PSYCHOLOGICAL LIMITATIONS OF EYEWITNESS TESTIMONY AND THEIR IMPACT ON CRIMINAL JUSTICE IN INDIA

Raksha Subba, K.E.S Shri Jayantilal H. Patel Law College

ABSTRACT

In Indian criminal trials, eyewitness testimony remains a cornerstone of the evidentiary process. Judges frequently assign immense weight to what a witness claims to have seen, even to the point of securing a conviction based on a single individual's account, as permitted by the Indian Evidence Act of 1872. This deep-rooted legal trust relies heavily on the assumption that an individual can perfectly observe and recount the past events. Yet contemporary research in cognitive psychology reveal that this assumption is often fundamentally flawed.

This paper examines the inherent psychological limitations of human memory and how it affects the reliability and accuracy of the eyewitness testimonies. The paper further explores how such limitations of human memory affect the Indian criminal justice system, particularly in relation to wrongful convictions, misidentification and the over reliance on testimonial evidence.

A major focus of this paper is the gap between how courts judge a witness's credibility and scientific understanding of memory. Currently, the legal system lacks the safeguards needed to identify and evaluate cognitive errors. To address this issue the paper suggests practical reforms to improve reliability of eyewitness testimonies, such as greater reliance on corroborative evidence, and increased awareness of psychological principles among legal professionals. The paper concludes that incorporating cognitive science insights is essential to ensure fairness, accuracy and safeguarding constitutional rights in criminal adjudication.

Keywords: Eyewitness testimony, Indian Evidence Act, 1872, Cognitive psychology, Memory distortion, Encoding, Storage and Retrieval model, Forensic corroboration, Wrongful conviction, Suggestibility, False identification, Legal precedent and cognitive science, Witness reliability.

Introduction

Eyewitness testimony is a fundamental component of the criminal justice system in India. In many cases, the account of a person who was present at the scene of a crime is treated as direct evidence, providing a primary basis for establishing the facts of a case. From a legal perspective, such testimony is given significant importance because it provides a firsthand account that can directly connect the accused to the alleged act. As a result, reliance on eyewitness testimonies has become a deeply rooted feature of both the statutory framework and judicial practice in the country.

Within the framework of the Indian evidence act of 1872, eyewitness testimony is recognised as a valid form of oral evidence under section 60[1] of the act, provided that the witness testimony is direct and based upon witness's personal perception of the event. This implies that a witness is competent to depose only to those facts which have been personally seen, heard or otherwise perceived. The requirement of direct evidence reflects the law's preference of firsthand accounts, thereby according significant evidentiary value of eyewitness testimony in criminal trials. Section 134[2] of the Indian evidence act provides that no particular number of witnesses is required to prove a fact, meaning that a conviction can rest on the testimony of a single eyewitness if it is found to be reliable. Additionally, Section 118[3] of the act establishes that all persons are competent to testify unless they are incapable of understanding questions or giving rational answers. It assumes that if a person is mentally competent to speak, their observations are sufficiently reliable. Thus, the testimonies of children, the elderly or those with physical or mental ailments are not automatically excluded. The Act ensures that the 'search for truth' is as inclusive as possible. It becomes clear that the law prioritizes the permissibility of testimony over its inherent accuracy.

While these provisions collectively reinforce the evidentiary value of eye witness accounts, they assess reliability primarily through legal standards such as consistency and credibility without incorporating the insights from cognitive psychology. While the law treats memory as stable record of past events, contemporary cognitive psychology suggests that this assumption

[1] Indian Evidence Act, 1872, § 60, No. 1, Acts of Parliament, 1872 (India) https://indiankanoon.org/doc/1681167/
[2] Indian Evidence Act, 1872, § 134, No. 1, Acts of Parliament, 1872 (India) https://indiankanoon.org/doc/838383/
[3] Indian Evidence Act, 1872, § 118, No. 1, Acts of Parliament, 1872 (India) https://indiankanoon.org/doc/371095/

