

Decoding Criminal Minds: A Study of Criminal Profiling Methods and the Forensic Science Investigation in the Criminal Justice System in India

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ABSTRACT

Criminal profiling is a process where the end result of the actions of an offender is inverted to rebuild their personality and motives. This method assists the police in their work by guessing the logic of crime, which makes the investigation more effective. Crime and criminals in India have been a major problem to law enforcement and there is an immediate need to enhance criminal profiling methods. The existing approaches such as social, economic, anthropological and psychodynamic approaches have their limitations. By 2023, 427 rape, sexual assault, POCSO, and homicide cases samples were in await, which showed that the system was inefficient. According to the Forensic Science India Report, the problems in the forensic labs are systemic, including poor infrastructure, understaffing, and absence of standard operating procedures. Between 2013 and 2018, 40.3 percent of authorized posts in forensic laboratories were empty and this affects the efficiency and speed of criminal trials and the judicial system. The purpose of this paper is to connect law and human behavior through the analysis of the behavioral patterns applicable to the criminal profiling. It attempts to present the information on criminal penology in India and give suggestions on how to improve it. The important elements of profiling like the crime scene analysis, behavior analysis, victimology, geographical profiling, and psychological profiling shall also be mentioned. Such approaches as inductive and deductive reasoning and the combination of profiling and law enforcement will also be discussed. The idea is to improve the validity and use of criminal profiling in the legal system and it is presently known that the research and assessment should continue. Criminal profiling is an effective instrument in crime investigations as it aids in comprehending the actions of the offenders, reduces the size of the suspects and focuses on the investigation process. Nonetheless, there is a necessity to critically assess and keep on enhancing profiling methods. The criminal justice system can be strengthened through addressing the challenges in the forensic science laboratories and improving the profiling methodologies that will help in improving the speed and accuracy of criminal investigations in India

Key Words: *Criminal Profiling, Forensic Investigation, Criminal Psychology, Forensic techniques, Criminal Behavior*

INTRODUCTION

The study of criminal behaviour has emerged as a crucial aspect of modern-day investigation where law enforcers are progressively trying to get out of their intuitive and traditional interrogative techniques and explore scientific and behavioural theories¹. Criminal profiling that analyses the behaviour patterns, the characteristics of offenders and the crime scene behaviours offers the investigators an analytical tool to unlock the thoughts and actions of the offenders. Simultaneously with this, forensic science has taken a leading role in the Indian investigative sphere, and physical, biological and digital pieces of evidence have been decisive in recreating events and determining the truth of a crime². The increased reliance on forensic techniques has been part of a larger change of confession oriented investigation to evidence based policing.

Regardless of these changes, India does not have an entirely institutionalised structure of criminal profiling and behavioural analysis. Profiling is largely an informal affair that is dispersed in investigative experiences instead of being pegged on a coherent model that involves the presence of trained behavioural experts³. This disconnect is even further escalated when compared to those

¹ B.R. Sharma, *Forensic Science in Criminal Investigation and Trials* (LexisNexis 2023).

² Brent E. Turvey, *Criminal Profiling: An Introduction to Behavioral Evidence Analysis* (Academic Press 5th ed. 2023).

³ David V. Canter, *Criminal Psychology: Topics in Applied Psychology* (Routledge 2020).

jurisdictions that have had behavioural science units and well-designed offender profiling systems. Lack of cohesive behavioural approach in Indian policing is a major research gap that should be investigated⁴.

The given study is thus aimed at evaluating the conceptualisation, application and conception of criminal profiling, as applied in the criminal justice of India and how the forensic science investigation supplements or offsets the drawbacks of behavioural methods. The study answers some of the most important questions such as how extensively profiling is used in India, the current strengths and weaknesses of forensic investigation and how behavioural insights and forensic evidence could be combined to achieve more accurate results of the investigation. The research design is based on qualitative analysis of legislations, case decisions, NCRB data, forensic principles and academic analysis. This serves as a basis to a historical and conceptual analysis of the development of profiling and forensic science that proceeds in the next section.

Historical Evolution of Criminal Profiling and Forensic Investigation.

