#### General

# Digital technology and mental health: Chinese university students' perspectives on the impact of social media

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# **Background**

To address the growing concerns about mental health issues among Chinese university students, our study investigates the impact of social media on their mental health. This study intends to shed light on how these students' use of social media platforms contributes to these mental health issues, given that it has been estimated that up to 30% of university students in China suffer from mental health issues.

### **Methods**

We investigate the extent of this issue by looking at how Chinese social media platforms like WeChat, Weibo, and QQ impact students' mental health. To gain a comprehensive insight into students' perspectives, this study's sole methodology is qualitative semi-structured interviews. Our core claim asserts that social media considerably affects Chinese university students' mental health, with both positive and negative consequences.

### Results

The findings show how closely social media use and Chinese university students' mental health are related. These networks let people connect and get support but also encourage social comparison and stigma towards mental illness. Students use a variety of coping skills, such as self-regulation techniques, digital detoxification techniques, and looking for emotional support in online networks. These results highlight the need for a complex understanding of social media's effects on mental health. Our study also recognizes students' capacity for adaptation and resilience as they traverse the digital world, offering theoretical and practical applications for successfully juggling online and offline lives.

### Conclusion

In the end, our study contributes to a thorough and culturally sensitive understanding of how social media affects the mental health of Chinese university students.

## 1. INTRODUCTION

Without a doubt, social media platforms have revolutionised communication, information sharing, and interpersonal interactions for people all over the world. With around 1.03 billion active users as of the year 2022, accounting for a 72 per cent penetration rate, social media is extremely prevalent in China. These astounding statistics highlight the vast scope of social media's effect in China, where governmental policies, local platforms, and a thriving digital culture have all worked together to create a distinctive online environment. However, the "Great Firewall," which effectively restricts popular foreign platforms like Facebook, Twitter, and YouTube, has caused a huge dif-

ference between China's social media ecosystem and that of the West.<sup>2</sup> Instead of these multinational social media platforms, Wang<sup>3</sup> reported that China has developed its own domestic social media ecosystem with homegrown platforms like WeChat, Weibo, and OO.

Concern over the alarmingly high prevalence of mental health issues, such as depression and suicide attempts, among university students in China has grown in recent years. Surprisingly, a study suggests that within this group, the prevalence rates of mental illness might reach up to 30%. There is an urgent need to investigate the underlying causes of this crisis because of the widespread attention that this frightening trend has received from academics, healthcare experts, and legislators. It is critical to investigate if social media platforms contribute to amplifying or

mitigating these mental health issues as they become more pervasive in the lives of Chinese university students. By exploring the complex link between social media use and the mental health of Chinese university students, our research aims to gain a comprehensive understanding of whether Chinese university students' use of social media platforms has any role to play in the increased mental health issues among this group.

#### 2. LITERATURE REVIEW

# 2.1. POSITIVE EFFECTS OF SOCIAL MEDIA ON MENTAL HEALTH

The term "social media" refers to a broad range of online platforms and technologies that let people create, share, and engage with digital content.<sup>5</sup> It has dominated today's world and significantly impacted almost every part of our lives. 6 In this context, it is critical to look at social media's positive effects on mental health in the context of China, where usage of social media has grown rapidly in recent years. 7 Social media use raises some genuine concerns, but its potential benefits for an individual's mental health cannot be ignored.<sup>8</sup> Studies show how social media platforms can help people interact and build social networks. 9,10 In this context, Xiong and Liu<sup>11</sup> highlighted that relationship maintenance has grown in China crucially thanks to platforms like WeChat and QQ, especially in geographically dispersed societies. According to studies, those who regularly interact with their social networks online experience less loneliness and a stronger sense of social connectedness, both of which can be beneficial for one's mental health. 12-14

In China, Sampogna et al. <sup>15</sup> noted that social media has greatly impacted lowering stigma and increasing awareness of mental health issues. On social media sites like Weibo, Sullivan <sup>16</sup> expressed that campaigns and conversations regarding mental health have gained traction, encouraging open conversations. Even while these positive social media trends in China are encouraging, it is vital to recognise that each person's experience with social media may be very different and may depend on usage habits and content preferences.

