

# The Impact of Artificial Intelligence Technology on Individual Behavior from the Perspective of Social Psychology

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**Abstract:** The application maturity and popularization of AI technology has produced significant socialization characteristics for individuals. Analysis the influence of AI technology on individuals from the perspective of social psychology shows the participation, interaction and dependence of individuals. Motivational interaction is the soul of AI technology-driven psychology. Individuals form an interaction for the application and transmission of AI technology, and produce psychological interaction. This interaction behavior is also the research perspective of social psychology. Therefore, this study has three starting points from the perspective of social psychology on AI technology on individual motivation, self-cognitive motivation and social cognition needs. Based on the cognitive theory of social psychology and from the perspective of human behavior, the influence of AI technology breakthrough technology innovation behavior on individual behavior, cognition and demand is analyzed from the perspective of people. Establish a theoretical framework for the impact of AI technology breakthrough and innovation on individual behavior. Research hypotheses on the impact of AI technology on individual behavior by questionnaires and empirical analysis. The results show that the emotion driven by AI technology is positively correlated; the basis of individual knowledge level positively affects the level of cognitive combination on the AI; and the middle level of cognitive motivation and big data ability has the behavioral relationship that promotes innovation. Through research, it can reveal how AI technology affects individual innovation behavior, and it is of great significance to clarify the cognition, motivation and behavior factors of AI technology from the perspective of social psychology, so as to promote individual development.

**Keywords:** social psychology, AI technology, personal behavior motivation, interaction influence

## 1. Introduction

Artificial intelligence affects all aspects of human society and psychology, and is becoming a new social subject. Social psychology of artificial intelligence arises at the historic moment. In contrast, the interpersonal model proposed by classical social psychology is not applicable to artificial intelligence application scenarios. There are some things that humans will never do to artificial intelligence, not because of technical bottlenecks, but about the human nature of how we are [1]. Therefore, in the new research field of artificial intelligence social psychology, the organic interaction between classical social psychology theory and the new era of artificial intelligence takes the subject of artificial intelligence beyond the tool attribute, and explores the changes of classical social psychology theory under the influence of artificial intelligence. Just as the rise of computer technology in the 1970s set off the revolution of cognition in psychology, the development of artificial intelligence will also lead the theoretical evolution and method innovation in the field of social science. Finally, on the basis of the intersection of artificial intelligence and social psychology, the psychological influence of intelligent society is explored together.

With the widespread application of data-driven intelligent technologies, data is increasingly used to record and influence the behavior of the world and people. Although the value rationality of the data doctrine behind the data transformation is still to be further analyzed, as a new form of intelligent society, the data analysis society has been quietly arrived [2]. From the phenomenal point of view, the operation and governance basis of data analysis society is to use data and intelligent algorithms to analyze human behavior. However, such intelligent monitoring is a speculative cognition, which may misinterpret and improperly interfere with the initiative of the recognized object, and it is urgent to set boundaries for the possible technology abuse. With the rapid development of information, digitalization

and intelligent technology, all kinds of data as the existence, the development of the event and the trace of human behavior are growing exponentially, and we increasingly live in the information space and coding space composed of digital data. The new round of artificial intelligence boom, the breakthrough development of AI's computing power and deep learning and other intelligent algorithms, is more data-driven. In the past 20 years, the development of Internet search, e-commerce and new media has brought great enlightenment to the digital industry that the data that reflect everyone's characteristics, behaviors and preferences may constitute a mirror image of the world [3]. If this mirror world of data can be fully used, it is possible to reconstruct various processes of social life and make them more accurate and efficient. The disruptive changes that AI technology brings to society and human behavior. This study focuses on how AI technology affects human behavior and social cognition.

## **2. The technological realization of the intelligent society and the digitization of human understanding of the world**