is often incorrect. Research in the field of memory and perception indicates that the human brain does not function like a recording device. Instead, it is a reconstructive process. As demonstrated by psychologists such as Elizabeth Loftus, memory is susceptible to various influences that can alter or distort a person's recollection of an event[4]. For instance, psychological studies highlight phenomena such as the weapon focus effect[5], where the presence of a weapon diverts attention and impairs accurate identification, and the impact of leading questions, which can reshape a witness's memory after the event[6]. This suggests that even when a witness has no intention of being dishonest, their testimony may still be factually inaccurate due to the way the brain processes and stores information. The law does not take account for such factors, all of which significantly affect the reliability of eyewitness testimonies. The absence of a psychological framework creates a critical gap between legal admissibility and scientific reliability, allowing courts to place substantial reliance on testimony that may appear credible according to the law but is inherently vulnerable to error in practice, an issue that lies at the core of this research.

In the Indian justice system, these psychological findings have serious implications. Given the practical constraints faced by investigative agencies including limited access to forensic resources, there remains a heavy reliance on verbal testimony. When the courts depend on potentially fallible memory without adequately accounting for cognitive limitations, it raises concerns regarding the right to a fair trial. Under Article 21 of the Constitution of India, the protection of life and personal liberty is a fundamental right, this includes the right to a fair and just trial based on reliable and accurate evidence.

This paper seeks to examine the gap between the legal standards for evaluating eyewitness testimony and scientific realities of human memory. It analyses how Indian courts have historically treated such evidence and contrast this with psychological theories. By doing so, the paper advocates for a more cautious and scientifically informed approach to the use of eyewitness testimony in criminal adjudication. The objective is to explore how the Indian legal system can better integrate interdisciplinary insights to enhance the accuracy of fact-finding

[4] Elizabeth F. Loftus, Planting Misinformation in the Human Mind: A 30-Year Investigation of the Malleability of Memory, 12 Learning & Memory 361 (2005).
[5] Elizabeth F. Loftus & John C. Palmer, Reconstruction of Automobile Destruction: An Example of the Interaction Between Language and Memory, 13 J. Verbal Learning & Verbal Behav. 585 (1974). https://psycnet.apa.org/record/1975-04498-001
[6] Saul McLeod, Loftus and Palmer 1974 | Car Crash Experiment, Simply Psychology (Oct. 2, 2025), https://www.simplypsychology.org/loftus-palmer.html

and safeguard the constitutional rights of the accused.

Psychological Limitations of Eyewitness Testimony

While the Indian Evidence Act, 1872 provides a clear framework for the admissibility of eyewitness testimony, it operates on the implicit assumption that human memory is a stable and objective record of past events. However, contemporary cognitive psychology challenges this assumption by demonstrating that memory is inherently fallible and susceptible to distortion. The limitations of eyewitness testimony can be more effectively understood through the three-stage model of memory as conceptualised in the Atkinson Shiffrin model of memory (1968)[7], which consists of encoding, storage, and retrieval. This model explains how information is perceived, retained, and later recalled by individuals. At each of these stages, memory is vulnerable to distortion and error, which can significantly affect the accuracy of eyewitness accounts. Consequently, the reliability of such testimony is not merely dependent on the honesty of the witness, but also on the inherent limitations of cognitive processes.

The Encoding Stage (limitations in initial perception)

The encoding stage refers to the process by which an individual first perceives and interprets an event, in the context of eyewitness testimony, this is the moment when a person observes a crime and their brain attempts to form a mental representation od what is happening. Under section 118[8] of the Indian evidence Act, 1872, there is often an assumption that if a witness is mentally competent and present at the scene, they are capable of accurately observing events. However, psychological research suggest that this assumption is not always correct, as perception at this stage is often selective and influenced by surrounding circumstances.

One of the most significant factors affecting encoding is stress. Contrary to the common belief that shocking and violent events are remembered more clearly, high levels of stress can actually impair a person's ability to observe details accurately. This is evident in the phenomenon known as the "weapon focus effect", where the presence of a weapon draws the witness's attention towards it, reducing their ability to notice other important details such as the

[7] Richard C. Atkinson & Richard M. Shiffrin, Human Memory: A Proposed System and Its Control Processes, in The Psychology of Learning and Motivation 89 (Kenneth W. Spence & Janet T. Spence eds., 1968). https://psycnet.apa.org/record/1978-11559-001

[8] Indian Evidence Act, 1872, § 118, No. 1, Acts of Parliament, 1872 (India) https://indiankanoon.org/doc/371095/

perpetrator's face or physical features. As a result, even a truthful witness may provide incomplete or inaccurate information simply because certain details were not perceived at the time of the event.

