POLICING AS A SCIENCE

Current Status and Effectiveness of Artificial Intelligence Application in Police Law Enforcement in China[1]

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Currently, artificial intelligence, big data, cloud computing and other technologies are used in many aspects of policing in China. China's 2024 Public Security Work Conference emphasised the need to accelerate the improvement of the "professional + mechanism + big data" new policing operation model and to comprehensively popularise the application of artificial intelligence in China's police and law enforcement and enhance its effectiveness.

This study utilises qualitative and quantitative research techniques to explore AI's current status and effectiveness in Chinese police law enforcement. To improve the utilisation of AI in police law enforcement, this study also further explores the influencing factors and enhancement countermeasures of Chinese police officers' willingness to use AI in police law enforcement.

Study 1 used the survey method to select 180 civilian police officers in N city of F province to conduct a questionnaire survey, and 20 of them were randomly selected to conduct semi-structured interviews to clarify the current status of the application of AI in police enforcement in China. Study 2 randomly selected 200 public security police officers in the public security bureau of H city in Z province to conduct a contextual experiment, which used a between-subjects design of task type (objective/subjective task) + transparency (low/medium/high transparency) to analyse the factors affecting the willingness of Chinese police officers to use AI and to propose countermeasures.

Study 1 found that the current Chinese police work, relying on artificial intelligence, has strengthened data collection and governance, promoted data sharing and application, and strengthened situational analysis and research

and judgment, which has effectively improved the ability of social stability, control and management. However, there is a lack of scientific management mechanisms, and the police are unwilling to use them actively enough. The type of police work and the transparency of the algorithm can interact with the police's trust in artificial intelligence and further affect their willingness to use it. Specifically, more complex subjective tasks can lead to the police's willingness to use AI, but if the algorithm can be moderately transparent, the influence of task type will be reduced.

Artificial intelligence has been used to a certain extent in China's police reform to innovate police work mechanisms and improve the effectiveness of social governance. However, due to the lack of scientific management and training mechanisms, the police are not willing to use AI. Objective police work and moderate algorithmic transparency can enhance the police's trust and willingness to use AI.

Introduction

Along with economic and social development, the structure of crime has produced new changes, and crime tends to be specialised, intelligent and hidden. In June 2022, the State Council issued the Guiding Opinions on Strengthening the Construction of Digital Government, encouraging innovations in digital governance models. Public security bodies, as important functional departments for maintaining social security and providing public services, must also use AI technology as the basis for public security work mode change, organisational structure optimisation, police process transformation and a series of explorations for policing and law enforcement. China's 2024 Public Security Work Conference emphasised the need to accelerate the improvement of the "professional + mechanism + big data" new police operation model and to popularise the application of AI in China's policing and law enforcement, and enhance its effectiveness. As a professional force for maintaining social security, how public security bodies can complete digital-driven police transformation in the context of the national strategy of building digital China and digital government and dynamically guard social security and stability under the pattern of great integration and great openness has become a significant issue in the modernisation of public security work.

The development of artificial intelligence provides unlimited possibilities for police work research, and the openness of police work will accept more new things. With the rapid development of the "Internet+" model, "intelligence + machine" has undergone a profound transformation not only in the industrial field but also in the field of public security. In police work, the continuous development of artificial intelligence technology has improved the high-tech content of police work and enhanced the efficiency of public security bodies in administrative law enforcement, thereby protecting the people's

legitimate interests and improving the credibility of public security bodies. As one of China's mega cities, Shanghai is a leading city in economic development and population, and its social governance faces high risks and challenges. For this reason, Shanghai has responded positively to the "intelligentisation" of public security work proposed by the state and has established the construction of an intelligent public security system for the first time in order to improve the level of police management and the ability of social governance. At first, the system played a significant role in public security work, significantly improving the speed of the Public Security Bureau's work and handling of cases and reducing the number of crimes in the jurisdiction.[6] However, the application of AI in police work also suffers from defects such as low levels of technical synergy and unstable algorithmic support. At the same time, public security work in other provinces and cities also differs in the current use of AI due to differences in the degree of development, development concepts and focus on modernisation. Overall, the construction of artificial intelligence in police enforcement in China is still in the primary stage, and the current relevant research mainly conducts theoretical analysis. There is a lack of empirical research support. Some scholars study the problems of intelligent police construction in China's J city from four aspects: data governance, information barriers, platform construction and professional talents,[7] and some studies put forward four significant dilemmas of collaborative governance for community smart policing, namely, insufficient organisational structure, lack of institutional construction, difficulties in data governance and lack of technological means.[8] This study will adopt a survey method to explore the current status of AI applications in Chinese police enforcement concerning the Chinese national context.