With the application and development of artificial intelligence (AI) technology, the current social attention to AI is not only limited to technology, but began to consider more about other non-technical factors. Accenture (Accenture) consulting in 2018 in 25 countries around the world more than 6300 enterprise IT executives survey shows that the impact of new technology on society presents five trends, one of which is the citizenship of AI, namely as AI technology in people work and life from the technical premise, universal computing and social perception of computing research laid the foundation for the realization of intelligent society [4]. In 1991, Mark Weiser published an article in the scientific American computing model in the 21st century, put forward the concept of "universal computing" (pervasive computing), pointed out that through ubiquitous computing can serve people's life and work, make people in the artificial environment or intelligent environment with computing power [5]. This concept indicates the general direction of moving forward from the information society to the intelligent society. Development since shows that the key path to an intelligent society is data-driven and intelligent integration [6]. On the one hand, research on artificial intelligence shows that so-called intelligence requires a completely different path from human cognition. This is to give full play to the expertise of computers in computing and storage, and use the completeness of big data to find laws that are difficult for people to find, and get results that cannot be obtained by traditional ways, so as to surpass human intelligence in some aspects. On the other hand, the implementation of universal computing or intelligent environment must be based on intelligent integration. This is also the main purpose of Qian Xuesen's intelligent system based on the theory of open complex giant system, which includes not only distributed and field artificial intelligence and agents, but also the integration of social intelligence that the Artificial Society Institute focuses on [7].

As early as 2005, MIT scientist Pentland (Alex Pentland) put forward the concept of social perception computing, trying to understand and improve human behavior by collecting and analyzing the data flow of interpersonal communication and social life, and to promote the comprehensive application of data-driven and intelligent integration in social management and governance [8]. Since then, Pentland further advocated the construction of data-driven intelligent society based on the research of social physics based on big data, starting from thought flow and social learning. Whether it is social computing or social perception computing, the purpose is to realize the world [9]. Based on this, we can not only use data to describe and describe the real world, but also use these data to influence and intervene in the world it describes and describes. In other words, the world of AI could become a parallel world corresponding to the real world. The presupposition behind this assumption is that data is "facts", and the digitization of the world means that we can use data to depict and influence all the facts that happen in the world.

In data-driven AI intelligence applications, the digitalization of the world often develops into an idealistic view of data doctrine. In the view of datarists, when data recording, observation and analysis techniques are widely used, data on the behavior of the world and the behavior of the people living in it is equivalent to the behavior of the world and the people living in the world, and is a resource that can be used to calculate and interfere in the behavior of the world and people. Here, datarists obviously do not see the reasonable limits of technology and value of data with the world and resources.

## **3. Artificial intelligence has transformed people's way of thinking from single to complex**

Big data and artificial intelligence develop "behavior mode" from a single terminal and solution

space to "problem space". In addition to the AlphaGo unbeaten myth, Cornell university based on the computer pendulum movement equation and multiple generation calculus and output the law of conservation of energy, Carnegie Mellon university development Libratus duel against top player over Texas poker, Stanford university all intelligent scanning precision screening more than 90% of lung cancer, and Google unmanned, hkust xunfei voice print recognition, drone logistics, RFID goods inventory, IBM Watson robot, Deloitte financial robot, Goldman sachs headquarters bank traders from 600 to 2, etc., show artificial intelligence from the learning ability to achieve the degree of strange. Artificial intelligence gets rid of the decision-making and behavior of the single terminal, that is, the average processing of the input values provided by individuals, making the lack of mutual influence between individuals is easy to lead to group bias. Artificial intelligence based on big data is "the synchronous operation and continuous optimization and integration of the group brain", which forms decisions with sufficient incentives, that is, starting to understand and process the influence between individuals, and influence and change the behavior and habits of users. In other words, there is a tendency to give the choice to artificial intelligence in terms of behavior, making it more important to "know" to ask questions than "to" solve problems ", that is, not only understand the solution at the level of" solution space ", but also understand the search at the level of" problem space ". Artificial intelligence itself has super strong computing power and deep learning ability, and further changes the fact that small data is just a byte fragment in the data stream. It even proposes persistent causal relationships that social sciences never need to explore, as long as correlation is known, it is sufficient. To some extent, it is closer to the equivalence of "full data models", and it has become very effective in predicting and controlling human cognition of new tools.

#### **4. Effect of AI on human psychosocial cognition**

Human-computer interaction is a social psychology problem, but the social psychology influence of artificial intelligence is not only a human-computer interaction problem. Tracing back to the source, artificial intelligence has produced unprecedented social and psychological significance, not because it directly interacts with human beings, but because it has become a new social subject. The reason why artificial intelligence is regarded as a social subject is precisely because it is expected to reach the level of human intelligence. This is not only a breakthrough in AI compared with previous technologies, but also a fundamental difference between it and other non-human species. As early as the beginning of the century, some researchers suggested that AI could be something new. But the term "species" is not the best description of artificial intelligence. In fact, human beings have never been the only species on earth. Other animals on earth also participate in the production and life of human society and can directly interact with human beings. However, due to the overwhelming advantage of human intelligence over animal intelligence, even though sometimes human beings have emotion and care for animals, especially their pets, they rarely regard animals as a social subject with psychosocial significance. In addition, the relationship between technology and human beings is the relationship between tools and users, so related research often focuses on topics such as acceptance, preference, anxiety and self-efficacy. After the rise of artificial intelligence technology, topics such as moral decision-making, emotional interaction, human-machine trust, human-machine empathy, machine awareness and machine characteristics have attracted much attention.

