

Research on the cognitive misconceptions of investigators

Qiyuan Li, Sixuan Wu, Junyu Fu, Zhaofeng Yu, Zonghao Jiang

Beijing Police College, Beijing 102202, China

ABSTRACT

In the process of criminal investigation, investigators may be limited by individual cognitive structure, psychological mechanism and environmental influence to produce various cognitive misunderstandings, which will affect the efficiency and justice of investigation, and even damage justice, resulting in innocent people being wronged and criminals at large. Based on the interdisciplinary perspective of investigation and cognitive psychology, this paper will analyze the influencing factors of investigators' cognition, further study the complexity and challenges of investigators' cognitive misunderstanding, and point out that future research should dig deeper into the cognitive mechanism in specific investigation situations and further develop targeted intervention measures. Through cognitive training, teamwork and scientific decision-making, it aims to improve the metacognition level of investigators, so as to avoid or reduce the occurrence of misunderstandings in practical work.

KEYWORDS

Investigation cognition; Cognitive misunderstanding; Cognitive psychology; Metacognition

Cognitive psychology views the human brain as an information processing system similar to a computer, emphasizing that existing knowledge and knowledge structures in the mind play a decisive role in human behavior and current cognitive activities, highlighting the integrity of cognitive processes. The cognition of investigators is a specialization of general cognitive psychology, and the level of their cognition, whether correct or not, is directly related to the protection of citizens' rights and the harmony and stability of society due to its specificity.

Marxist philosophy points out that social existence determines social consciousness, and social consciousness in turn reacts back on social existence, clearly stating that social activities are the unity of internal thought and external action. The investigative understanding of investigators, as a form of "thought," deviates under the intersecting influence of subjective and objective factors, leading to investigative errors, which in turn causes investigators to make incorrect "actions," namely investigative behaviors, ultimately resulting in erroneous investigative outcomes. Tracing back along this chain, one will find that the fundamental issue lies in the existence of factors that influence the transformation of investigative understanding into investigative errors. Therefore, a thorough analysis of the causes of investigative errors and the proposal of preventive strategies are of significant theoretical and practical importance for improving investigative systems and ensuring the scientific and fair nature of criminal justice.

1 Introduction

1.1 Research Background

From the perspective of investigative practice, it is not uncommon for investigators to fall into cognitive biases. Under the dual pressures of information overload and time constraints, investigators are prone to making erroneous judgments. Theories such as confirmation bias and anchoring effect in cognitive psychology provide a theoretical basis for explaining these phenomena. From the perspective of theoretical research, relevant studies abroad started early and yielded many results, but they lack a systematic approach; domestic research often begins from practical applications, with fewer results centered on "cognitive biases of investigators." In the current era and social context, it is necessary for investigators to analyze the cognitive processes at each stage of investigative work to avoid erroneous investigative cognition and the evolution of cognitive biases. Therefore, in-depth research on the cognitive biases of investigators is of great significance for promoting the development of investigative theory and guiding practice.

1.2 Theoretical basis

Cognitive psychology views the human brain as an information processing system, studying psychological activities such as perception, attention, and reasoning. Investigative activities are essentially processes of information acquisition, processing, and decision-making, which can be included in the scope of cognitive psychology research. The cognitive biases of investigators, as a special type of bias, deviate from the established track under the intersecting influence of subjective and objective factors. This introduces the concept of "metacognition," which refers to the awareness and understanding of one's own cognitive processes, encompassing knowledge and control over thinking and learning

activities. Its essence lies in self-awareness and self-regulation of cognitive activities. By incorporating this reflection and consideration of their own thinking into investigative activities, investigators can evaluate and reflect on their cognitions after they arise, re-examining the case from an outsider's perspective, and promptly correcting errors to avoid the emergence of investigative biases.

2 The cognitive misconceptions of investigators

2.1 Case-filing contact stage

When investigators encounter a case, the cognitive bias of "first impressions" often becomes the source of wrongful convictions. Due to their long-accumulated experience, they tend to make preliminary judgments about the nature of the case and the identity of the suspect based on limited clues at the first opportunity. This experience-based pre-judgment can provide direction for investigative work, but it also easily leads to fixed thinking patterns, causing investigators to overly rely on subjective judgments and selectively ignore important information that contradicts their pre-judgments during subsequent evidence collection and analysis. For example, in the case of She Xianglin, investigators did not carefully verify whether the deceased was She Xianglin's wife, Zhang Zaiyu, and instead assumed the deceased was Zhang Zaiyu. During the 11 years that She Xianglin was sentenced, there were claims of sightings of Zhang Zaiyu, but these did not attract the attention of investigators, resulting in a nationally shocking miscarriage of justice.

2.2 Investigation and evidence collection stage

There are issues of illegal evidence collection and incomplete information gathering at this stage. Some investigators, in pursuit of speed in solving cases, resort to illegal means such as torture, inducement, and deception to obtain evidence, severely undermining judicial fairness. In terms of information collection, first, there is an excessive reliance on confessions, neglecting the collection of objective evidence, which weakens the chain of evidence. Although this situation has been significantly reduced under the legal principle of "light confessions, heavy evidence" in our country, the misconception of over-relying on confessions remains a significant reason for the singularity and fragility of the evidence chain. Second, there is an excessive reliance on technical means, overlooking the limitations of technology and the value of traditional investigative methods. Third, there is an excessive focus on details while neglecting the overall case, affecting the efficiency and accuracy of investigations.