# 2.3. NEGATIVE EFFECTS OF SOCIAL MEDIA ON MENTAL HEALTH

Recent studies have shown that the expansion of social media has had some detrimental effects on users' mental health. <sup>17,18</sup> According to Liu and Ma, <sup>19</sup> social media's widespread use may encourage frequent social comparisons. Users, especially social media influencers, frequently display their apparently idealised lives, setting up unattainable standards for other people. <sup>20</sup> Similarly, McCrory et al. <sup>21</sup> indicated that users, especially the younger generation, have been shown to experience higher levels of inadequacy and poorer self-esteem as a result of continual exposure to curated content. Another problem is that some social media sites provide the ability to remain anony-

mous.<sup>22</sup> Swenson-Lepper and Kerby<sup>23</sup> expressed that this has led to problems with cyberbullying and harassment. Online abuse incidents can severely impact a person's mental health, causing anxiety, depression, and even suicidal thoughts.<sup>24</sup> In the context of cyberbullying, the Chinese government has tried to stop online harassment, yet the issue still exists.<sup>25</sup> Further, as a result of the continuous updates and live-streaming culture on websites like Kuaishou and Douyin, the fear of missing out (FOMO) is common in China.<sup>26</sup> Users who feel driven to be connected all the time could feel more anxious and under pressure to follow trends in society.<sup>27</sup> Ma et al.<sup>28</sup> elaborated that negative consequences on mental health might result from the need to maintain an online presence, which can lead to stress and burnout.

### 2.4. CULTURE, SOCIAL MEDIA, AND MENTAL HEALTH

Examining the effects of online platforms on people's psychological well-being is complicated further by the complex relationship between culture, social media, and mental health. Pavlova and Berkers<sup>29</sup> indicated that individuals' beliefs, conventions, and expectations are shaped by their culture, and this, in turn, affects how they interact with social media and perceive its consequences on their mental health. In China, Jackson and Wang<sup>30</sup> reported that a collectivist culture strongly values interpersonal relationships and social harmony. Due to possible increased sensitivity to online criticism and peer comparisons, which may have an adverse effect on self-esteem and mental health, Tsai and Men<sup>31</sup> expressed that this cultural context may amplify the effects of social media interaction. In this study, we are attempting to test whether this cultural context intensifies the effects of social media interaction on the mental health of Chinese university students. Furthermore, facesaving, or "mianzi" in Chinese culture, is a deeply embedded idea that revolves around maintaining one's social reputation and image.<sup>32</sup> People in China could be especially sensitive to harsh remarks, criticism, or feedback on social media since it might be seen as a loss of face.<sup>33</sup> This cultural norm may exacerbate the negative effects of online interactions on mental health in the setting of social media. This increased sensitivity could make it more stressful and anxious to use online areas.

#### 2.5. THEORETICAL FRAMEWORK: GROUNDED THEORY

We used grounded theory as our analytical framework, which is consistent with our research strategy. In particular, grounded theory is highly suited for investigating and developing ideas from qualitative data. It enabled us to carefully examine interview transcripts, spot emergent themes, and come up with useful insights based on the data itself. Instead of imposing preconceived conceptions or theories, we used grounded theory to make sure that our findings were based on the experiences and viewpoints of Chinese university students.

### 3. METHODS

In this section, we have provided a detailed description of the research methodology that we adopted to successfully conduct our study.

#### 3.1. CROSS-SECTIONAL EXPLORATION

Our research was carried out as a cross-sectional study. By choosing a specific time frame, we could take a quick look at Chinese university students' perceptions and experiences of social media's impact on their mental health at a particular time. This cross-sectional study used data gathered at a specific time to reveal the participants' feelings, thoughts, and experiences. While a cross-sectional exploration provides a momentary viewpoint, it is especially useful for comprehending the phenomenon's current state. We effectively collected data from our participants and analysed it in a way that represents their recent and present-day experiences with social media and mental health by choosing this time horizon.