Interpretation of criminal behaviour has its roots in the European efforts to explain violent offenders especially in the late nineteenth century. Among the first uses of behavioural inference described was in the study of the Jack the Ripper murders in London, where by the police authorities conducted an informal study of the modes of operation of the offender, the choice of his victims and the distribution of crimes in order to derive speculative behaviour images⁵. Despite being primitive, these primitive attempts indicated the possibility of analyzing offender behaviour as a method of investigation. Criminal profiling, as it is known today, was however founded in the United States when the Federal Bureau of Investigation set up its Behavioural Science Unit in the 1970s⁶. The unit had developed systematic profiling techniques based on case interviews, offender and crime scene typologies. Similar progress in the United Kingdom, especially in investigative psychology under David Canter, provided the theory rigour and empirical methods that formed the modern-day models of profiling.

Forensic science developed on a parallel but complementary path as criminal justice systems throughout the world started to depend on physical and scientific evidence. The twentieth century was marked with the great progress, fingerprint classification systems, ballistic examination, forensic toxicology and serology⁷. The identification of DNA profiling in the 80s transformed the evidence procedure by allowing a very precise identification of criminals, the standards of evidence were redefined, and the dependability on confessions was replaced with objective scientific indicators⁸.

In India, forensic investigation has its origins in colonial policing systems, where scientific methods like fingerprinting were previously introduced before in a number of other jurisdictions. India was a leader in setting up organised fingerprint bureaus such as the Fingerprint Bureau in Kolkata. After independence, India established the Central Forensic Science Laboratories and other state laboratories to assist in the scientific investigation of a criminal case. With time, the courts and police investigators came to realise the weaknesses of confession based policing, particularly with regards to the issue of custodial coercion. This resulted in a slow institutional change of integrating forensic science into a key investigative instrument⁹. As the forensic capability has been continuously growing, behavioural profiling is relatively underdeveloped thus creating the groundwork to explore the conceptual framework of profiling further in the next section¹⁰.

Conceptual framework and understanding Criminal Profiling Theory.

Criminal profiling can be defined as a methodical effort to infuse the behavioural pattern, personality and most likely traits of an offender through examining the nature of the crime, crime scene setting and the manner in which the victim interacted with the offender. It is based on the assumption that behaviour leaves footprints and the footprints, once analysed scientifically, provide useful information about the motivation and the psychological make-up of the offender¹¹. Profiling utilises a number of elements, such as crime scene features, order and method of how the offence was committed, post offence behaviour and victimology, which involves how a certain victim was selected and what relationship existed between the offender and the victim. In this context, the profiling methods are broadly categorized as deductive profiling, which is based on the conclusions made based on the specifics of a specific case; inductive profiling, which is based on the statistical trends of similar cases; and geographic profiling, which is based on spatial trends to determine the likely location of the offenders¹².

The overall aim of profiling in the criminal justice system is to improve the investigation procedure by defining behavioural frameworks that may lead the law enforcement agencies. Profiling also helps in reducing the number of suspects particularly

⁴ S.L. Vaya et al., *Forensic Psychology: The Basics* (Sage India 2021).

⁵ John Douglas & Mark Olshaker, *Mindhunter: Inside the FBI's Elite Serial Crime Unit* (Scribner 2017).

⁶ David V. Canter, *Investigative Psychology: Offender Profiling and the Analysis of Criminal Action* (Wiley-Blackwell 2011).

⁷ Richard N. Kocsis, *Criminal Profiling: Principles and Practice* (Humana Press 2013).

⁸ Paul L. Kirk, *Crime Investigation: Physical Evidence and the Police Laboratory* (Interscience 1953).

⁹ B.R. Sharma, *Forensic Science in India: A Vision for the Future*, 44 *Indian Journal of Forensic Medicine & Toxicology* 23 (2022).

¹⁰ Rukmani Krishnamurthy, *Evolution of Forensic Science in India*, *Journal of Indian Academy of Forensic Sciences* (2021).

¹¹ Richard N. Kocsis, *Applied Criminal Psychology: A Guide to Forensic Behavioral Sciences* (Charles C. Thomas 2019).