Environmental conditions also play a vital role in shaping perception. Crimes often occur suddenly and under less-than-ideal circumstances, such as poor lighting, significant distance, or very brief exposure. In such situations, a witness may only have a limited opportunity to observe what is happening. For example, a person who sees an incident for only a few seconds or from a distance may not be able to accurately identify the individuals involved. Despite this, the legal system may still place considerable reliance on such testimony.

Another important limitation arises from the influence of prior experiences and cognitive biases. Individuals do not perceive events in a completely objective manner, instead, their understanding is shaped by pre-existing mental frameworks, often referred to as "schemas". These schemas can lead a witness to interpret or fill in gaps in their perception based on expectations and prior experiences rather than actual observation. Similarly, phenomena such as own race bias demonstrate that individuals may have greater difficulty in accurately identifying persons from different racial or ethnic groups, which is particularly relevant in a diverse society like India.

Therefore, the encoding stage highlights the eyewitness testimony is not a perfect reflection of reality, but rather a subjective interpretation shaped by psychological and environmental factors. If errors occur in the initial stage, they can affect the entire process of memory formation, ultimately impacting the reliability of testimony presented before the court.

The Storage Stage (memory retention and distortion)[9]

The storage stage refers to the process by which information, once perceived, is retained in the brain over a period of time. In the context of eyewitness testimony, this is the stage where there is a gap between the time when an event is witnessed and when the witness is required to recall it and testify in court. During this interval, the memory is not simply preserved in its original form, instead, it becomes vulnerable to change, decay and distortion.

[9] Jenna Fletcher, *The Atkinson-Shiffrin Memory Model*, Psych Central (Aug. 22, 2024), https://psychcentral.com/health/atkinson-and-shiffrin-model

One of the primary issues affecting storage is the passage of time. As time passes, memories tend to fade, and specific details may become unclear or completely forgotten. A witness who was initially confident about what they saw may overtime lose accuracy in recalling finer aspects of the event. Despite this, the legal system may still treat such testimony as reliable, especially if the witness appears confident while testifying.

Additionally, memory may be influenced by exposure to post event information. After witnessing an incident, individuals are often exposed to external sources such as media reports. These factors can unintentionally alter the original memory. Psychological research has shown that memory is reconstructive in nature, meaning new information can become integrated into existing memory overtime.

Repeated recalls of an event can also affect the way it is stored. Each time a person remembers an event, the memory may be slightly altered, reinforcing certain details while weakening others. Overtime, this process can lead to gradual distortion of original memory, even before it is formally presented in a legal setting.

Social influences further contribute to this distortion during the storage stage. For instance, discussions with other witnesses can lead to memory conformity, where individuals begin to align their recollections with others, even if those recollections are inaccurate. This demonstrates how memory, during the storage stage is shaped not only by the original event but also by the external influences encountered after it.

Therefore, the storage stage demonstrates that memory is not a stable or passive record pf past events, but an active process that is highly susceptible to external influences. By the time a witness presents their testimony in court, their memory may have already undergone significant changes, raising important concerns about its reliability in the administration of justice.

The Retrieval Stage (recall and suggestibility)

The retrieval stage refers to the process by which stored information is recalled and presented when required. In the context of eyewitness testimony, this is the stage at which a witness recounts events during police investigations or in court. Although it may appear that a witness is simply recalling what was previously stored in memory, psychological research suggests that retrieval is not a passive process. Instead, it involves an active reconstruction of past event,

which makes it particularly vulnerable to error and suggestion.

One of the most significant issues affecting retrieval is the influence of suggestive questioning. The manner in which questions are framed during police investigation or cross examination can shape how a witness recalls an event. Even subtle suggestions may lead a witness to alter their account without consciously realizing it. This is evident from the study conducted by Elizabeth Loftus and John Palmer (1974)[10], which demonstrated that the phrasing of questions could significantly alter a witness's memory. In their experiment, participants who were asked how fast the cars were going when they smashed into each other estimated higher speeds and were more likely to report seeing a broken glass, even though no such detail was present. This demonstrates how the manner in which questions are framed can introduce new information to a witness's memory, causing individuals to incorporate inaccurate details to their recollections. This raises concerns about the reliability of testimony obtained through leading or repetitive questioning.

