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Eyewitness Testimony and Human Memory in India: A Psychological and Evidentiary Analysis of Reliability in Criminal Trial

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ABSTRACT

Eyewitness testimony remains one of the most frequently relied-upon forms of evidence in Indian criminal trials, yet decades of psychological research show that human memory is reconstructive, malleable and vulnerable to error. This paper examines the interface between memory science and Indian evidence law. Using a doctrinal and narrative-review methodology, it analyses the psychological literature on encoding, storage and retrieval, the statutory framework governing witness evidence, and landmark judicial pronouncements of the Supreme Court of India on witness reliability, identification parades and hostile witnesses. The analysis finds that Indian courts have developed useful categories, such as the "wholly reliable, wholly unreliable and neither" classification, and the "sterling witness" standard, but these are applied largely through intuitive credibility assessment rather than scientific understanding of memory. Procedural safeguards such as delay in identification, suggestive police practices and absence of witness protection further compromise reliability. The paper recommends structured investigative interviewing, double-blind identification procedures, recording of first accounts, judicial training in memory science, and expert-evidence mechanisms. Empirical Indian research is urgently needed.

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1. Introduction

The criminal trial is, at its core, an exercise in reconstructing past events through the present accounts of people. Where forensic or documentary evidence is scarce, as is common in many Indian prosecutions, the oral testimony of a person who claims to have seen the offence becomes decisive. The Indian law of evidence has historically embraced this reliance. The Indian Evidence Act, 1872 (now Bharatiya Sakshya Adhiniyam, 2023) treats oral evidence as direct evidence when it concerns what a witness saw, and its provision on the number of witnesses required (Section 134 of IEA / Section 139 of BSA) states that no particular number of witnesses is needed to prove a fact. A conviction may therefore rest on the testimony of a single witness if the court finds that testimony credible.

Psychological science, however, has long cautioned that confidence in a witness's account is not the same as accuracy. Bartlett (1932) demonstrated that remembering is an act of reconstruction shaped by prior knowledge and expectation rather than the playback of a stored record. Loftus and Palmer (1974) showed that the wording of a question could alter estimates of speed and even lead participants to report details that were never present. Subsequent work has documented that stress, weapon presence, cross-racial identification, the passage of time and post-event information can all degrade or distort eyewitness reports (Deffenbacher et al., 2004; Meissner & Brigham, 2001; Steblay, 1992; Wells & Olson, 2003). In the United States, the study of wrongful convictions later overturned through DNA evidence found that mistaken eyewitness identification featured in a large majority of the cases examined (Garrett, 2011).

India presents a distinctive context. Trials are often delayed by years, so witnesses testify long after the event. Police investigation practices, crowded courtrooms, limited witness protection, and cultural factors such as social hierarchy, village or caste affiliation and fear of reprisal all influence what a witness remembers and what a witness is willing to say. At the same time, there is very limited indigenous experimental research on memory in forensic settings, and judicial reasoning about reliability tends to rely on common-sense heuristics such as demeanour, consistency and the natural conduct of witnesses.

This paper therefore asks three questions. First, what does psychological research tell us about the reliability of human memory in forensic contexts? Second, how does Indian evidence law and case law currently evaluate eyewitness testimony? Third, where do the two diverge, and what reforms may close the gap? The paper aims to contribute a structured, India-focused synthesis that may assist judges, prosecutors, defense lawyers, police officers and policymakers.

2. Materials and Methods

2.1 Research design

This study is a doctrinal and interdisciplinary narrative review. It does not involve human participants and does not report primary experimental or survey data. The design was chosen because the objective is to analyse legal rules and judicial reasoning in light of established psychological findings, rather than to measure memory performance directly.

2.2 Sources

Three categories of sources were used:

1. **Psychological literature:** Foundational and widely cited peer-reviewed articles, meta-analyses, books and review papers on eyewitness memory, confidence-accuracy relations, identification procedures and investigative interviewing.
2. **Legal and statutory material:** The Indian Evidence Act, 1872, the Code of Criminal Procedure, 1973, and, where relevant, the successor statutes (the Bharatiya Sakshya Adhiniyam, 2023 and the Bharatiya Nagarik Suraksha Sanhita, 2023), which replaced the earlier enactments for proceedings under them with effect from 1 July 2024. Section references in this paper are to the earlier statutes under which the cited judgments were decided;
3. **Judicial decisions and official reports:** Leading judgments of the Supreme Court of India on witness reliability, test identification parades, sole-witness convictions and hostile witnesses, together with reports of the Law Commission of India and the Committee on Reforms of Criminal Justice System.