The effectiveness of the application of artificial intelligence in Chinese police work is closely related to the willingness of the police to use it. Analysing the factors affecting the police's willingness to use AI and improving the police's trust and willingness to use AI will help further improve the effectiveness of "Artificial Intelligence + Police Law Enforcement." The Unified Theory of User Acceptance of Technology (UAT)[9] points out that three factors influence users' willingness to use related technologies: performance expectation, effort expectation and social influence, to which Tran et al. add task complexity, technological innovation and trust, and investigate the relationship among healthcare professionals in the medical field,[10] i.e. the factors influencing healthcare professionals' willingness to use AI in healthcare. Based on this theory, this study will analyse the factors influencing police officers' willingness to use AI.

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[6]   Zhang 2023.
[7]   Hua 2023.
[8]   Liu 2023.
[9]   Kijsanayotin et al. 2009.
[10]   Tran et al. 2021.

Currently, the application of AI in policing is mainly focused on interrogation,[11] data acquisition and analysis,[12] community governance,[13] intelligence gathering[14] and other aspects involving a wider variety of task types. This study is based on Castelo et al. to categorise policing task types into subjective and objective tasks.[15] Subjective tasks refer to open-ended interpretations based on personal opinion or intuition, such as mediating disputes and accident determination. Objective tasks involve quantifiable and measurable facts, such as business processing and fraud stream analysis. It has been shown that for a given task, willingness to use AI is positively correlated with perceived objectivity.[16] For example, as a subjective task of talent acquisition, the study found that candidates perceived real-life interviews as more professional, fair, flexible and accurate than AI interviews.[17]

In contrast, the willingness to use AI is relatively high in objective tasks.[18] However, there is a lack of empirical research on the effect of subjective/objective tasks on the willingness to use AI in policing. Based on the above analysis, this study proposes First Hypothesis (H1): The type of task can influence police officers' willingness to use AI, and objective policing tasks will have a relatively high willingness to use AI.

In addition to the type of task, trust is a critical issue in technology adoption, as it affects initial adoption and subsequent sustained use of the technology.[19] Trust in the context of artificial intelligence refers to an individual's confident attitude that their weaknesses will not be exploited in a cyber risk environment.[20] Sun et al. proposed a threefold framework of algorithmic trust, which emphasises that when task objectivity is high, people have more confidence in the performance or reliability of the algorithm, corresponding to showing higher cognitive trust.[21] Subsequent studies have also shown that subjects hold trusting attitudes toward algorithms across experimental task types when engaging in objective tasks.[22] When people develop trust in AI, they are more inclined to use it. For instance, in Dietvorst et al. an experiment in which subjects were asked to choose between predicting the outcome of an experiment on their own or using an AI to make a prediction, 74% of the subjects chose to predict on their own and abandoned the use of an AI after seeing that the AI made multiple mistakes.[23] Pearson et al. also demonstrated that trust is highly predictive of AI use through a dual advisor decision task.[24] Accordingly, this paper proposes the Second Hypothesis (H2): Trust mediates the role of police enforcement task type and the willingness of civilian police to use AI.

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[11]   Noriega 2020.

[12]   Kuk 2015.

[13]   Rodríguez-Jiménez 2018.

[14]   Perrot 2017.

[15]   Castelo et al. 2019.

[16]   Castelo et al. 2019; Inbar et al. 2010.

[17]   Diab et al. 2011.

[18]   Logg et al. 2019.

[19]   Kizilcec 2016.

[20]   Corritore et al. 2003.

[21]   Sun et al. 2023; Johnson–Grayson 2005.

[22]   Logg et al. 2019; Reich et al. 2023.

[23]   Dietvorst et al. 2015.

[24]   Pearson et al. 2019.

The dual process model of attitude change suggests that individuals are constantly processing information, consciously and unconsciously, in response to external influences.[25] The dual process model of attitude change suggests that individuals are constantly processing information consciously and unconsciously when exposed to external influences.[26] Due to the "black box effect"[27] civilian police cannot understand the reasoning process and principles behind the use of AI, which in turn affects trust in AI and willingness to use it. For example, Yeomans et al. analysed the role of transparency in an experimental study, which found that the proportion of subjects who chose to accept the help of AI was significantly improved if they were informed of the working principle of AI.[28] Meanwhile, Kizilcec et al. further categorised transparency into low, medium and high levels in their actual study,[29] again verifying the moderating effect of transparency on trust, and this result was supported by several studies.[30] Therefore, this study proposes the Third Hypothesis (H3): Transparency of AI plays a moderating role in the process of policing law enforcement task types affecting trust.