The process of repeated recall also affects the accuracy of memory during this stage. They are not simply retrieving a stored record, but actively reconstructing it. Each time a witness recounts an event, the memory may be reconstructed slightly differently. This process increases the likelihood of errors, as small inaccuracies may become reinforced overtime and lead to the formation of a version of events that differ from the original experience. In legal settings, where the witness may be questioned multiple times during investigation and trial, this can lead to gradual distortion of original memory and significantly impact the consistency and reliability if their testimony.

Legal Consequences of Unreliable Eyewitness Testimony

The natural limits of human memory, from how we first see a crime to how we recall it later create serious problems for the Indian criminal justice system. Even though these memory flaws are well known, courts still rely heavily on eyewitnesses often treating it as credible and sufficient for conviction, even in the absence of other physical evidence. This creates a potential risk of errors, especially since a witness's memory can easily become distorted without them even realizing it.

[10] Saul McLeod, Loftus and Palmer 1974 | Car Crash Experiment, Simply Psychology (Oct. 2, 2025), https://www.simplypsychology.org/loftus-palmer.html

One of the gravest outcomes of unreliable eyewitness testimony is the potential risk of wrongful conviction. Under the Indian Evidence Act, 1872, courts are legally permitted to convict an accused person based solely on the testimony of a single witness, as long as the court finds that witness reliable. This principle was reinforced by the Supreme Court of India in the landmark 1957 case, Vadivelu Thevar v. State of Madras[11]. The Court ruled that the testimony of a single "wholly reliable" eyewitness is sufficient to secure a conviction, even in the absence of corroborating evidence. While this legal standard allows for the prosecution of isolated offenses, it places a significant burden on the reliability of a single human memory. If that memory is distorted, the entire foundation of the conviction is compromised.

The implementation of this standard becomes particularly problematic when courts evaluate emotionally involved witnesses. In State of Rajasthan v. Kalki (1981)[12], the Supreme Court ruled that a witness's testimony should not be disregarded simply because they are related to the victim. Although relatives are often the most instinctive witness to a crime, this ruling fails to consider the psychological impacts of trauma. Cognitive principles, such as the Yerkes-Dodson law[13], demonstrate that extreme stress severely impairs an individual's ability to accurately perceive and remember details. A relative who has experienced trauma may genuinely believe their flawed recollection is the absolute truth, which can result in courts accepting compromised testimony as reliable.

This judicial misunderstanding of trauma is further depicted in Narayan Chetanram Chaudhary v. State of Maharashtra (2000)[14]. Dealing with a gruesome crime, the Supreme Court assumed that a terrifying event leaves an indelible, unforgettable mark on a witness's mind. However, cognitive science reveals this reliance on flashbulb[15] memories to be a fallacy. While extreme trauma may cause a witness to vividly recall the terror of an event or narrow their focus onto a weapon, it actively degrades their ability to remember peripheral details, faces, and exact timelines. Rather than freezing a perfect picture in the brain, trauma often fragments it.

To add to these issues, courts frequently accommodate the inconsistencies that stem from

[11] Vadivelu Thevar v. State of Madras, A.I.R. 1957 S.C. 614 (India) https://indiankanoon.org/doc/406841/
[12] State of Rajasthan v. Smt. Kalki & Anr., A.I.R. 1981 S.C. 1390 (India) https://indiankanoon.org/doc/1064706/
[13] Charlotte Nickerson, *Yerkes-Dodson Law of Arousal and Performance*, Simply Psychology (Aug. 14, 2025), https://www.simplypsychology.org/what-is-the-yerkes-dodson-law.html
[14] Narayan Chetanram Chaudhary & Anr. v. State of Maharashtra, (2000) 8 S.C.C. 457 (India) https://indiankanoon.org/doc/1351065/
[15] Richard C. Atkinson & Richard M. Shiffrin, *Human Memory: A Proposed System and its Control Processes*, *in* 2 The Psychology of Learning and Motivation 89 (Kenneth W. Spence & Janet T. Spence eds., 1968), https://psycnet.apa.org/record/1978-11559-001

trauma and the passage of time. In State of Himachal Pradesh v. Lekh Raj (1999)[16], the Supreme Court acknowledged that humans do not possess a photographic memory. The Court ruled that minor contradictions in an eyewitness's narrative are natural and should not automatically destroy their credibility.