¹² Wayne Petherick, *Profiling and Serial Crime* (Academic Press 3d ed. 2021).

with serial crimes whereby the repetition of behaviour is more clearly evident¹³. It is also useful in enabling the investigators to comprehend the motive and mode of operation of the criminal and provide leads on the capabilities of the criminal, state of mind and planning. When combined with forensic evidence, profiling can be used to support strategic decisions in the investigation and enhance the general comprehension of the crime.

Profiling has received a lot of criticism in spite of its utility. The threat of investigator bias is one of the biggest problems since subjective interpretations can cause incorrect or misguided conclusions. The lack of standardisation between jurisdictions is another weakness of it because profiling practices tend to be inconsistent depending on training, intuition or experience but not on systematic methodological frameworks¹⁴. Ethical and legal issues also come into play especially on the admissibility of behavioural evidence in court where speculative or untested psychological test would be in conflict with the evidentiary standards. These constraints underline the importance of cautious incorporation of profiling into a scientifically based investigative framework, and the aspect is of particular concern in the Indian context.

Forensic Science Investigation in India.

The role of forensic science in the criminal justice system of India has been gradually gaining prominent position backed by a growing institutional framework and increased judicial focus on the scientific approach to investigation. The institutional structure includes a system of Central Forensic Science Laboratories that work under the Directorate of Forensic Science Services and offer specialised examination in such disciplines as DNA profiling, toxicology, ballistics, cyber forensics and examination of questioned documents. In line with this, State Forensic Science Laboratories also serve as the main backbone to the day to day activities of the police investigations, and in most cases they receive a large amount of physical and biological evidence¹⁵. The creation of National Forensic Sciences University has further improved the educational and capacity building ecosystem through provision of advanced training, research opportunities and specialised programmes to the investigators, forensic scientists and legal professionals. All these facilities collectively constitute the Indian forensic infrastructure¹⁶.

The legal framework has also been transformed dramatically with the enactment of the Bharatiya Nagarik Suraksha Sanhita 2023 that explicitly promotes scientific inquiry and broadens the rules regarding forensic evidence. The law focuses on the compulsory forensic collection of some types of crimes and aims at establishing uniformity in the procedure of maintenance, analysis and admissibility of scientific evidence¹⁷. Moreover, the suggested models like the DNA Technology Regulation Bill are intended to come up with legal protections of the application of DNA profiling by means of regulating gathering, storing and utilizing genetic information¹⁸. In conjunction with these legislative initiatives, the judiciary has continued to emphasize the value of forensic science in ensuring that the investigation is fair and reliable¹⁹ with the view that scientific evidence tends to serve as a counter to the weaknesses of oral evidence as a reliable counterpart²⁰.

In spite of its expansion, forensic investigation in India has significant issues in terms of operations. There is an ongoing lack of trained forensic specialists, which causes the uneven distribution of expertise on a state-to-state basis²¹. Labs are often faced with a pile of samples and thus, there is a lot of delay in the delivery of the forensic report which leads to the postponement of a trial and the extension of the stay of an undertrial in jail²². Disparities in infrastructures across states also increase the difference in quality and in time of access to forensic services, with some labs being understaffed or having outdated equipment. These issues hinder the complete fulfilment of forensic science as an effective instrument of investigation and support the necessity of systematic reinforcement, especially in cases of combining forensic findings with the behavioural analysis and criminal profiling²³.

Criminal Profiling and Forensic Investigation Interplay.

Crime scene is a peculiar intersection point of behavioural patterns and physical evidence providing the investigator with vital information regarding the activities and the psychology of the criminal. Criminal profiling uses behavioural indicators like the mode of attack, degree of planning, victim selection and after offence behaviour whereas forensic science studies physical evidence like prints, biological evidence, weapon impressions and computer artefacts. These dimensions taken jointly allow a more detailed reconstruction of crime events so that the investigators can gain an insight into not only what

¹³ Snook, Brent & Cullen, Richard & Bennell, Craig & Taylor, Paul & Gendreau, Paul. (2008). The Criminal Profiling Illusion What's Behind the Smoke and Mirrors?. *Criminal Justice and Behavior - CRIM JUSTICE BEHAV.* 35. 1257-1276. 10.1177/0093854808321528.

