, they haven't always shown an openness to new research. It is unclear how the criminal justice system will react to the upcoming wave of visual memory and perception research.

Whether evidence-based solutions will be used in other areas where criminal law improvements are advocated. Whether evidence-based solutions will be used in other areas where criminal law improvements are advocated our comparative institutional perspective offers valuable insights for the larger, pressing endeavour to construct a fair and evidence-based criminal justice system in the US and around the world. In the field of eyewitness testimony, scientific studies have been carried out expressly to influence criminal procedure, and that impact has been incredibly fruitful and profitable. Over time, basic and applied study on the fundamental mechanisms and processes of human visual perception and memory have informed that research more and more. State courts are more involved in this study than federal courts, with law enforcement agencies and legislators paying significantly more attention to it than the courts themselves.

We may use what we've learned from this experience to reconsider how the legal, research, and law enforcement groups interact. Criminal procedure should not necessitate a high volume of recorded incorrect convictions. Evidence to modify the rules. Emergence of national solutions would also be ideal. It is difficult to be hopeful about the prospect of comprehensive police reform given the difficulties facing law enforcement organisations and pervasive worries about the calibre and justice of their work.

Nonetheless, our understanding of the law, science, and first-hand information offers a blueprint for how reform in our criminal justice system might happen gradually. The top-down, Supreme Court-centric explanation that governs constitutional criminal procedure is reversed by this account. Significant legal reform can be informed by science.

Significant impediment, but not usually an unbreakable barrier, to the cautious application of scientific discoveries. The use of eyewitness testimony in science and law offers a potent

Lesson: Compared to popular belief, our legal and constitutional institutions have much more chances to use scientific research within a legal-science framework to enhance the impartiality and standard of justice.

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