In summary, this study uses survey and experimental methods to explore AI's current status and effectiveness in Chinese policing. Study 1 explores the current status of AI use in Chinese police enforcement through questionnaires and qualitative interviews; Study 2 explores the factors affecting police officers' willingness to use AI in law enforcement through situational experiments and analyses the specific roles of task type, algorithm transparency and trust. The hypothetical model of this study is shown in Figure 1.
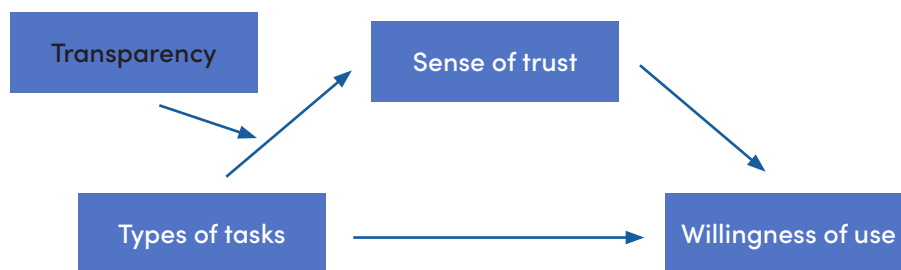

Figure 1: Artificial intelligence willingness to use model diagram (Hypothetical Model)
Source: compiled by the authors

25   Petty–Cacioppo 1986.
26   Petty–Cacioppo 1986.
27   Castelvecchi 2016.
28   Yeomans et al. 2019.
29   Kizilcec 2016.
30   Cadario et al. 2021; Sun et al. 2023; Zhao et al. 2024.

Study 1 – Current status and problems of the application of artificial intelligence in Chinese police law enforcement

At present, China's social development is in a period of transition, and police work presents new situations and new characteristics, facing many challenges, such as the occurrence of problems, the increase of contradictions and the accumulation of risks. Although the construction of artificial intelligence has made specific achievements and stimulated the endogenous power of police and law enforcement, some aspects still need to match the development of social transformation, which restricts the high-quality development of police work. Taking N city of F province as an example, in order to actively implement the police modernisation requirements of the Ministry of Public Security, based on the solid deployment of the provincial department and the implementation of the municipal bureau, the civil police of N city of F province constructed an intelligent AI system after joint participation and joint efforts. This study focuses on the problems in the AI operation process in N city of F province. It investigates police personnel, the technical backbone of the scientific and technological information department, and police officers on duty at the N city police station, etc., to gain a deeper understanding of the situation of applying the AI system in their departments and to determine the current status of AI use in police law enforcement as well as the main problems existing in it. Then, the system, technology and talents were summarised based on the data and information obtained.

Status of artificial intelligence usage

Led by artificial intelligence technology, the field of policing is undergoing an unprecedented revolution. The traditional policing model is gradually being replaced by a new model of intelligence and data, which will provide more comprehensive, efficient, and precise protection for public security.

Creating intelligent law enforcement linkages

In past police work, due to the large population and limited police force, the public security bodies in the administrative enforcement work had cumbersome formalities, and the case-handling cycle was longer. The process is not transparent, resulting in increased pressure on the work of the staff and, at the same time, affecting the credibility of law enforcement. Artificial intelligence technology can effectively solve the above problems. For example, the relevant departments can use artificial intelligence technology to set up a specialised enforcement linkage working group responsible for the coordinated operation of linkage matters, which effectively safeguards the enforcement linkage operation mechanism and promotes the solution to the problem of difficult enforcement.

> "The implementation of the artificial intelligence system is of great convenience to us, since a lot of paperwork has been simplified compared to the time before when you had to go to court and run around between prosecutors, detention centres and lawyers to get a case heard,

now you don't necessarily have to go everywhere to get the necessary paperwork done; now it is much simpler, the direct system helps to submit the approval of the various departments in their competence within the scope of the operation on the line, and greatly improves the efficiency of our work!" (Interview transcript 20230819GBT)

The achievement of precise security prevention and control

The introduction of artificial intelligence technology into public security administrative law enforcement allows police forces to be assigned to places of higher risk by analysing existing violations in the past and situations from multiple perspectives where administrative penalty cases are frequent. At the same time, timely administrative inspections are carried out for subjects that may have violated the law, realising a more agile identification of dangers and, with the help of an extensive data analysis system, making police work comprehensively intelligent. Public security bodies can extract adequate data from a large amount of case information and then combine it with time, space and other factors for analysis to find a variety of crime elements and then summarise the common points of all types of cases for the accumulation of experience. The artificial intelligence system can analyse and summarise all the experiences, build a corresponding model and realise accurate prevention.

