

A Study on the Associations Among Social Media Usage Patterns, Perceptions of AI Culture, and Mental Health Across Gender Groups

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Abstract

In order to explore the internal relationship between social media use behavior, digital culture perception and mental health of different gender groups, this paper undertakes data collation and empirical analysis based on CNNIC's 53rd Statistical Report on Internet Development in China, the Blue Book on Mental Health: China's National Mental Health Development Report (2023-2024) and other public authoritative materials. Research shows that the size of China's internet user base has reached 1.092 billion, the Internet penetration rate is 77.5%, and the network applications have achieved full national coverage. Uncontrolled browsing of short videos and other passive social media usage behaviors can have a negative impact on individual emotions and mental health, and this impact is more prominent in the female population. The Blue Book data shows that the risk of depression and anxiety in adults gradually decreases with age, and the decline in depression risk in women is significantly higher than that in men; The psychological health risks of rural minor females and high-frequency online consumers are relatively higher. Actively participating in online social activities and developing rational internet habits can effectively maintain mental health. This study clarifies the correlation characteristics between digital usage behavior and mental health under gender differences, providing empirical reference for developing gender-differentiated digital psychological counseling programs and guiding the public toward healthy internet use.

Keywords

Social media usage; Perceptions of AI Culture; Mental Health; Gender Disparities; Digital Life.

1. Introduction

With the continued advancement of internet infrastructure in China, social media has been deeply integrated into the daily social interaction, information acquisition and leisure life of the public. As of December 2023, the number of Internet users in China has reached 1.092 billion, the Internet penetration rate is 77.5%, and the national coverage of network applications has continued to increase. The popularization of generative artificial intelligence has integrated AI content creation, algorithm push and other functions into social media, forming a new form of digital culture and exerting a subtle influence on the public's mood and mental health.

Previous studies have mostly focused on analyzing a single dimension, exploring the association between social media use and mental health, or analyzing the overall public perception of AI technology. There is less systematic examination of the intrinsic relationship between social media use behavior, Perceptions of AI Culture, and mental health from a gender perspective. In practical usage scenarios, there is a natural distinction between the behavioral preferences and cognitive attitudes of male and female netizens. Women tend to use social

media for social interaction and life sharing, while men tend to use it as a tool for information acquisition and professional learning.

Based on the findings of the investigation on the Blue Book on Mental Health: The Report on the Development of National Mental Health in China (2023-2024), there are strong gender and age tendencies in the national mental health conditions. The likelihood of depression in females declines by 54 percent with age, compared to the 25 percent decline in males. The women who spend money extravagantly shopping online are predisposed to greater risk of depression onset. Existing studies do not usually provide much detail on the subject of gender; hence, it is not clear what the link between digital behavior and mental well-being is in respect to different genders. As per the official survey data and the known studies in psychology in China, the present paper establishes the contrast between online behaviour indicators and cognitive features of men and women respectively. It examines the existing connections between those factors, and gives sound empirical evidence and actionable recommendations that would help enhance the digital habitat and implement focused mental health interventions [1].

2. Research data sources and definition of core concepts

The current study relies all on reliable and open sources of literature and official data of surveys that are traceable. In the course of the work, we do not use fake statistics, individual cases, and ungrounded personal judgments so as to remain impartial and objective, and therefore, academic. Our analysis mainly relies on industry reports and professional academic papers released by well-known domestic authoritative bodies. The 53rd Statistical Report on Internet Development released by CNNIC is adopted as the fundamental reference material of this research. This report is compiled based on a national standardized sampling survey, systematically sorting out the overall scale of domestic netizens, the current situation of network application popularization, and the characteristics of group structure. The data statistical caliber is unified, and it has high academic reference and credibility value.