2.3 Trial breakthrough stage

An excellent investigator will adopt different interrogation methods based on the specifics of the case and the characteristics of the suspect. Their rigorous logical chain can serve as a breakthrough for the case. In contrast, inexperienced investigators, lacking scientific interrogation techniques and methods, such as direct confrontation and emotional interrogation, not only find it difficult to obtain effective confessions but may also exacerbate the suspect's resistance, damaging the interrogation atmosphere and thereby losing the opportunity to find breakthroughs in the case.

2.4 Evidence analysis stage

During evidence analysis, investigators are prone to one-sided interpretations of evidence, understanding it only from a superficial or singular perspective, neglecting the logical relationships and contradictions between pieces of evidence, and hastily reaching conclusions. In the wrongful conviction case of Nie Shubin, one reason the police targeted him was that he did not go to work a few days after the incident, which they interpreted as a sign of guilt, when in fact it was due to a conflict with the foreman at the factory. Secondly, when the police called out to Nie Shubin, he turned and ran away. The police believed that these "abnormal" behaviors were consistent with post-crime psychology, leading them to identify Nie as a suspect. At the same time, some investigators exhibited a disregard for teamwork, overly emphasizing individual capabilities or lacking communication and coordination between departments, which affected the resolution of the case.

2.5 The post-case summary stage

After the case is solved, some investigators neglect to summarize and reflect on their experiences, failing to review the case in a timely manner, which leads to the same mistakes occurring in subsequent cases. In addition, the excessive confidence and complacency that arise after successfully solving a case cause them to overlook the follow-up work, such as improving the evidence chain, leaving hidden dangers in case handling.

3 Influencing factors of investigative misconceptions

In cognitive psychology, cognitive processes are influenced by the interplay of various subjective and objective factors. Investigative activities differ from other general cognitive activities because they are a process that involves multiple stages from case initiation to final conviction, with different influencing factors at each stage. Therefore, to explore the main influencing factors on investigative cognition, it is necessary to delve into the practical work of investigations, uncovering the mechanisms of influence at each stage of the actual work, and further summarizing the subjective and objective causes of investigative misconceptions.

3.1 Subjective factors

(1) Physiological error-causing factors

The philosopher Karl Popper repeatedly emphasized in his numerous works the fallibility and proneness to error of human beings. He once clearly pointed out: "Human beings are biological organisms, and all biological organisms are prone to making mistakes." As natural beings, all human activities are rooted in their physiological basis, and physiological disorders and physiological limitations constitute the physiological mechanism of errors. When investigators work for long periods beyond their capacity, their energy and physical strength will gradually be exhausted, and their attention will be difficult to concentrate. Working under such conditions, it is inevitable that they will make mistakes.

(2) Psychological factors causing the error

The factors leading to rational errors mainly involve the psychological shortcomings and obstacles of investigators during investigative activities. These factors include the influence of emotional states, motivations, and attitudes on cognitive processes. Emotional fluctuations during interrogations may lead to biases in the interpretation of suspects' statements.

(3) Sensory error-causing factors

Perceptual error factors stem from the limited perception abilities of the investigative subject. When investigators' sensory responses to new information about a case diminish, it can lead to perceptual inertia and subsequently trigger negative perceptual adaptation, resulting in investigative errors. Investigators' limited perception abilities and reduced sensory responses to case information can easily lead to illusions or negative perceptual effects, forming biases that result in investigative errors.

(4) Thinking factors that cause errors

Cognitive error factors mainly include subjective, experiential, dogmatic, and conservative erroneous thinking patterns of investigators. These erroneous thinking patterns may hinder investigators from stimulating creative thinking, and negative cognitive biases and outdated thinking methods can affect rational judgment of case information.

3.2 Objective factors

(1) Investigative activity characteristic factors

Investigative activities themselves are highly complex and filled with uncertainty. The occurrence of a case is often accompanied by various influencing factors, including scene conditions, evidence preservation, and suspect behavior patterns. These factors lead investigators to face challenges when collecting evidence and analyzing the case.

On one hand, the incompleteness of evidence: Due to the passage of time, scene destruction, and other reasons, the evidence collected by investigators is often incomplete, leading to limitations in understanding the facts of the case. On the other hand, the complexity of the case: The case may involve multiple suspects, multiple crime scenes, and various methods of committing the crime, with intertwined factors increasing the difficulty of the investigation.

(2) External environmental factors

First, in the environmental context of the scene, suspects often possess a certain level of counter-investigation awareness, which can increase the difficulty for investigators in solving cases through methods such as disguising themselves, destroying the scene, and tampering with evidence. Second, in the legal environment, investigative activities must be conducted within the legal framework; while legal procedures regulate investigative activities, they may also impose pressure and constraints on investigators, and any violation of the law could lead to investigative errors. Third, in the institutional environment, the inadequacy of the investigative system may lead to cognitive biases among investigators; a lack of effective supervision mechanisms may also result in the abuse of investigative power and the occurrence of investigative errors. Fourth, in the public opinion environment, investigators may make unjust decisions regarding cases due to pressure and attacks from public opinion.