#### 3.2. SETTING

The data collection of our research was totally virtual, using two of the most popular Chinese online meeting tools, Tencent Meeting and DingTalk, in data collection interviews. The decentralised mode was adopted in order to take into account the geographical spread and the busy schedules of our participants, who are Chinese university students, spending a lot of time on social media platforms. I did not allow other non-participants to be present during these interviews as this ensured a peaceful and focused environment. We had sixteen university students from tier 2 Chinese cities as our sample, namely Xi'an, Chengdu, and Hangzhou, for the diversity of the urban context. The participants' ages varied from 18 to 24 with a 50% male ratio and from various studies such as computer science, social sciences, engineering, business, and humanities and arts. This sociodemographic diversity presented a sophisticated, complex viewpoint on the significance of social media to mental health within the unique cultural and social sphere of a Chinese college.

### 3.3. DATA COLLECTION AND ANALYSIS

This section describes the methods we used to gather and analyse the data for our study, which looked into how social media affects the mental health of Chinese university students.

# 3.3.1. SAMPLING STRATEGY FOR RECRUITMENT OF PARTICIPANTS: CONVENIENCE SAMPLING

We specifically targeted Chinese university students who frequently use social media platforms with our participant recruitment technique. Since Weibo is a popular social media network among Chinese students, we used this platform for participant recruitment purposes.<sup>36</sup> A convenience sampling technique was used to reach our target audience.

Weibo's hashtag feature and university-related groups were used to our advantage as we shared advertisements explaining the goal of our study and inviting students to take part in it. These ads were purposefully placed at periods of heavy platform usage when it was anticipated that student interaction would be strong. We also acknowledged the value of Weibo communities and forums unique to universities. These online forums act as conversation hubs for students, making them excellent platforms for the recruitment of participants. In order to initiate discussions about our research and look for people willing to share their experiences, we shared our advertisements in these communities and forums on Weibo.

#### 3.3.2. PARTICIPANT PROFILE

In this section, we have presented thorough information about the participants who took part in our study. In our study, there were sixteen participants in total, and each participant contributed immensely to our understanding of the perspective of Chinese students studying at various universities on the impact of social media on their mental health. We have ensured gender balance in our study by selecting an equal number of female participants and male participants. Further, our study's participants were within a broad age range, which is consistent with China's typical university student population. Most of our participants were between the ages of 18 and 24, corresponding to the age range most frequently linked with higher education. Furthermore, participants in our study came from a broad range of study fields, including computer science, social sciences, engineering, business, and humanities and arts. The main point to be noted is that in our study, all the participants were from tier 2 cities in China, including Xi'an, Chengdu, and Hangzhou. This clearly shows that our study has the potential to capture the perspective of students belonging to tier-2 cities in China regarding the impact of social media on their mental health.

# 3.3.3. PRIMARY DATA COLLECTION: SEMI-STRUCTURED INTERVIEWS

Semi-structured interviews served as our main technique for collecting the primary data. First, we began preparing our interview guide, which was comprehensive enough to collect in-depth data from our sample population. We conducted a thorough literature study before conducting interviews in order to pinpoint the major questions and themes surrounding social media and mental health. This extensive literature review influenced the creation of our semi-structured interview guide. The semi-structured interview guide was created to strike a balance between a standardised method and the freedom required to delve into participants' individual experiences. It consisted of open-ended questions that prompted respondents to express their ideas, sentiments, and opinions on social media and how it affected their mental health. After preparing the interview guide, we conducted two pilot interviews, which helped refine and validate our interview guide to ensure that the questions were clear, relevant, and conducive to in-depth responses. The interviews were audio-recorded which was informed to all participants before commencing the interview, to enhance the accuracy of transcription and analysis. These semi-structured interviews were performed online using two popular Chinese online meeting apps, Tencent Meeting and DingTalk from Alibaba. These platforms allowed for easy communication and smooth virtual interactions with our participants. Each interview session lasted between 40 and 50 minutes, giving participants enough time to elaborate on their experiences and viewpoints regarding the impact of social media on mental health. These online meetings made it simple for our participants to participate in the study by allowing for flexible scheduling that took into account their convenience.