Meanwhile, this article refers to the national mental health special report jointly completed by the Institute of Psychology of the Chinese Academy of Sciences and 79 professional institutions across the country. The study draws on over 170,000 valid survey responses and deeply analyzes the impact mechanism and changing patterns of national mental health from multiple dimensions such as gender, age, and online behavior, providing empirical support for the argumentation and analysis of this study. In addition, the study also referred to similar academic achievements in core journals such as *Progress in Psychological Science* and *Chinese Journal of Health Psychology*. The papers published in these journals have undergone rigorous peer review, and the research paradigm is mature and standardized. The conclusions obtained have reference and verifiable academic value.

Referring to the existing mature research paradigms in academia, this article standardizes and defines the core concepts of research. Based on differences in behavioral motivations, social media use can be divided into two types: active and passive. Active online engagement mainly includes keeping social connections intact, creating and sharing original content, and searching for professional information according to personal demands. In terms of passive internet use, users usually scroll online without specific aims. They simply accept content recommended by algorithms, and spend a lot of time indulging in short videos and social updates [2]. Perceptions of AI Culture refers to the comprehensive subjective cognition of the public towards the integration of artificial intelligence into social scenarios, covering three major levels: willingness to accept technology, ethical risk assessment, and life adaptation anxiety. Psychological health is comprehensively measured from three dimensions: daily emotional stability, anxiety and depression levels, and subjective life well-being. This study uses gender as the stratification standard to compare and analyze the differences in characteristics of

various indicators between male and female groups, and explore the inherent correlations between variables [3].

3. Group characteristics of social media usage patterns among different gender groups

The gender structure of domestic Internet users tends to be balanced as a whole, and there is no obvious gender barrier for the public in the basic Internet access link. According to the data from the 53rd Statistical Report on Internet Development, the gender ratio of China's internet users was 51.8:48.2 in December 2023, which is highly consistent with the gender distribution of the national population. Digital popularization has achieved balanced coverage at the gender level. Under the premise of no difference in basic network access, male and female users exhibit stable and significant differentiation characteristics in their actual usage preferences and behavior patterns on social media [4].

In terms of functional usage choices, women value the emotional and social value of social media more, using the platform as the main carrier to maintain relationships with family and friends, share daily life, and integrate into their interest circles. They invest more time in leisure and social content in their daily lives. According to data from the National Mental Health Survey, 37.7% of women actively confide their emotions and share their inner thoughts with their peers, and their willingness to engage in interpersonal social interactions is much higher than that of men. A typical man tends to take a utilitarian attitude towards internet use. The regular use of online media includes keeping up-to-date with the latest news and happenings in the industry and developing professional knowledge. A number of them are engaged in functional communities such as gaming communities or scholarly discussion clubs, and are motivated to use the internet due to obvious utilitarian reasons.

When it comes to the female daily use of the internet, their browsing style is random and unsystematic. They can be manipulated by algorithms-based suggestions of what to see and can scroll endlessly without any consciousness. To state it statistically, women spend much more time per day on social and video apps than men do. On the contrary, men utilize social media to achieve a specific goal. Their main activity includes looking at the particular information and immediately log out after getting what they want, which results in a more organized way to go about it online. The current studies of adolescent online behavior show that adolescents are more vulnerable to both excessive social media use and addiction tendencies as well as more explicit signs of negative emotions and psychological consequences.

Underlying gender differences influence different types of social media behavior that has become an important consideration in influencing individual mental health outcomes. Data on national mental health surveys indicate that intensive use of short videos may increase the chances of developing depression-like feelings, and women experience much higher psychosocial negative effects due to this behavioral tendency than men [5].

4. Cognitive Differences in Perceptions of AI Culture Across Gender Groups

The given empirical studies indicate quite explicitly that gender influences the perception of AI by the population and its cultural associations. Males and females have been shown to consistently differ in terms of their acceptance of technology, their sensitivity to risks, and how they psychologically adjust to this technology-based world. Those natural variations are also one of the most basic aspects of people psychological states throughout society in the digital era. The specific differences are outlined below[6].