2.3 Analytical approach

The materials were analysed through thematic synthesis. Psychological findings were grouped by stage of memory (encoding, storage and retrieval) and by system versus estimator variables, following the framework generally used in the eyewitness literature (Wells & Olson, 2003). Judicial pronouncements were then examined to identify the tests applied by courts, and these were mapped against the psychological themes to identify points of convergence and divergence.

2.4 Limitations

The study relies on secondary sources and on selected judgments rather than on an exhaustive database of trial court decisions. Most experimental eyewitness research originates in Western countries, and its generalisability to Indian populations has not been established through extensive local replication. Case law is cited by reporter reference as commonly reported; readers are advised to verify the full text of each judgment before relying on it in legal practice.

3. Results

3.1 Psychological findings relevant to criminal trials

Memory is reconstructive. Memory is not a recording. Bartlett (1932) showed that recalled stories were altered to fit existing schemas, and Schacter (1999) described systematic memory errors, including transience, misattribution, suggestibility and bias, as natural by-products of an adaptive memory system. An honest witness can therefore be sincerely mistaken.

Misinformation and suggestion. Loftus and Palmer (1974) found that leading verbs in questions affected witnesses' estimates and later reports. Loftus (2005) reviewed thirty years of evidence that post-event information can be incorporated into memory. In the investigative context, repeated questioning, exposure to other witnesses' accounts, media reports and leading questions by police may all contribute to such contamination.

Estimator variables. Factors outside the control of the justice system affect accuracy. Meta-analytic work indicates that high stress can impair identification accuracy and recall of details (Deffenbacher et al., 2004), that the presence of a weapon draws attention away from the perpetrator's face (Steblay, 1992), and that people are generally better at recognising faces of their own racial group than of other groups (Meissner & Brigham, 2001).

System variables. Factors under the control of the justice system include the structure of identification procedures and the manner of interviewing. Wells et al. (1998) recommended that the person administering a line-up should not know which person is the suspect, that fillers should match the witness's description, that the witness should be told the perpetrator may not be present, and that the witness's confidence should be recorded immediately. Fisher and Geiselman (1992) developed the cognitive interview, which uses context reinstatement and open-ended retrieval to elicit more accurate information without leading the witness.

Confidence and accuracy. Courts and juries often treat a confident witness as a reliable one. A synthesis by Wixted and Wells (2017) concluded that confidence and accuracy are strongly related when initial identifications are made under pristine conditions, that is, with a fair procedure, no suggestion and an immediate record of confidence, but that confidence expressed later, especially after feedback or repeated exposure, is a much weaker indicator of accuracy. In Indian trials, a witness's first expression of confidence is almost never recorded, and in-court identification occurs years later.

3.2 The Indian statutory framework

The following features of the statutory framework are most relevant:

1. **Competence and weight.** Under the Indian Evidence Act, 1872, and Bharatiya Sakshya Adhiniyam, 2023 any person who understands the questions put to them and can give rational answers is competent to testify (Section 118 of IEA / Section 124 of BSA)). The statute does not prescribe the weight to be given to any particular witness; this is left to judicial assessment.
2. **No corroboration rule for ordinary witnesses.** Section 134 of IEA / Section 139 of BSA permits conviction on the testimony of a single witness, subject to the court's satisfaction regarding its credibility.
3. **Identification.** Section 9 of IEA / Section 7 of BSA 2023, makes facts necessary to establish identity relevant. The Code of Criminal Procedure, 1973 (Section 54A) / Section 54 of BNSS 2023, allows a court to direct that an arrested person be identified by witnesses. In practice, this is done through a test identification parade (TIP) conducted by a magistrate or executive magistrate.
4. **Prior statements.** Statements made to police during investigation are governed by Section 162 of the Code of Criminal Procedure / Section 181 of BNSS and are not signed by the witness; statements recorded before a magistrate under Section 164 of Cr.P.C. / 183 of BNSS carry additional formality. These earlier statements are central to impeaching inconsistencies at trial.
5. **Hostile witnesses.** Section 154 of the Evidence Act / Section 157 of BSA allows the court to permit the party calling a witness to put questions that may be put in cross-examination.