> "Public security authorities have already been suffering from a shortage of human resources, and now artificial intelligence will use big data to provide us with key places to focus on during the 100-day campaign, and even provide policing warnings for special situations such as the movement of people; last month we investigated and dealt with a case of crowd gambling through the system." (Interview transcript 20230812SZK)

Promotion of scientific and technological investigations and evidence collection

In the investigation stage, artificial intelligence technology has become an indispensable and essential support for the police in analysing clues and collecting evidence. With the help of face recognition, natural language processing, voice recognition, graph data mining and other AI technologies, the police can efficiently analyse the diversified information in a case and accurately refine key clues, thus significantly improving investigation efficiency. In e-discovery, AI technology can assist the police in recovering deleted documents, parsing network chat records, detecting data anomalies and steganography. If done manually, these tasks are time-consuming, labour-intensive and prone to missing crucial evidence. AI technology makes this process more efficient, reduces human error and ensures that no clues are missed.

> "Times are different now; in the past, we had handwritten transcripts; now, there is a set of templates and even voice input, greatly reducing the work time. The Internet Police Department has a lot of technical means also breathtaking; last year there was a fraud case and the

suspect deleted all the evidence which, in a short period, was restored by the Internet Police, and this provides a great convenience." (Interview transcript 20240816ZWH)

Limitations of artificial intelligence applications

The impact of technology on society is twofold. On the one hand, it brings significant social benefits and promotes the progress and development of society. On the other hand, the widespread application of technology is accompanied by increased risk and the escalation of potential threats.[31] Therefore, in promoting the application of AI technology in policing, it is necessary to fully recognise the duality of its impact and develop corresponding response strategies.

Lack of scientific management mechanisms

First, the legal status is vacant. The emergence and development of artificial intelligence have reduced the pressure of cumbersome police work and improved work efficiency, but it has also brought challenges. There is no specific legal basis for applying this new type of law enforcement, and the authority of the police and the legitimacy of police enforcement cannot be guaranteed.[32] In addition, the problems of algorithmic black box, insufficient transparency and interpretability also lead to the restricted application scenarios of AI in police law enforcement, and the enthusiasm of the police is affected.

> "Sometimes, it is not that we do not want to use AI; it is that the people do not believe in those machines, and the country does not have a unified plan for the credibility of AI, not to mention that they do not believe in it, but we are also weak when we use it for fear that something will go wrong. After all, we do not know too much about how artificial intelligence works." (Interview transcript 20240714DX)

Second, the platform construction could be better. Significant differences exist in constructing AI systems in China's provinces and cities. The police in each region work separately, and each regional system is self-contained. There is a lack of effective communication between different police departments, and there are information barriers. In addition, in the process of gradual construction and improvement of the system, there is a turnover of new and old systems, and there will be data garbage.

> "It took me ages to learn how to use that platform before, and now there is a new platform. How can I learn to understand it at my age? Every day I have to go to those young police officers for help: it troubles both the others and myself." (Interview transcript 20240827GBT)

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[31]   Zhang 2019.
[32]   Feng 2022.

Risks at the technical level

Public security bodies are administrative institutions of an armed nature. However, the current artificial intelligence technology still lacks subjectivity, cannot promptly adapt to the local situation on a case-by-case basis, and cannot make value judgments.[33] In addition, the application of artificial intelligence in the public security administrative law enforcement field includes collecting, processing and using citizens' personal privacy information, and data security and confidentiality will also become a top priority. Currently, AI products are mainly constructed with the assistance of third-party organisations. If they are not protected promptly and comprehensively, they can easily lead to the illegal use of citizens' personal information by criminals and threaten social stability.

> "I feel that some simple work, such as data collection, suspect identification, track query with this artificial intelligence is more reliable; what concerns such complex work as mediation of civil disputes, accident liability determination, who dares to believe that the judgment of the artificial intelligence is flawless ah, the people will not be convinced." (Interview transcript 20240821ZXK)

Insufficient willingness to use AI

With the rapid development of artificial intelligence, public security has considerable data talents that have become a critical factor in modernising police work. On the one hand, the comprehensive ability of ordinary civilian police is insufficient. Policing in the era of big data requires that civilian police have a certain degree of expertise in big data. However, most of the community police just mastered data entry, query and simple statistics, and other basic operations, like data depth mining, correlation analysis, data modelling, comprehensive research and judgment, and other higher-order application capabilities are lacking, the ability to resolve and prevent security risks in advance is insufficient, and there is still a particular gap in the work concept, operational skills and the actual needs of the police work. According to statistics, more than 60% of the police do not know enough about AI and are even reluctant to use AI in police law enforcement, which is ultimately a lack of understanding of AI, resulting in the police not daring to use it and not knowing how to use it.