In the face of the human challenge of ruthless AI technology thinking automation and engineering thinking, we must build an ethical reflection arc that can counterbalance its abuse. Here, this article does not intend to repeat the good slogans of transparent, responsible, interpretable, trusted data and artificial intelligence, with only a few relatively feasible initiatives. First, above all, we should recognize the relationship between man and technology, and reflect on and correct the value and ethical issues brought by new technology in the network of actors composed of man and technology. When we think about the human-machine relationship, we should not fall into the abstract reflection of the human-machine relationship, but also avoid treating the machine as independent of human beings, and realize that the essence of the human-machine relationship is the machine-mediated relationship between people. Taking the controversy caused by the application of facial recognition technology as an example, we take whether it can involve technical products (services) and their related groups to form an actor network as the research object. By analyzing the technical applications of facial recognition technology developers, the use of facial recognition technology, and the possibility that the objects and original works of facial recognition may be replaced by facial recognition technology and influenced by groups, Undoubtedly, it helps to deepen our understanding of related issues. Whether enterprises, institutions, governments or individuals, they should see that the uniqueness and infinite possibilities of people are the root cause of human civilization and all innovation. The indiscriminate

collection and abuse of data will not only lead to the infringement of basic rights such as human dignity and privacy, but more importantly, it will make people lose their own independence, initiative and creativity. Objectively speaking, the absolute understanding of human behavior by data is an impossible illusion, because the huge amount of data experiments often captures not fresh human life, but only a stereotyped version of the world constructed by data as traces of human behavior.

## 5. The impact of artificial intelligence on human behavior

### 5.1 Inspection of social psychological and behavioral indicators of artificial intelligence

One of the great contributions of social psychology is to propose the constructive principle, that is, the influence of any objective stimulus condition depends on the subjective meaning given by the actor to the condition. Unlike behaviorism, which focuses only on the correlation between stimulus and response and does not dissect the "black box" of the human mind, social psychology always focuses on the individual subjective construction of stimuli and responses. Under the principle of constructiveness, artificial intelligence, as the subjective construction of human artificial intelligence, is the real stimulus that affects human psychology and behavior. Thus, a research path has emerged: the psychological impact of artificial intelligence on social people.

Using data and intelligent algorithms to analyze human behavior means intelligent monitoring of people. The so-called intelligent monitoring is mostly carried out without the knowledge of the analyzed object, but some are also self-monitoring, such as the application of smart wearable devices such as smart bracelets. Even for the latter, device users' personal data will be collected and analyzed by product and software manufacturers or third parties. This kind of intelligent monitoring is not new, to some extent is an extension of traditional intelligence monitoring. According to Snowden, the NSA monitored the public's calls through metadata analysis. This monitoring generally does not involve the call, because you can learn a lot of the situation, based only on the metadata such as the number, time, length, frequency, and location of the call.

### 5.2 Test of artificial intelligence on human behavior

Based on the neural network algorithm and (LSSVMA), we designed the recognition system for the psychological impact of AI technology on people, and established a training data set, in order to train and test the emotion recognition system of the two algorithms. During the training process, the recognition accuracy (Acc) and the recognition accuracy on the cross-validation data set (Val-acc) are mainly recorded. These two important information can be used to monitor the training of the model, and the training results of face recognition are shown in Figure 1.