When these four legal precedents intersect, they create a precarious environment for judicial error. A trial court may legally convict based on one traumatized witness. The judge may incorrectly assume the trauma guaranteed a highly accurate memory, while simultaneously excusing actual cognitive errors as normal forgetfulness. This framework allows genuine false memories to be legally validated as objective facts.

When the criminal justice system relies heavily on uncorroborated, psychologically vulnerable memories, the consequences are severe. This disconnect between law and science has directly contributed to tragic miscarriages of justice in India.

Another major concern is the issue of mistaken identification, particularly in criminal trials involving strangers. As discussed in the encoding stage, factors such as stress, poor lighting, and limited exposure can impair accurate perception. These issues, combined with memory distortion over time can lead to incorrect identification of the accused. In a legal system where identification evidence often plays a crucial role, such errors can lead to serious consequences.

The continued reliance on eyewitness testimony is also influenced by practical challenges faced by investigative agencies. In many cases, especially in environments with limited resources, there may be little to no access to forensic tools such as DNA analysis or advanced technological evidence. As a result, investigators may depend heavily on oral testimony to build a case. While this reliance may be necessary in certain situations, it increases the importance of ensuring that such testimony is critically evaluated.

Moreover, the judicial tendency to link confidence with credibility can make evaluating eyewitness testimony more complex. Courts often consider a confident and consistent witness to be reliable. However, psychological studies show that confidence does not necessarily correlate with accuracy. A witness may genuinely believe in the truth of their statement, even

[16] State of Himachal Pradesh v. Lekh Raj & Anr., (2000) 1 S.C.C. 247 (India) https://indiankanoon.org/doc/1200711/

if their memory has been distorted over time.

These issues raise broader concerns regarding the right to a fair trial under Article 21 of the Constitution of India. A fair trial requires that convictions be based on reliable and accurate evidence. When courts rely on testimonies that could be influenced by cognitive limitations without properly accounting for such factors, it creates a risk of injustice. This highlights the need for a more cautious and informed approach in evaluating eyewitness evidence.

Therefore, while eyewitness testimony continues to play a central role in the Indian criminal justice system, its psychological limitations demand a more critical and evidence-based approach. Recognising these limitations is essential to reducing the risk of wrongful convictions and ensuring that the justice system remains fair and reliable.

Suggestions and Reforms

Given the well documented psychological flaws associated with eyewitness testimony, it becomes necessary to adopt measures that strengthens the reliability of such evidences within the criminal justice system of India. Several crucial reforms such as,

- Improved Identification process, there is a need to improve identification procedures. Test Identification Parades should be conducted quickly and under controlled conditions to minimise the risk of suggestive inputs or memory contamination. Clear guidelines should be established to ensure that witnesses are not exposed to the accused before the official identification lineup.

- Greater emphasis should be placed on corroboration evidence, courts must be much more cautious about relying solely on eyewitness testimonies, particularly in serious criminal cases. Wherever possible, such witness testimonies should be supported by additional corroborative evidence, such as forensic findings or material evidence, to reduce the risk of wrongful conviction.

- The inclusion of expert testimony from psychologists, inputs given by cognitive psychologists during trials can significantly improve judicial understanding of memory related issues. Expert evidence can assist courts in evaluating the reliability and accuracy of eyewitness accounts by explaining complex cognitive concepts that can

possibly distort human memory.

- Training and awareness programs for law enforcement professionals, such as judges, lawyers, and police officers should be introduced to familiarise them with the psychological aspects of memory. Teaching these legal professionals about how cognitive psychology works will lead to better legal decisions and can reduce the over reliance on flawed testimonies.