3.3 Judicial approaches to reliability

Classification of witnesses. In *Vadivelu Thevar v. State of Madras* (1957), the Supreme Court described witnesses as wholly reliable, wholly unreliable, or neither wholly reliable nor wholly unreliable. A conviction can rest on a wholly reliable single witness, a wholly unreliable witness must be rejected, and in

the third category the court should look for corroboration. This approach was applied in later decisions such as *Lallu Manjhi v. State of Jharkhand* (2003).

The "sterling witness" standard. In *Rai Sandeep alias Deepu v. State (NCT of Delhi)* (2012), the Supreme Court described the kind of witness whose testimony may be accepted without further corroboration as one of very high quality and caliber, whose version should be consistent with the prosecution case and with other evidence, and whose account is unassailable on material points. While this standard guards against careless reliance on weak witnesses, it also relies on the court's perception of a witness's quality, which is the very kind of judgment that psychological research suggests is error-prone.

Test identification parades. The Court has repeatedly held that a TIP is a part of the investigation and that identification in the parade is not substantive evidence; the substantive evidence is the witness's identification in court, and the parade serves only to corroborate it (*Matru v. State of U.P.*, 1971). Unexplained delay in holding a parade has been treated as weakening its value (*Kanta Prashad v. Delhi Administration*, 1958). In *Dana Yadav v. State of Bihar* (2002), the Court considered the evidentiary consequence where a parade was not held or where witnesses had earlier opportunities to see the accused. These decisions show that courts recognise the risks of delay and suggestion, though they typically analyse them through the lens of corroboration, not memory science.

Hostile witnesses and witness integrity. In *Sat Paul v. Delhi Administration* (1976), the Court clarified the meaning and treatment of hostile witnesses. In *Zahira Habibulla H. Sheikh v. State of Gujarat* (2004), the Court underscored that fair trial requires protection of witnesses from intimidation and inducement. A witness who retracts may be doing so because of pressure and not because the original account was inaccurate; conversely, a consistent witness may be repeating an account hardened by repetition and rehearsal rather than accurate memory.

Official reports. The Committee on Reforms of Criminal Justice System (2003), commonly called the Malimath Committee, and the Law Commission of India (2006) in its report on witness identification and protection, both highlighted witness hostility, intimidation and delay as systemic problems that damage evidence quality. Neither report, however, centred the cognitive science of memory.

3.4 Mapping psychology to doctrine

Table 1. Convergence and divergence between psychological findings and Indian judicial practice

Psychological finding	Indian legal position	Assessment
Memory is reconstructive and suggestible	Courts assess "natural conduct" and consistency of witnesses	Partial divergence: consistency is valued, but suggestion by police or others is rarely examined
Confidence is a weak indicator after delay or feedback	Demeanour and firmness in cross-examination are often treated as credibility signals	Divergence
Delay degrades memory and increases contamination	Delay in TIP is criticized; delay in trial is rarely linked to memory loss	Partial convergence
Fair line-up procedures reduce false identifications	TIP is conducted by magistrates, but no mandatory double-blind or fillers-matching protocol in statute	Partial convergence; procedural gap
Cross-race and stress effects exist	Not formally recognised in case law	Divergence
First accounts and recorded confidence are most diagnostic	Statements are used for contradictions	Gap
Open-ended interviewing improves quality	No statutory guidance on investigative interviewing method	Gap

4. Discussion

4.1 The credibility paradox

Indian courts have wisely cautioned that testimony must be weighed, not counted, and have built a graded framework for assessing witnesses. Yet the underlying tools of that assessment, namely demeanour, consistency and natural conduct, are the heuristics that psychological research finds least predictive of accuracy. A witness who is calm and confident at trial may be no more accurate than a hesitant one, and may in fact simply have rehearsed the narrative through repeated statements. The paradox is that the legal system acknowledges the fallibility of witnesses but provides judges with few validated tools to detect it.