On the other hand, the number of artificial intelligence professionals needs to be increased. F province N city public security bodies specialising in science and technology work only occupy a small portion; most of them belong to the ordinary police or part-time auxiliary police, and they need to deal with all kinds of daily policing, have no time to participate in the relevant training. The unique nature and sensitivity of public security work determine that much of the work content cannot be interfered with by third-party organisations; many units have a shortage of talent dilemmas, and the police work of artificial intelligence is still a long way to go.

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[33]   Li 2023.

"I work in our police station and am responsible for the artificial intelligence platform business. I remember there was a notice for me to go to the training last year, but our police station would have had fewer people and more cases. I could not go, so I took a leave of absence." (Interview transcript 20240719TY)

Study 2 – Factors influencing the willingness to use artificial intelligence in police law enforcement in China

Subjects

Utilises G*Power 3.1 software[34] calculating the sample size required for this experiment, for the independent samples a t-test was applied, taking the medium effect size of d = 0.25 and the significance level of α = 0.05; the calculations showed that at least 158 subjects were needed to achieve 90% statistical test power. In this study, 200 public security police officers were randomly selected for the contextual experiment in the public security bureau of H city in Z province. According to the political audit requirements of the public security bodies, all the measurements were reported to the City's Political Department of the Public Security Bureau before the questionnaire survey, and the questionnaire test was conducted after the review was qualified. All participants were public security police officers who had been regularised. According to the number of questionnaire topics, excluding invalid questionnaires with less than 3 minutes of response time and regular responses, a total of 191 valid questionnaires were recovered, and the validity rate of questionnaire recovery was 95.5%. Among them, there are 158 males and 33 females; 82 people aged 20–30, 59 people aged 31–40, 41 people aged 41–50, 9 people aged 51–60; 1 person in junior high school and below, five people in high school/secondary school, 43 people in college, 134 people in bachelor's degree and eight postgraduates; 139 people below the rank of section, 48 people in the rank of section and four people in the rank of division or above; 153 grass-roots civilian police and 38 people in agency civilian police; the working time is 3 years and below 65 people, 4–6 years 32 people, 7–9 years 20 people, 10 years and above 74 people. All subjects carefully read the instructions and gave informed consent before the experiment began.

Experimental design and procedures

This experiment utilised a between-subjects experimental design with task type 2 (objective task/subjective task) + algorithm transparency 3 (low/medium/high transparency). Subjects were randomly assigned to six groups to complete demographic information. The independent variable was then manipulated by reading materials about using artificial intelligence in police enforcement.

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[34]   FAUL et al. 2009.

This study builds on existing research[35] for the experimental design. Regarding the task type, the objective police enforcement task was set to query vehicle information (quantifiable, measurable, not relying on personal experience or intuition). The subjective police enforcement task was set as explicitly tracking hit-and-run vehicles (requires personal experience and intuition).

Scenarios involving quantifiable and measurable facts were chosen for vehicle searches, and subjective tasks were chosen for tracking a fleeing vehicle, which required personal judgment or intuition on the part of the civilian police and where the outcome was somewhat open-ended.

About transparency, the material in the low-transparency group describes the name of the platform used by the AI to handle police enforcement tasks; the medium-transparency group describes the AI's specific computational processes and the metrics on which decisions are based; and the high-transparency group, on top of the medium-transparency information, will provide further explanations of the AI's computational capabilities, thus enabling the manipulation of low, medium and high transparency. Take the objective low-transparency group and the subjective low-transparency group as examples.

The material read by the objective and low-transparency group reads as follows: Currently, the querying of information on target vehicles requires law enforcement police to test multiple systems one by one. The Public Security Bureau of City H in Province Z recently introduced an intelligent case-handling algorithm, "Smart Brain 800", to assist the city's public security authorities in querying target vehicles related to cases. "Smart Brain 800" is based on the police multi-dimensional information network on the trajectory of the target vehicle and accompanying personnel to query, the police only need to enter the license plate number of the vehicle in the algorithmic system, vehicle attributes and period, and "Smart Brain 800" will be able to calculate the vehicle's track and the number of accompanying personnel in the period immediately!

The subjective low-transparency group read the material: in hit-and-run accidents, it is often necessary for the police to analyse and clarify the hit-and-run vehicle based on the details of the scene and manual inference. "Smart Brain 800" can analyse the information of the vehicle and the driver at the time of the accident based on the multi-dimensional information network of the police.