- Reforms in police investigation practices, investigating officers must be trained to avoid asking leading or suggestive questions, and witness testimony should be recorded as early as possible to preserve the most accurate version before it fades or distorts.

If implemented effectively, these reforms will bring us a step closer to bridging the gap between legal practice and scientific understanding of eyewitness testimonies, ultimately making the Indian criminal justice system fairer, more accurate and far less prone to errors.

Conclusion

Today, the Indian criminal justice system is caught up between established legal traditions and modern cognitive science. For over a century, courts have treated eyewitness testimony as the ultimate criminal evidence, often relying on single individual's account to determine if the accused is guilty or innocent. However, as this paper has explored, human memory is not a perfect record of events and the assumption that it functions as accurately and objectively is fundamentally flawed. The way our brains take in, store and recall information makes our memories inherently fragile, they can be easily altered by stress, the passage of time and external influences.

When legal system ignores these limitations, it inadvertently paves way for unfair trials and wrongful convictions. Past rulings have created a system that allows judges to accept flawed memories as undeniable facts.

Acknowledging these flaws does not mean discarding or disregarding eyewitness testimony entirely, rather it demands a fundamental shift in how it is evaluated. Closing the gap between the courtroom and scientific study is necessary. By embracing scientifically backed reforms, the justice system can build much needed safeguards against human errors,

True justice, as guaranteed by the right to fair trial under Article 21 of the Constitution, requires that no individual be deprived of their liberty based on the fragile foundations of a distorted memory. To protect the innocent and uphold the law, Indian courts must evolve.

References

Elizabeth F. Loftus & John C. Palmer, Reconstruction of Automobile Destruction: An Example of the Interaction Between Language and Memory, 13 J. Verbal Learning & Verbal Behav. 585 (1974), https://psycnet.apa.org/record/1975-04498-001

Saul McLeod, Loftus and Palmer 1974 | Car Crash Experiment, Simply Psychology (Oct. 2, 2025), https://www.simplypsychology.org/loftus-palmer.html

Psych Yogi, *Loftus and Palmer (1974) – Eyewitness Testimony*, Psych Yogi (Jan. 15, 2023) http://psychyogi.org/loftus-and-palmer-1974-eyewitness-testimony/

Saul McLeod, *Multi-Store Memory Model: Atkinson and Shiffrin*, Simply Psychology (May 19, 2025), https://www.simplypsychology.org/multi-store.html

Jenna Fletcher, *The Atkinson-Shiffrin Memory Model*, Psych Central (Aug. 22, 2024), https://psychcentral.com/health/atkinson-and-shiffrin-model

Charlotte Nickerson, *Yerkes-Dodson Law of Arousal and Performance*, Simply Psychology (Aug. 14, 2025), https://www.simplypsychology.org/what-is-the-yerkes-dodson-law.html

Richard C. Atkinson & Richard M. Shiffrin, *Human Memory: A Proposed System and its Control Processes*, *in* 2 The Psychology of Learning and Motivation 89 (Kenneth W. Spence & Janet T. Spence eds., 1968), https://psycnet.apa.org/record/1978-11559-001

Indian Evidence Act, 1872, § 60, No. 1, Acts of Parliament, 1872 (India)

https://indiankanoon.org/doc/1681167/

Indian Evidence Act, 1872, § 118, No. 1, Acts of Parliament, 1872 (India)

https://indiankanoon.org/doc/371095/

Indian Evidence Act, 1872, § 134, No. 1, Acts of Parliament, 1872 (India)

https://indiankanoon.org/doc/838383/

India Const. art. 21

https://indiankanoon.org/doc/1199182/

Vadivelu Thevar v. State of Madras, A.I.R. 1957 S.C. 614 (India) https://indiankanoon.org/doc/406841/

State of Rajasthan v. Smt. Kalki & Anr., A.I.R. 1981 S.C. 1390 (India) https://indiankanoon.org/doc/1064706/

Narayan Chetanram Chaudhary & Anr. v. State of Maharashtra, (2000) 8 S.C.C. 457 (India) https://indiankanoon.org/doc/1351065/

State of Himachal Pradesh v. Lekh Raj & Anr., (2000) 1 S.C.C. 247 (India) https://indiankanoon.org/doc/1200711/