### 3.3.4. DATA ANALYSIS METHOD: THEMATIC ANALYSIS

We were able to draw out valuable insights from the qualitative data we gathered from our interviews by using thematic analysis, which served as the cornerstone of our data analysis method. In keeping with the strategy we decided upon, we conducted a thorough thematic analysis of the interview transcripts as per the method described in the literature.<sup>37</sup> Through methodical identification, analysis, and reporting of repeating themes and patterns that appeared in our participants' responses, this technique allowed us to delve deeper into the subject matter. We started our analysis journey by carefully reading the interview transcripts. We then coded different data segments, highlighting important words, ideas, and patterns. We then went through a process of grouping and streamlining these codes into logical and insightful themes. We engaged in careful consideration and discussion throughout this iterative process to ensure that the themes we found were representative of the complex tapestry of participant narratives. Therefore, by using thematic analysis as the primary data analysis method, we ensured that our study captured the essence of the lived experiences and perspectives of Chinese university students while also providing in-depth insights into the complex relationships between social media and mental health.

# **3.4.** ETHICAL CONSIDERATIONS

In terms of ethical consideration, all the participants gave informed consent and the consent was obtained in written format to make sure a clear understanding of the study's aim and their involvement on a voluntary basis. Participants were fully informed that their verbal consent would be recorded at the beginning of each interview session which served as a binding agreement of their willingness to participate. We upheld a firm commitment to confidentiality and assured participants that their information and identities would be kept private using assigned pseudonyms. Online interviews were conducted in secure, private environments, and privacy was of utmost importance.

### 4. DATA ANALYSIS

#### 4.1. THEMATIC ANALYSIS

#### 4.1.1. THEME 1: DUAL NATURE OF SOCIAL MEDIA

Participants in our study provided poignant insights into the dual nature of social media, which is pervasive in our lives and serves as a double-edged sword. One of the participants shared: "With the help of social media platforms like WeChat, I can keep myself close to my friends far away. For me, it is like a lifeline. Even though we are separated by miles, I feel close to them through shared photos and updates" (Participant 2). Such comments perfectly encapsulate the positive aspects of social media. This striking comment demonstrates how social media platforms, like WeChat and other similar ones, can help University students stay connected with friends and relatives who are geographically distant. However, an opposing perspective that reflected the possible harm that social media might cause emerged. One of the participants expressed: "Douyin makes me feel like I am not good enough, with all those perfect influencers using the platform to flaunt their perfect looks" (Participant 5). Such remarks highlight the anxietyinducing nature of social media platforms, like Douyin, where self-esteem can be damaged as people compare themselves to highly curated content shared by influencers.

Critically, this theme emphasises the need for a complex understanding of how social media affects Chinese university students' mental health. Although it is a useful tool for connecting and sharing information, it also carries a risk of social comparison, anxiety, and inadequacy.

# 4.2.2. THEME 2: COPING STRATEGIES AND DIGITAL DETOX

In our semi-structured interviews with Chinese university students on the effects of social media on their mental health, coping mechanisms and the idea of digital detox came up repeatedly.

Establishing boundaries and restricting screen time were crucial coping mechanisms for many students. One of the participants said: "I have started limiting my screen time and disabling notifications. Not receiving updates on a constant basis is liberating" (Participant 1). In this context, in order to maintain a good balance between online and offline life, many participants emphasised the need to set up personal boundaries in the digital world. Another widely used coping strategy was taking detox breaks from using social media platforms. Participants talked about consciously taking breaks from social media as a way to lessen the pressure of maintaining a continual online presence. One participant described their own experience: " I take social media breaks regularly. It helps me focus on real-life interactions" (Participant 14). Such practice was thought to be a technique to reconnect and re-establish contact with the real world, minimising the emotional toll of social media. Furthermore, participants also acknowledged the value of seeking support from friends and family as one of their coping mechanisms. They found comfort in talking with loved ones who knew their concerns about their digital experiences and mental health issues. Additionally, the fact that they turned to their social networks for support highlights the value of personal connections as a safeguard against any possible drawbacks of digital technology.

# 4.2.3. THEME 3: IMPACT OF SOCIAL MEDIA ON ACADEMIC PERFORMANCE

In terms of the third theme, several participants stated that social media has educational benefits, including using social media platforms for academic discussions, sharing study materials, and working with others on group projects. One participant expressed their excellent experience by sharing: "Social media groups related to our courses have been tremendously useful; we share notes, talk about homework, and even look for study partners" (Participant 3). On the other hand, the potential for social media to divert from academic responsibilities was a frequent concern raised by many participants. Participants shared spending excessive amounts of time on social media platforms, compromising their study schedules and general academic performance. Offering this critical viewpoint, one of the participants shared: "I know I should be studying during exams, but Weibo can be so addicting. I do not know why but I lose track of time when I am using social media" (Participant 7). Thus, this dual impact of social media on academic performance emphasises the need for methods to maximise its positive aspects while minimising its negative ones.