¹⁴ Laurence Alison, *The Forensic Psychologist's Casebook* (Routledge 2020).

¹⁵ Directorate of Forensic Science Services, *Status of CFSL and SFSL Infrastructure* (MHA 2023).

¹⁶ K. Jagadeesan, *Human Resource Deficiency in Indian Forensic Labs*, *Indian Police Journal* (2024).

¹⁷ A.P. Singh, *Forensic Science in India: Challenges and Prospects*, 49 *Indian Police Journal* 45 (2022).

¹⁸ DNA Technology (Use and Application) Regulation Bill 2019.

¹⁹ *Manoj v. State of M.P.*, (2022) 4 SCC 1.

²⁰ *Selvi v. State of Karnataka*, (2010) 7 SCC 263.

²¹ Law Commission of India, *Report on DNA Profiling* (2017).

²² Rakhi Desai, *Forensic Science Backlogs and Delays in India*, *Economic and Political Weekly* (2023).

²³ Aditi Sharma, *Disparities in State Forensic Labs*, 18 *Journal of Forensic Sciences & Criminal Investigation* 41 (2023).

occurred but how and why it occurred²⁴. This combination of behavioural and scientific explanation makes the investigational story stronger and leads to more oriented and informed decision making.

The advantages of the combination of profiling and forensic evidence are especially important with complex crimes when the motives and the identities of the offenders are hard to determine. Serial murders tend to have signatures of repetitive behaviour that when coupled with the forensic connection like DNA or ballistic similarities can be used to identify the patterns of several offences²⁵. In sexual crimes behavioural evidence can be used to supplement forensic evidence of medical and biological tests which are used to identify the victim and the offender fantasy. Terror crimes and organised violent acts also need the knowledge of psychological motivation in combination with technical forensic examination of explosives or digital communication. Child abduction cases are also not left behind since timelines of behavioural patterns, geographical profiling, and forensic evidence are also critical in reproducing movements and reducing the suspect pool within a short time.

A profiling and forensic science combination provides significant powers to the investigative process. It offers a comprehensive knowledge of the offender behaviour as it combines both psychological inference and objective scientific information thus enhancing the validity of the investigative hypotheses. This synergy, also ensures that there is minimum dependence on coercive means and also minimises the chances of wrongful suspicion since the investigative assumptions are based on the evidence based analysis. Finally, the merger of behavioural and forensic methods increases the reliability of investigation and contributes to more responsible and science-oriented system of criminal justice²⁶.

Indian Case Studies and Trends in Judiciary.

The development of profiling and forensic investigation in India can be understood more easily with references to some of the most prominent criminal cases, in which scientific methods and behavioural knowledge had a significant role in the development of the investigation. The Nithari killings can be taken as a clear instance in how crime scene patterns, victim profile and forensic recoveries lead to the realisation of the repetitive and organised nature of the crimes²⁷. The identification of human remains, biological evidence and spatial concentration of victims compelled investigators to consider behavioural regularities and forensic evidence, which proved that a combined-investigative method is possible²⁸. Forensic science was decisive in the Shakti Mills gang rape case as it was used to support the testimony of the survivor by DNA profiling, medical examination and digital evidence. Though behavioural profiling was not embraced, reconstruction of the behavioural pattern of the offenders, spatial mobility and interaction at the crime scene provided behavioural aspects to the forensic evidence²⁹.

The Bhanwari Devi case also brought out the relevance of the forensic result in the reconstruction of events in which the direct evidence was scarce. Biological samples, call records, vehicle traces and site examinations were also used, and they assisted investigators to make sense of the chain of events even when they were contradicting. There are also other instances like serial burglars, cybercrime offenders and organised violence among others that further show how reliance on forensic linkage analysis, crime pattern interpretation and minimal behavioural insights applied haphazardly by investigating officers is becoming increasingly common.