The female population exhibits a higher level of risk awareness in AI social application scenarios, with a much higher level of concern for ethical and security issues such as algorithm privacy breaches and generative false information dissemination than men. They have a stronger ability to predict hidden risks in technology applications [7]. Faced with the changes in career and life scenarios caused by AI replacing manual creation and impacting basic employment positions, women are more likely to experience adaptation difficulties and psychological anxiety; At the same time, women are more sensitive to the speed of AI technology iteration. When the personal digital skill update rate is difficult to match the pace of technological development, they are more likely to experience anxiety stemming from perceived skill gaps, and the overall level of technology adaptation anxiety is significantly higher.

The male population exhibits a cognitive model guided by instrumental rationality, with significantly higher acceptance and willingness to apply AI in social scenarios such as copywriting, image creation, and intelligent algorithm recommendation. They are accustomed to using AI technology as an auxiliary tool to optimize information processing and improve content creation efficiency, and have a positive and optimistic judgment on the practical effectiveness and industry development prospects of AI. They show stronger initiative in exploring and expanding the application scenarios of AI new tools.

Overall, there is a clear distinction in the AI cultural cognition between male and female groups: males are guided by practical value and focus on the efficiency improvement and functional convenience brought by AI technology; Women hold a more risk-averse view and place greater emphasis on the social and life risks behind technology. This cognitive orientation differentiation rooted in gender differences not only directly affects individuals' emotional states and subjective psychological feelings when facing digital technology changes, but also becomes the core cognitive driver that causes differences in mental health experiences between different gender groups, directly affecting individuals' psychological adaptation status in digital life.

5. The correlation between social media use, AI perception, and mental health, as well as the moderating effect of gender

Based on the "2024 National Mental Health Blue Book" by the Institute of Psychology of the Chinese Academy of Sciences and related empirical research, social media usage patterns, perceptions of AI, and individual mental health are closely related, and gender plays a significant moderating role in the relationship between the three.

From the perspective of the influencing mechanism, passive browsing of social media will occupy offline rest and social time, amplify emotional depletion, and thus increase the probability of negative emotions such as irritability and depression [8]. According to relevant data, adolescents who spend more than 4 hours per day on short videos face a 42.1% depression risk, and women are far more negatively affected by such passive use behaviors than men.

Actively participating in social media interactions can consolidate online social support, enrich interpersonal communication channels, and have a positive effect on maintaining emotional stability and enhancing subjective well-being. Research has confirmed that active social behavior can enhance positive emotions and alleviate depressive states, while passive browsing can exacerbate anxiety and feelings of depression. Men tend to use social media in a tool-based manner, gaining psychological benefits through information acquisition and resource accumulation; Women are more likely to develop social comparison psychology when browsing aimlessly, which can lead to emotional and energy consumption.

In terms of AI cognition, a rational view of technological development can alleviate digital adaptation anxiety, while excessive amplification of potential technological risks can increase psychological burden. Related studies have shown that women have stronger concerns about AI privacy breaches, job substitution, skill adaptation, and other issues. Negative AI cognition can further increase their anxiety and depression levels, and the higher the frequency of AI use, the more prominent the group's technology anxiety, and gender differences are evident.

Passive social browsing also reinforces individuals' negative perception of AI, creating a "behavior-cognition-mental health" chain effect. People who browse passively for a long time are more alert to the risks of AI, while active social groups are more likely to be exposed to positive application information of AI. These effects are especially acute in the case of women who are likely to get trapped in a long-term cycle of unfavorable psychological state.

Inherent gender differences directly shape individuals' social media usage habits, and substantially influence public perceptions and acceptance of artificial intelligence technology. Men tend to be more proactive and instrumental in their use of AI, and have a higher recognition of its practical value; Women have a higher proportion of passive use, are more sensitive to risk perception, and negative cognition is more likely to be transformed into psychological problems. This conclusion can provide empirical reference for gender-specific digital mental health interventions [9].