# 4.2.4. THEME 4: INFLUENCE OF SOCIAL MEDIA ON MENTAL HEALTH STIGMA

Social media platforms can both support and contradict pre-existing attitudes and stereotypes towards mental health issues. In this regard, some participants called attention to the negative aspects. One of the participants said: "I came across a post on Weibo where I see hurtful comments about people with mental health issues. I am very, very disappointed to see how uninformed and judgmental some online discussions may turn into" (Participant 10). This demonstrates how negative remarks can flourish on social media platforms, further marginalising people who are struggling with mental health issues. On the other hand, social media also proved to be a great platform for de-stigmatising mental health conditions. One of the participants said: "I follow mental health advocates on WeChat who share their stories and struggles. It gives me comfort to know that I am not the only one suffering" (Participant 5). This exemplifies how social media may link people with helpful communities and amplify voices supporting stigma reduction. Furthermore, the potential of social media marketing campaigns was also underlined by our participants. One of the participants narrated: "I remember seeing Dove's #DetoxifyYourFeed campaign related to toxic beauty advice shared by beauty influencers on social media, with millions of views and comments on Douyin. Such campaigns might alter how people perceive mental issues" (Participant 12). This demonstrates how social media may

be used to further societal change by raising awareness and challenging stereotypes.

# 4.2.5. THEME 5: SOCIAL MEDIA AND CULTURAL EXPRESSION OF MENTAL HEALTH

In the context of their culture, this theme investigates how Chinese university students utilise social media as a forum to express and manage their mental health.

Many participants emphasised the importance of cultural identity in their discussions of mental health on social media. They discussed how they had used forums to talk about culturally specific stressors, such as study pressure, expectations from family, and societal norms. One participant said, "I can interact with people who understand the particular difficulties we Chinese students experience on social media. It is comforting to know that someone is there who can understand me better" (Participant 13). Participants also emphasised the role of traditional Chinese beliefs and values in shaping their perception of mental health. However, participants acknowledged the possibility of cultural stigma associated with mental health disorders. For instance, one of the participants shared: "One of my classmates needed help but he was too afraid to reach out to such communities on social media. He was worried about what his families or other people would think" (Participant 9). It draws attention to the difficulties University students face in openly speaking out and addressing mental health issues.

### 5. FINDINGS AND CONCLUSION

In this section, the key findings of our study have been presented, and we attempted to correlate those key findings with prior literature and renowned academic theories.

# 5.1. THE DUAL-EDGED SWORD OF SOCIAL MEDIA: BALANCING CONNECTION AND COMPARISON

Chinese university students in our study demonstrate the dual nature of social media platforms while deftly navigating the complicated social media landscape, echoing prior literature that has acknowledged social media's dual nature.8 They took comfort in social media's capacity to reunite them with loved ones, especially when they were geographically apart, mirroring the principles of the Social Identity Theory. This theory emphasizes the role of group affiliation and identity in shaping behaviour.<sup>38</sup> WeChat, Weibo, and QQ were lifelines for maintaining social relationships and establishing a feeling of community inside online networks. However, these students also mentioned the darker side of this virtual world, grappling with the Social Comparison Theory. This theory holds that people assess their own qualities and ideas by evaluating how others see them.<sup>39</sup> They emphasised how social media frequently turns into a breeding ground for social comparisons, with users-especially those who have been swayed by social media influencers-presenting idealised lives that set unachievable standards, leading to feelings of inadequacy and self-doubt. As they admitted to feeling both uncomfortable when disconnected and uneasy when constantly engaged, this paradoxical relationship with social media was further highlighted.