(3) Technical and resource factors

First, technological limitations. The level of development of investigative technology directly affects the cognitive abilities and work efficiency of investigators. Outdated technological means may not meet the needs of modern

investigative work, resulting in investigators being unable to obtain key evidence or clues. Second, improper technical operation. Even with advanced technological means, if investigators operate incorrectly or lack necessary skills training, it may also lead to investigative errors. Third, resource limitations. Investigative work requires a large amount of resources and support, including human, material, and financial resources. Insufficient resources may lead to investigative work not proceeding smoothly or failing to achieve the expected results.

4 Countermeasures

The initiation of a criminal investigation is the starting point of all criminal activities, and the actions of investigators during this process have a crucial impact on the final outcome of the case. It is evident that improving the professional quality of investigators, perfecting the evidence system, and establishing an effective mechanism for correcting wrongful cases are key to preventing similar tragedies from recurring.

4.1 Improve individual quality

Individual qualities refer to the self-improvement of investigators' cognitive levels, with the core focus on enhancing their metacognitive abilities. Through situational simulation training, complex information and uncertain situations are set up, such as introducing misleading information or incomplete evidence, allowing investigators to be exposed to potential cognitive pitfalls in a safe environment, thereby improving their ability to recognize and respond to biases. For example, training courses can guide investigators to use critical thinking when analyzing evidence, encouraging them to conduct a balanced assessment of all evidence rather than focusing only on parts that support existing hypotheses. At the same time, situational adaptability is emphasized, enabling investigators to flexibly adjust their thinking strategies based on the characteristics of the case. This means that investigators need to learn how to adjust their attention allocation and logical reasoning when facing different investigative tasks, thereby reducing the occurrence of cognitive biases.

4.2 Strengthen teamwork

On one hand, team discussions can reduce the impact of cognitive biases through collective intelligence. Team members come from different backgrounds and possess various experiences and knowledge, which helps to examine issues from multiple perspectives and reveal details that individuals may overlook. Additionally, individuals may be influenced by cognitive biases when thinking about problems, and team discussions can help identify and correct these biases, improving the accuracy of decision-making. On the other hand, the diverse perspectives and complementary expertise within the team allow members from different professions to provide specialized knowledge in their respective fields, such as psychologists, forensic experts, technical analysts, and investigative specialists, who can analyze evidence and suspect behavior from different angles, helping individuals break out of their personal cognitive frameworks and promoting a more comprehensive analysis.

4.3 Optimize organizational culture

Establishing a positive organizational culture requires a dual approach of institutional and conceptual efforts. In terms of building feedback mechanisms, implement a "double-blind case review" system to encourage investigators to accept others' opinions, breaking the cycle of confirmation bias and considering information comprehensively; advocate for open-mindedness, encouraging questioning of preliminary judgments to break rigid thinking; establish a dynamic training system that incorporates the latest criminological research findings and new investigative techniques into training content, such as specialized training in areas like new types of cybercrime and biometric identification, ensuring that investigative capabilities evolve in sync with changes in criminal patterns.

4.4 With the aid of technology

Use big data analysis, artificial intelligence and other technological means to assist in investigation and decision-making. Virtual reality and augmented reality technologies can help investigators familiarize themselves with investigation scenarios, and AI-assisted systems can provide multi-dimensional evidence assessment, reduce the impact of subjective judgment, and improve the objectivity and accuracy of case analysis.

The optimization of investigative strategies is a systematic project, and its application still needs to consider individual differences. The cognitive styles, emotional intelligence, and roles of different investigators in a team may all affect their susceptibility to cognitive biases and the effectiveness of their coping strategies. Therefore, future research should

explore how to conduct targeted training based on individual characteristics, aiming for more precise strategy implementation and further enhancing the effectiveness of investigative strategies.

5 Conclusions

This article, based on the intersection of detective science and cognitive psychology, combines the current research background both domestically and internationally, utilizing theories from cognitive psychology and metacognition to clarify the concept, manifestations, influencing factors, and countermeasures of cognitive biases in investigators. Future research should delve deeper into the cognitive mechanisms in specific investigative contexts and develop more targeted intervention measures. Personalized training should be conducted based on individual differences among investigators, such as cognitive styles and emotional intelligence, to further enhance the effectiveness of investigative strategies, improve investigative systems, reduce investigative errors, and ensure judicial fairness.

References

- [1] Characteristic Analysis and Investigation Strategy of Computer Network Crime[J]. Tang Liangyan. Journal of Physics: Conference Series. 2021.
- [2] The Impact of Investigation Strategies and Tactics on Homicide Clearance[J]. Jesenia M. Pizarro;; William Terrill;; Charles A. LoFaso. Homicide Studies. 2020.
- [3] Threat assessment as a school violence prevention strategy[J]. Dewey G. Cornell. Criminology & Public Policy. 2020.