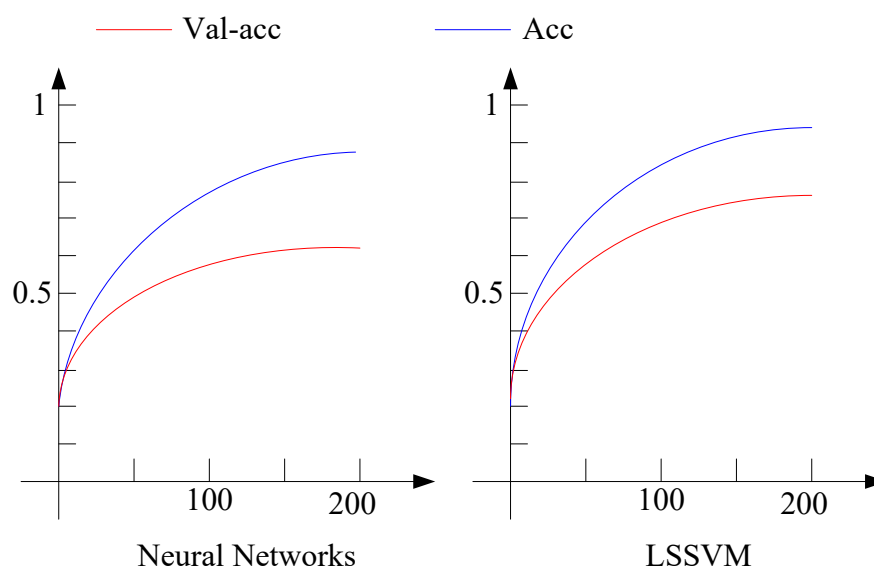


Figure 1: Mental recognition accuracy curve of the data set

As can be seen from Figure 1, the recognition accuracy of both algorithms is around 90%, but (LSSVMA) the recognition accuracy is several percentage points higher than the emotion recognition system of neural network algorithms. Moreover, the identification accuracy of both algorithms improves with the number of data sets. When the data set is around 200, the identification accuracy is relatively stable and reaches relatively high levels. The increase in identification accuracy in the cross-validation dataset is similar to that of the training dataset, with the relatively low Val-acc, Val-acc of the neural network fluctuating around 60%, and (LSSVMA) Val-acc above 70%.

The training dataset was used to train the above models, and the cross-validation set was used to determine the relevant parameters of the ensemble model. Finally, we paper verify the model performance using the test dataset. A total of 500 test data and the results are shown in Table 1 and 2.

Table 1: Test results

Mood /%	Indignation	Fear	Happy	Unexpected things	Neuter
indignation	67.6	12.0	4.4	8.1	7.9
fear	8.4	58.7	6.7	17.6	8.6
happy	6.4	7.8	70.1	9.1	6.6
Unexpected things	10.1	12.4	9.6	62.4	5.5
neuter	7.5	8.3	8.1	7.3	68.8

Table 2: Test results of the least-squares SVM algorithm

Mood /%	Indignation	Fear	Happy	Unexpected things	Neuter
indignation	76.7	6.1	5.4	7.3	4.5
fear	8.7	68.4	6.1	8.6	8.2
happy	4.1	6.2	82.1	3.7	3.9
Unexpected things	5.1	6.1	2.8	79.7	6.3
neuter	7.1	6.7	3.6	7.8	74.8

As can be seen from the above two tables, the emotion recognition system algorithm of the neural network and the five psychological emotions identified by (LSSVMA) are happy, fear, anger, happiness, surprise and neutrality, which have the highest recognition rate of happiness. It shows that the emotion driven by AI technology has a positive correlation; the basis of individual knowledge level positively affects the cognitive combination level of AI; and the moderate level of cognitive motivation and big data ability has the behavioral relationship promoting innovation

## 6. Conclusion

This study reveals the impact of the breakthrough technological innovation of artificial intelligence and big data on people from the behavioral perspective of social psychology. Artificial intelligence has both "changes and shortcomings" in its influence on human cognition, thinking and behavior, and how to design more gentle and more humane products in terms of micro cognitive psychological mechanism, so that it can be more easily accepted by people in the society. The combination of psychology-behavior and neurology in the field of micro cognitive psychology, the influence of artificial intelligence on society is a revolutionary event in cognitive psychology in recent years, and is also the fastest developing psychological research field in modern times. A large number of new discoveries, deepening, correction, challenge and change the unable to directly observe the human brain "black box" research state, allowing researchers combining behavior data and human brain activity data, more objective and accurately reveal and explain the process of judgment, decision-making, behavior, greatly deepen the understanding of the cognitive and behavioral mechanism. In essence, when it is an observation with or without a certain element in a controlled environment, the development of artificial intelligence has significant changes on human cognition, thinking and behavior. In order to promote the positive psychological impact of intelligent society, interdisciplinary cooperation is the only way. On the one hand, AI technology experts need to incorporate social psychology knowledge to improve the model. On the other hand, social psychologists also need to understand certain technical details to better explore the psychological impact of intelligent society.

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