# 5.2. STRATEGIES FOR MENTAL HEALTH MAINTENANCE: A DIGITAL BALANCING ACT

Our study found that Chinese university students had a nuanced understanding of the potential drawbacks of excessive social media use and used a variety of coping mechanisms. This is consistent with the idea of the Media System Dependency Theory, which emphasises the importance of individual agency in managing setting consumption patterns. 40 They connected with the notion of creating boundaries to control their online life. This connection matches the ideas of the Self-Determination Theory by actively controlling their behaviour to achieve well-being.<sup>41</sup> They demonstrated their control over media consumption patterns by setting screen time limits and turning off notifications, achieving a balance between online and offline activities. These coping strategies are similar to those used by students to control how social media affects their academic performance, 42,43 placing emphasis on the value of good time management and the establishment of specific academic goals (Mota et al., 44; Usman et al., 2014). Not only this, our study extends prior studies by the addition of the concepts of digital detox and self-regulation to the existing literature on social media use and mental health. Additionally, the students adopted digital detox practices that echoed the idea of psychological detoxification.<sup>45</sup> By employing this tactic, students were able to reduce the emotional cost of ongoing online interaction and re-establish contact with the real world.

# **5.3.** DECONSTRUCTING STIGMA: THE SOCIAL MEDIA PARADOX

The influence of social media on mental health stigma among Chinese university students reveals a complex dynamic, resonating with existing literature that recognises both the potential for perpetuating and challenging stigma. 15,46 In our study, participants highlighted instances where social media platforms served as breeding grounds for negative attitudes and comments about mental health, due to which people cannot openly discuss their mental health issues. This aligns well with prior studies highlighting how social media is used for cyberbullying. 20,24 These experiences also align with the Spiral of Silence Theory, where individuals may choose to remain silent or conform to the prevailing public opinion, fearing isolation or backlash.<sup>47</sup> In this context, social media platforms can amplify stigmatising voices and discourage open discussions, perpetuating mental health stigma.

# 5.4. SOCIAL MEDIA AS A CULTURAL CANVAS: NAVIGATING MENTAL HEALTH IN A CHINESE CONTEXT

Our study findings show that cultural identity significantly shapes the mental health language among Chinese students on social media, which is consistent with Cultural Identity Theory.<sup>48</sup> Students manage culturally specific tensions, including academic demands and parental expectations, via SNSs, which corroborates prior research.<sup>29</sup> They also strive to reconcile Chinese spirituality with Western psychological treatments according to the Acculturation Theory.<sup>49</sup> This requires culturally relevant mental health knowledge and modern seeking assistance. We also found that societal perceptions and family influences cause mental health stigma, supporting the idea that cultural attitudes affect mental health and treatment alternatives.<sup>50</sup> As Tsai and Men<sup>31</sup> show, collectivist cultures discourage free discussion of mental health due to social stigma.

#### 5.5. STUDY'S CONTRIBUTION

The findings of our study provide important theoretical and practical implications of social media and mental health among Chinese university students. In theory, it requires developing new theories to accommodate this group of learners. In practice, it implies that educational institutions adopt initiatives that promote digital literacy and mental health, targeting those who require intervention in the digital space. Digital solutions can be created by mental health professionals for enhancing the management of mental health. Our findings also suggest that social media platforms can improve user experience and algorithmic transparency.

# 5.6. LIMITATIONS AND FUTURE RESEARCH

Our study is significant for understanding the impact of social media on the mental health of Chinese university students but has limitations. However, its cross-sectional design hinders causal inference; hence future longitudinal or experimental studies on this dynamic relationship are recommended. This emphasis on tier 2 cities does not necessarily reflect other geographical areas or consumer groups; therefore, further research should encompass various cities and communities. Furthermore, the use of self-report measures can be associated with response effects. Future researches could include the use of behavioral data or the use of qualitative techniques. It is also recommended to examine interventions such as social media literacy programs and cultural factors that shape individuals' behavior online.

#### ETHICAL CONSIDERATIONS

An application for full ethical approval was made to the City University of Macau and ethics consent was received on 22 March 2023. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

# ETHICS DECLARATIONS

I confirm that all the research meets ethical guidelines and adheres to the legal requirements.

# DATA AVAILABILITY

We are willing to share the data. Please contact the correspondence author for details by provided email.

### COMPETING INTERESTS

The authors report no conflict of interest.

### **GRANT INFORMATION**

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