The tendency of judicial also demonstrates a steady focus on the development of scientific temper in the investigation of crimes. It has been repeatedly emphasized by the courts that forensic science makes evidence more reliable and less reliant on oral testimony which can easily be subject to inconsistencies³⁰. Meanwhile, the judiciary have provided warning constraints on the application of theoretical behavioural evaluations, believing that psychological conjectures or offender profiles cannot be used to replace legally viable evidence. The courts have argued that even though profiling can aid in investigation, it has to work within the confines of the standards of evidence that are set out in the Indian Evidence Act. The rationale of judicial therefore promotes a balanced viewpoint in which behavioural perceptions do not eclipse scientific proofs³¹. This harmonisation is an indicator of a developing awareness of profiling as an auxiliary that has to be anchored in verifiable forensic information and so strengthening its responsible use in the Indian criminal justice model and in its constitutional alignment.

Comparative Insights: What other Jurisdictions can teach us.

A number of jurisdictions have established organized frameworks, which combine behavioural science with forensic inquiry, which can be learnt by India. The creation of the Behavioural Analysis Units of the Federal Bureau of Investigation in the United States can be discussed as a formalised model where offender profiling, crime scene evaluation and victimology are

²⁴ Turvey & Petherick, Crime Scene Reconstruction and Behavioural Patterns, 32 Journal of Behavioral Sciences and the Law 145 (2021).

²⁵ David Canter, Linking Physical Evidence with Offender Behaviour, Journal of Investigative Psychology (2020).

²⁶ Anil Aggarwal, Behavioural and Forensic Correlates in Serial Crime, Indian Journal of Criminology (2022).

²⁷ Desk OW. "Pandher Did Not Know About The Murders" [Internet]. Outlook. 2022. Available from: <https://www.outlookindia.com/website/story/pandher-did-not-know-about-the-murders/234202>

²⁸ Shakti Mills Case Analysis, Journal of Forensic and Legal Medicine (2015).

²⁹ Dhruv Sharma, Forensic Reconstruction in the Bhanwari Devi Case, Indian Police Journal (2014).

³⁰ Krishan v. State of Haryana, (2013) 3 SCC 280.

³¹ Ritesh Sinha v. State of U.P., (2019) 8 SCC 1.

implemented in combination with the use of advanced forensic procedures³². These units are based on large databases, empirical studies and interview procedures, which allow to carry out more consistent and evidence based behavioural assessments.

The investigative psychology model developed by David Canter has been embraced by the United Kingdom, focusing on the statistical analysis, research in behavioural science as well as the principles of offender consistency³³. Unlike the intuition based profiling model, this model shifts to data based behavioural interpretation and is more in line with the evidentiary standards. Australia and Canada have come up with co-located patterns of investigation whereby behavioural scientists, forensic scientists, computer specialists and detectives work in multi-disciplinary teams³⁴. Such an institutional arrangement will encourage cross checking behavioural hypotheses with scientific results and make sure that profiling is based on objective evidence.

The comparative systems can provide valuable advice to India. They prove that profiling is most efficient in case of institutional support, specialised training and interdisciplinary cooperation. Some of the elements that India can adopt include structured behavioural databases, lifelong learning and multi-agency investigative unit within police academies and forensic institutions. Such institutionalisation would aid in the development of a standard and scientifically underpinned profiling mechanism that will supplement India growing forensic capacity and enhance the overall quality of criminal investigation³⁵.

Issues and Problems in the Indian Scenario.

There are various structural, legal and ethical issues in India that prevent the successful incorporation of criminal profiling and forensic investigation. The major structural constraint is that the majority of police organisations lack specific behavioural science units. Experiential judgement is widely used by investigators instead of formal behavioural methodologies and this leads to the use of inconsistent and unstandardised approaches. In training academies, officers lack the specialised proficiency to apply behavioural patterns in accurate interpretation because they do not have sufficient exposure to the offender profiling, criminological theory or investigative psychology. This disparity is seen especially in complicated cases that require interdisciplinary knowledge. Legal and evidentiary issues also make the application of profiling in India even more complicated³⁶. Psychological tests or behavioural conclusions are often subject to questions of admissibility, because in order to be admissible a court must have evidence that satisfies the requirements set under the Indian Evidence Act. It is possible to have prejudicial profiling particularly where assumptions made on behavioural grounds are not sufficiently scientifically supported. The lack of standardized instructions on how profiling is to be done or reported in the investigation process adds to the risk of speculative findings that can affect the course of the investigation or the view of the judge with no solid basis of evidence³⁷.