4.2 Delay as an Indian specificity

Because of delays between incident, investigation and trial, many Indian witnesses testify years after the event. Memory research consistently finds that unaided recall declines over time and that reconstruction fills the gaps with inference, expectation and information acquired later (Schacter, 1999; Loftus, 2005). Indian courts often treat minor discrepancies as normal and attribute them to lapse of time, which is psychologically sound. Less attention is paid to the opposite risk: that long delay combined with repeated police and prosecutorial contact can produce a smooth, detailed and confident account that is partly constructed.

4.3 Identification evidence

Identification parades are a valuable safeguard in principle, but their value depends on procedure. International recommendations stress blind administration, unbiased instructions, appropriate fillers and immediate confidence statements (Wells et al., 1998). Indian practice, as reflected in judicial commentary, focuses on timeliness, the absence of prior exposure of the accused to witnesses and the conduct of the magistrate. These are necessary but not sufficient conditions. The Indian approach that treats in-court identification as the substantive evidence is also problematic, because in-court identification of an accused seated in the dock is inherently suggestive. In the United States, the Supreme Court has recognised the risk of suggestive identification procedures in cases such as *Manson v. Brathwaite* (1977), while declining in *Perry v. New Hampshire* (2012) to extend due-process screening to suggestiveness not arranged by police. Comparative law thus offers both models and cautions, and Indian courts may draw on this discussion without importing it wholesale.

4.4 Police practices and the risk of contamination

Investigative interviewing in India is generally unstructured, and written statements are summaries rather than verbatim accounts. Research on false confessions and police-induced error underscores that pressure and suggestion in investigative settings can shape what people say (Kassin et al., 2010). Although that

literature concerns suspects, the same dynamics of expectation and suggestion affect witnesses. Audio-visual recording of witness interviews, training in non-leading questioning, and adoption of cognitive-interview principles (Fisher & Geiselman, 1992) would add reliability without requiring any change in the substantive law.

4.5 Witness protection and hostility

Witness reliability is not only a cognitive issue but a social one. A witness who fears retaliation may withhold or alter testimony, and the resulting inconsistency may be wrongly read as a sign of unreliable memory. The Supreme Court's emphasis on fair trial in *Zahira Habibulla H. Sheikh* (2004) and the recommendations of the Law Commission of India (2006) recognise this problem. Any reform of eyewitness evidence must therefore be coupled with credible witness protection.

4.6 Recommendations

1. **Structured investigative interviewing:** train police in open-ended and cognitive-interview techniques and record first accounts, preferably in audio-visual form.
2. **Reformed identification protocols:** issue binding guidelines for double-blind administration, similar fillers, neutral instructions and immediate recording of the witness's confidence.
3. **Judicial education:** include memory science in judicial academies' curricula so that judges understand confidence-accuracy relations, suggestibility and delay effects.
4. **Cautionary guidance on in-court identification:** treat dock identification of an unfamiliar accused as weak evidence unless supported by a properly conducted prior identification.
5. **Expert evidence:** create a framework by which courts may, in appropriate cases, receive expert testimony on the psychology of memory, while retaining control over its admissibility.
6. **Indian empirical research:** fund field and laboratory studies on eyewitness memory in Indian populations, including studies of cross-caste, cross-regional and cross-linguistic effects, court-record analyses and judicial decision-making.
7. **Witness protection:** operationalize and resource witness-protection mechanisms so that variations in testimony can be interpreted correctly.

4.7 Limitations and future directions

This paper is a conceptual synthesis. Future work might include systematic analysis of a random sample of sessions-court judgments to measure how often identification evidence is the principal basis for conviction,

experimental studies using Indian participants and realistic stimuli, and surveys of judges and police regarding their beliefs about memory.

5. Conclusion

Eyewitness testimony will continue to be indispensable in Indian criminal trials, but its evidentiary weight must be calibrated to what is known about human memory. Indian jurisprudence has laid down valuable principles: it rejects blind reliance on numbers of witnesses, demands corroboration for imperfect witnesses, and subjects identification parades to scrutiny. However, the tools used to measure reliability remain largely intuitive and are not informed by the science of memory. By adopting structured interviewing, scientifically informed identification procedures, judicial training, cautious treatment of in-court identification and strong witness protection, the Indian justice system can reduce the risk of wrongful conviction and wrongful acquittal alike. The integration of psychology and law should be viewed not as a challenge to judicial discretion but as a means of strengthening it.

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