After reading the material, the subjects' trust and willingness to use AI in that context were measured. Trust was measured through three question items:[36] "To what extent do you understand the use of AI in that context?" "How accurate do you think the results obtained from AI are in that context?" "To what extent do you believe the AI can perform this task well?" a 7-point Likert scale (from "1 = very little understanding" to "7 = much understanding") was used, with higher scores indicating that the subjects felt that the decisions made by the AI in the material they read were better understood and trusted the AI more. Willingness to use AI was measured as: "To what extent would you be willing to use AI in this task in your future work?" It was scored on a 7-point Likert scale (from "1 = very reluctant" to "7 = very willing").

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[35]   Castelo et al. 2019.
[36]   Kizilcec 2016.

Results

Variable correlation analysis

The correlation analysis of each variable is shown in Table 1, according to which task type has a negative predictive effect on trust (t = −0.05, p < 0.01), and task type also has a negative predictive effect on willingness to use (t = −0.30, p < 0.01), and Hypothesis 1 is verified.

Table 1: Correlation analysis

	1	2	3	4
1 Types of tasks	1			
2 Transparency	−0.01	1		
3 Sense of trust	−0.55***	0.45*	1	
4 Willingness to use	−0.30***	0.83	0.53***	1

Note: *indicates p < 0.05; **indicates p < 0.01; ***indicates p < 0.001
Source: compiled by the authors

The mediating role of trust

Using mode l4 in the plugin process to test the mediating role of trust between the type of AI task and the willingness of civilian police to use it,[37] where AI task type is the independent variable, willingness to use is the dependent variable and trust is the mediating variable. Among them, task type is a categorical variable (subjective/objective), and trust and willingness to use are continuous variables. This study standardised all the variables before the data analysis and then conducted a regression analysis. Figure 2 shows the path coefficients between the three variables of trust in task type and willingness to use.
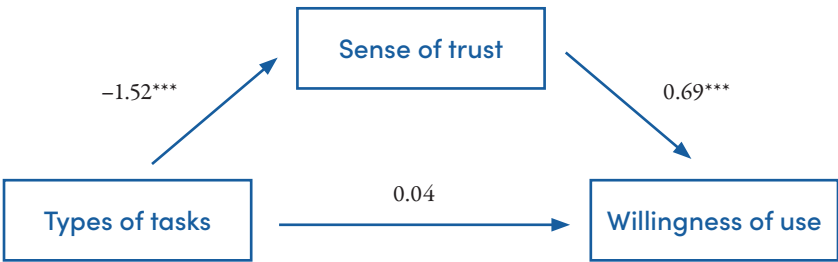

Figure 2: Schematic diagram of the mediator effect
Source: compiled by the authors

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[37]   Wen–Ye 2014.

As can be seen from Table 2, the mediation effect value of AI task type on civilian police's willingness to use through trust is –1.05, and the 95% Bootstrap confidence interval is [–1.38, –0.75], excluding 0, indicating that the mediation effect is significant; and after adding the mediator variable trust, the direct effect of task type on the willingness to use is 0.04, and the 95% Bootstrap confidence interval is [–0.45, 0.52], indicating that its direct effect is no longer significant. This result suggests that trust fully mediates between AI task type and civilian police willingness to use, validating Hypothesis 2.

Table 2: Influence of task type on willingness to use AI: Analysis of the mediating effect of trust

	Effect	se	t	p	LLCI	ULCI
Aggregate effect	–1.01	0.24	–4.28	0.00	–1.48	–0.55
Direct effect	0.04	0.25	0.15	0.88	–0.45	0.53
Indirect effect	–1.05	0.16	0.17	0.00	–1.38	–0.75

Source: compiled by the authors

The regulatory role of transparency

The moderating effect of transparency was tested using mode l7 in the Process add-in in SPSS, and the mediation model with moderation was tested by parameter estimation of 2 regression equations. Equation 1 estimated the predictive effect of task type on trust and the moderating effect of transparency between task type and trust, and Equation 2 estimated the overall effect of task type on inhibited constructive behaviour. All variables in each equation have been standardised and controlled for gender, education and age. A moderated mediation effect was shown to hold if the model satisfied the following three conditions:
1. The overall effect of task type on willingness to use was significant.
2. The predictive effect of task type on trust was significant.
3. The interaction term between task type and trust was significant in its predictive effect on trust.

As shown in Table 3, Equation 1 indicates that task type Condition (a) and the interaction term between task type and transparency Condition (c) both significantly predicted trust and Equation 2 indicates that task type positively predicted willingness to use, and trust positively predicted willingness to use, satisfying Condition (b). A significant mediation effect with moderation was indicated, where the mediation effect was fully mediated, constitutes a model with moderated mediated effects (Figure 3).