Special attention should also be paid to ethical and human rights. Caste, gender, community or socio economic based discriminatory profiling may contribute to unfair suspicion and support systemic biases. It is necessary to make sure that profiling is applied in a rational and constitutional manner in order to avoid abuse of this tool and safeguard the personal freedom of people. These issues underscore the necessity of a moderate and scientifically based solution that protects the rights and enhances the accuracy of the investigation to make informed recommendations that would help improve the profiling and forensic systems in India³⁸.

RECOMMENDATIONS

A number of reforms are needed to bolster the process of integrating behavioural analysis and forensic science into the Indian criminal justice system. The formation of a national behavioural profiling unit which is manned by professional psychologists, criminologists and forensic specialists would offer an institutional base to a systematic offender profiling. Increasing funding in the development of forensic infrastructure, including the development of modern laboratories, hiring of specialised staff is also necessary to minimise delays and guarantee high quality analysis³⁹. Police officers, prosecutors and judiciary members should be a priority area to build capacity building programmes to develop knowledge regarding behavioural techniques and scientific evidence. Creating standardised procedures in managing crime scenes, collection of

³² FBI Behavioral Science Unit, Crime Classification Manual (Wiley 2013).

³³ David Canter, *Criminal Shadows: Inside the Mind of the Serial Killer* (HarperCollins 1994).

³⁴ *Criminal Profiling: International Theory, Research, and Practice* 327–45 (Richard N. Kocsis ed., Humana Press 2006).

³⁵ Australian Institute of Criminology, *Integrated Forensic and Behavioral Crime Approaches* (2022).

³⁶ I. Kanishga & H.R. Bhargava, Survey on the Underutilization of Forensic Expertise in India: Examining the Dominance of Law Enforcement in Evidence Collection and Investigations, 9 *J. Forensic Sci. & Res.* 67, 067–086 (2025), <https://doi.org/10.29328/journal.jfsr.1001083>

³⁷ Vinay Kumar & Yogendra Singh, Forensic Science in the Indian Legal Framework: Challenges and Opportunities in Criminal Investigations and Trials, 4 *Int'l J. Civ. L. Legal Res.* 213 (2024), <https://doi.org/10.22271/civillaw.2024.v4.i2c.107>

³⁸ Ananya Singh & Prashant Kumar Varun, Forensic Evidence in Criminal Convictions: Need for Regulatory Reform in India, *Indian J. Legal Rev.* Vol. 5(5) 173–183 (2025)

³⁹ Bureau of Police Research and Development, *Training Manual on Behavioural Sciences for Policing* (2024).

evidence and forensic processes would provide more uniformity and consistency in the investigation procedures. Inclusion of behavioural science, criminology and forensic investigation in police and prosecution training programs would create expertise in the long term. Lastly, interdisciplinary collaboration between investigators, forensic scientists and behavioural experts would promote more holistic and evidence based investigations. All these would help in creating a more scientific, responsible and complex investigative mechanism.

CONCLUSION

The theoretical and methodological analysis of criminal profiling and forensic investigation in India assists in revealing the increased role of the scientific and behavioural approach in understanding criminal behaviour and enhancing the results of the investigation. Although forensic science has gained significant institutional acceptance, behavioural profiling has not been well developed, as there is no single and standardised system in Indian policing. The paper points out that science based approach is necessary to go beyond the intuition based level of investigation and into methods that are evidence based, research and analytical rigour based. The combination of profiling and forensic science has undisputed benefits as it enhances the investigative understanding, increases accuracy, and minimizes the chances of false accusation. This kind of integration does not just increase the effectiveness of investigations, but it also leads to a better and more rights conscious criminal justice system. Institutional fortification, interdisciplinary models and the encouragement of scientific temper amongst investigative agencies can all contribute to a better and future oriented criminal investigation in India.

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