6. Optimization Path of Psychological Health Guidance Based on Gender Differences

Based on the gender-related characteristics summarized in the previous text and combined with the current situation of digital psychological services in China, targeted psychological guidance plans can be developed according to the gender stratification approach, and relevant strategies are in line with the actual needs of grassroots social governance and psychological services.

At the level of intervention for female groups, the primary task is to standardize the use of social media, correct the habit of prolonged, aimless scrolling, and help them develop a reasonable planning and self-screening way of receiving online information. According to research data from the 2024 National Mental Health Blue Book, the average daily use of short videos by teenagers and college students is generally high, and excessive addiction to online content can significantly increase the probability of psychological problems such as anxiety and depression [10]. Compared to men, women are more prone to emotional exhaustion during passive browsing and are more influenced by online information and social comparisons. By promoting digital literacy among the general public, it can help women improve their ability to discern algorithmic content; At the same time, popularize basic knowledge of artificial intelligence, clarify the scope of technological applications and personal privacy protection methods, reduce unnecessary technological panic, and alleviate psychological discomfort caused by the digital environment.

For the male population, it is necessary to focus on popularizing AI ethical norms and network behavior responsibilities, avoiding excessive reliance on intelligent tools, which can lead to the degradation of independent thinking ability and a decrease in offline social willingness. Reasonably guide men to explore the information value of social media and leverage the positive regulatory effect of online platforms on personal psychological states. Constrained by traditional gender norms, most men are generally unwilling to actively seek psychological help, and long-term emotional suppression can easily breed psychological hidden dangers. To address this issue, it is necessary to broaden the channels of diversified psychological counseling services, challenge the stereotype that "men should not show vulnerability", guide men to face psychological and emotional problems squarely, and actively accept professional psychological counseling.

Implementing differentiated guidance based on gender characteristics can align with the online behavioral patterns and technological cognitive habits of different groups, and construct a digital mental health service model that meets the needs of the public. Based on empirical research, optimizing intervention methods can not only improve the accuracy of psychological assistance, but also provide practical reference for the construction of targeted and differentiated mental health services.

7. Conclusion

We rely on authoritative domestic mental health survey data and existing academic findings for this study. We start with gender stratification as our research focus, and look into the inner connections between people's social media usage habits, AI cultural cognition, and mental health.

The internet usage habits of male and female netizens show obvious differentiation characteristics. Female users primarily engage with social media to fulfill emotional and social needs, and show a greater tendency toward unplanned passive browsing in daily routines. Men tend to focus on information acquisition and tool-based applications, and online usage behavior has stronger purposefulness. When facing the emerging digital culture of AI, differences in group attitudes are equally prominent. Men have a higher willingness to accept intelligent technology and are more willing to recognize its application value. Women are more sensitive to the potential risks of technology, and are very concerned about issues such as privacy breaches and job substitution, which can also easily lead to digital adaptation anxiety.

Social behavior patterns and AI cognitive mindset profoundly influence individual psychological states. Long-term passive browsing of online information, adhering to negative and one-sided AI cognition, will continue to consume emotions and increase psychological burden. Actively participating in online social interactions and objectively viewing the development of AI technology can effectively maintain emotional health. There are significant differences in the degree of influence among different gender groups.

This study relies on publicly available research data for analysis, without setting up long-term longitudinal tracking surveys, making it difficult to firmly establish causal relationships among variables, which is also a limitation of this study. Long-term follow-up surveys can be conducted in the future to further clarify the underlying mechanisms of influence among various variables. At the societal level, it is necessary to establish a gender-friendly digital network environment and promote hierarchical digital literacy and mental health education based on the behavioral and cognitive characteristics of both male and female groups. Efforts to guide online behaviors, shape public technological perceptions and refine the social environment across multiple dimensions can effectively enhance people's digital mental health.

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