Table 3: Task type and willingness to use AI: Moderated mediation effect analysis

Predictor variable	Equation 1 (trust)			Equation 2 (willingness to use)		
	SE	β	t	SE	β	t
Type of mission	0.13	−1.52	−11.41***	0.25	0.04	0.15
Trust				0.09	0.69	7.66***
Transparency	0.26	−0.51	−1.97*			
Type of task x transparency	0.16	0.83	5.16***			
R2		0.57			0.30	
F		81.21***			41.27***	

Note: *indicates p < 0.05; **indicates p < 0.01; ***indicates p < 0.001
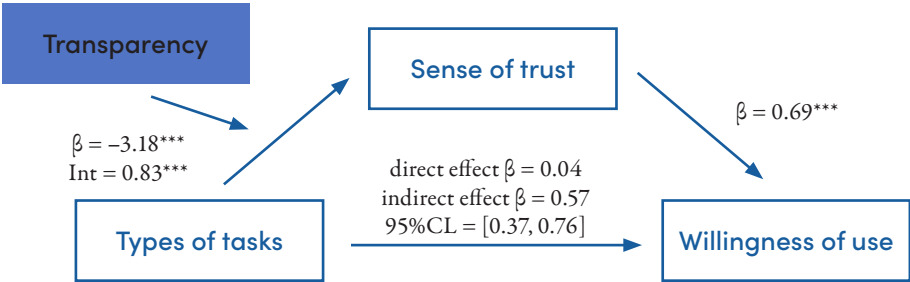*Source:* compiled by the authors

Figure 3: Moderated mediating effects
Source: compiled by the authors

Discussion

With the constant updating and development of artificial intelligence technology, policing technology also needs to be updated and improved accordingly. In this context, the concept of "intelligent policing" has emerged, representing the in-depth application of AI technology in policing, and heralds the innovation of the security governance model and the transformation of the policing work style. This study explores the current status of AI applications in Chinese police law enforcement through a survey method. It explores the effects of police task type and algorithm transparency on the police's sense of trust and willingness to use AI through a scenario-based experimental method.

Study 1 showed that the current AI is critical in law enforcement linkage, security prevention and control, and investigation and evidence collection for police law enforcement. However, there are still many limitations, especially the issue of the police's

willingness to use it, which constrains the modernisation process of police law enforcement and needs to be explored. Study 2 found that the type of task can influence the police's willingness to use AI. In objective police enforcement tasks, the willingness of the police to use AI is relatively high. This is consistent with the results of previous studies.[38] This shows that for the use of AI, we must objectively view its drawbacks, uphold the scientific concept of people-oriented, technology-enabled and shared governance,[39] and effectively utilise it on different occasions and at different times.

Regarding the specific path of influence between task type and willingness to use AI, this study found that trust fully mediates between task type and willingness to use civilian police and is moderated by transparency. This can be explained by the three-dimensional motivation theory of algorithmic rejection.[40] The theory reduces the willingness to use AI to three questions: whether decisions can be made, whether they are needed and how they will affect people. Whether AI can make the right decisions for policing is the primary question, as with AI, few technologies are immediately accepted by people upon introduction into the workplace.[41] First, people do not understand the new technology and may distrust it. However, as the application of AI becomes more popular or exposure increases, people will become more aware of it, less transparent and more accepting of AI in policing and law enforcement. Ireland argues that as AI develops, algorithms in the justice system will become commonplace depending on the increased knowledge and trust of law enforcement officers and the public in AI.[42] In the face of the impact of transparency and trust on the willingness of civilian police to use it, this study will further explore improvements to facilitate modernising policing.

Policing artificial intelligence enhancement strategies

The current application of artificial intelligence in Chinese police law enforcement has subjective and objective constraints. On the objective side, the lack of a scientific management system affects the synergistic development of policing modernisation, the loopholes in technological security significantly reduce the applicability of artificial intelligence, and the most critical lack of talent is a crucial factor in restricting the popularity of artificial intelligence. On the subjective side, the police's willingness to use AI is affected by the type of task, trust and transparency, and on the objective side, the deeper the police's understanding of AI, the stronger their trust and the higher their willingness to use it, which suggests that we can provide a good strategy for the modernisation of policing from the aspects of trust and transparency.

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[38]   Diab et al. 2011; Logg et al. 2019; Yeomans et al. 2019.
[39]   Zhejiang Police College Subject Group – Huang 2020.
[40]   Zhang et al. 2022.
[41]   Parasuraman–Riley 1997.
[42]   Ireland 2020.

Systematic planning for top-level design

In the context of the era of the construction of China under the rule of law and the transparency of law enforcement, the application of artificial intelligence should provide a good opportunity for public security law enforcement personnel to effectively solve the problems that exist in the practical application of artificial intelligence. It is necessary to insist on digital reform as a comprehensive and systematic project and to form a good momentum for up-and-down integration and overall attack. At the same time, law enforcement transparency is an important indicator reflecting the modernisation of our government's governing capacity, and it is also essential for enhancing government credibility. When public security bodies use artificial intelligence technology, they should thoroughly follow the principle of transparency in law enforcement procedures.[43] On the one hand, the transparency of AI algorithms should be guaranteed to improve the scientificity and interpretability of their results. On the other hand, when researching and developing the system, technicians should pay attention to the research of procedural transparency and improve the visualisation characteristics of the system based on the understanding of the public. At the same time, the standardisation of police work should be promoted, the overall quality of police staff should be improved, and the public security bodies should be promoted to enforce the law strictly, by the rules and regulations, and impartially, to strengthen the standardisation of the team.

Cross-border integration to fill gaps

Public security big data application technology is complex and rapidly updated, so public security bodies should increase their efforts in technological research development and innovation. They can continuously improve their data processing and analysis capabilities by introducing new technologies, methods and tools. For example, using machine learning, deep learning and other artificial intelligence technologies can realise massive data's rapid processing and deep mining, providing strong support for public security work. At the same time, it has strengthened investment in technological research and development and innovation, encouraged and supported scientific research institutions and enterprises to carry out research and development and innovation of related technologies, and continuously improved the level and effectiveness of public security big data applications through the introduction and absorption of advanced technologies. Public security big data can be integrated and applied with other advanced technologies, such as cloud computing, the Internet of Things, blockchain, etc., to improve the processing speed further, analyse accuracy and expand the scope of public security extensive data application.

Systematic cultivation of digital literacy

The level of civilian police digital literacy determines the effectiveness of digital policing, which is directly reflected in the ability to perform specific police work. Systematic

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[43]   LI 2020.

cultivation of civilian police digital literacy comprehensively enhances the civilian police digital survival and development capabilities, not only in consciousness to guide the civilian police to fully understand the enhancement of digital literacy of the sense of responsibility, sense of mission and urgency, but also through effective and efficient education and training methods to comprehensively enhance the civilian police digital policing skills. In the face of the current shortage of artificial intelligence talents and the lack of professionalism, it is necessary to adhere to the professionalism, systematisation and long-term nature of the training of digital talents, focusing on the systematic selection and training of particularly outstanding talents, full-time instructors and different levels of echelon talents. Organise and carry out intelligent public security scene application and data modelling to support the actual combat and other business skills training in all business lines, build different police lines, application scenarios, and disposal levels of specialised teams, and form a publicity advocacy and practice orientation for promotion and reference.

Improve algorithmic trust across the board

The civilian police's cognitive characteristics, such as insufficient experience in AI, insufficient perception of AI capabilities and insufficient participation in AI decision-making can lead to distrust of AI, reducing the willingness to use AI. The easiest way to improve trust is to increase the expertise and familiarity of police officers with AI and, at the same time, demonstrate AI capabilities more often. As more and more algorithms and AI technology elements appear in human life, the knowledge and familiarity of human beings with algorithmic decision-making will gradually increase until they become accustomed to it. At this point, it is essential to demonstrate algorithmic capabilities. For example, professional and practical algorithmic advice will lead to more trust and thus increase the utilisation of algorithms.[44] Furthermore, if the civilian police can autonomously adjust the AI output to their needs,[45] their perception of the ability to learn or adjust AI decisions would also be more robust.

Conclusion

With the rapid development of artificial intelligence technology, "intelligence + machine" has undergone significant changes in the industrial field and profound changes in the field of public security. Study 1 found that artificial intelligence is essential in intelligent law enforcement linkage, investigation and evidence collection, and public security prevention and control. However, there are still problems of institutional deficiencies, technological risks, and the lack of willingness of the police to use it. Surveys show that more than 60% of Chinese police officers do not know enough about AI and are reluctant to use it in police law enforcement. On this basis, Study 2 found that the police's use of AI is influenced by the type of task and trust, and is moderated by transparency. Therefore,

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[44]   Goodyear et al. 2016; Kramer et al. 2018.
[45]   Greene et al. 2016.

we need to systematically plan top-level design and cross-border integration to fill in the gaps, cultivate digital literacy, and comprehensively enhance algorithmic trust to help the police better maintain social stability and protect public safety.

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