

WeChat usage, social comparison, and self-esteem among Chinese college students

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ISSN: 2243-7703
Online ISSN: 2243-7711

OPEN ACCESS

Received: 20 September 2024

Revised: 13 October 2024

Accepted: 20 October 2024

Available Online: 25 October 2024

DOI: 10.5861/ijrse.2024.24757

Abstract

This study investigates the impact of WeChat usage on social comparison and self-esteem among 874 Chinese university students. Using regression and mediation analysis, the research explores various dimensions of WeChat engagement and their effects on psychological well-being. Results reveal that while WeChat usage strongly predicts social comparison behavior, its direct effect on self-esteem is minimal. However, social comparison, particularly upward comparisons, significantly negatively affects self-esteem. The study highlights the complex relationship between digital engagement, social comparison, and self-esteem, emphasizing the need for further exploration of mediating factors like emotional support and coping strategies.

Keywords: WeChat usage, social comparison, self-esteem, Chinese college students

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1. Introduction

WeChat, since its launch in 2011, has evolved into a highly influential social media platform, especially among college students in China. Beyond being a communication tool, WeChat's multi-functionality, including entertainment, social interaction, and information acquisition, has made it indispensable in daily life. As social media becomes increasingly embedded in daily life, understanding its psychological effects has garnered growing academic interest. Despite the extensive use of WeChat among Chinese college students, limited research has focused on how its use interacts with psychological constructs such as social comparison and self-esteem. Given these gaps, this study aims to explore the influence of WeChat usage on social comparison and self-esteem, contributing to a deeper understanding of its potential psychological impacts.

WeChat usage, which encompasses messaging, social networking, and content sharing, plays a central role in the daily lives of Chinese college students. According to Li (2023), although WeChat usage itself does not directly lead to lower self-esteem, upward comparison tendencies negatively moderate the relationship between frequent posting on WeChat Moments and self-esteem. This highlights the role of social comparison in shaping users' psychological outcomes. In addition, WeChat's privacy features, reciprocity, and synchronicity encourage users to share personal information and engage in social interactions, making it a vital tool for maintaining social connections. Studies have shown that frequent social media usage, including WeChat, is linked to both positive and negative psychological outcomes, depending on the nature of the user's interactions (Liu et al., 2019). For instance, students who use WeChat more intensively for upward social comparisons may experience adverse effects on their self-esteem (Liu et al., 2019; Valkenburg et al., 2021).

Social comparison refers to the process by which individuals evaluate their own worth, abilities, and success by comparing themselves to others (Festinger, 1954). In the context of social media, this process is amplified, as users are constantly exposed to idealized representations of others' lives. On platforms like WeChat, social comparison occurs frequently as students view curated posts from peers, which can create unrealistic standards of success and happiness. Among Chinese college students, such comparisons on WeChat have been found to exacerbate feelings of inadequacy, particularly when individuals engage in upward comparisons with more successful or popular peers (Gao et al., 2020). Self-esteem is defined by Rosenberg in 1965 as an individual's overall evaluation of their worth, encompassing both positive and negative feelings about oneself. It is a crucial psychological construct, closely tied to emotional well-being and social interactions. In the context of social media use, self-esteem can be influenced by how individuals perceive and react to social comparisons. Studies have found that frequent exposure to idealized images and achievements on platforms like WeChat can lower self-esteem, particularly when users perceive themselves as falling short of these ideals (Valkenburg et al., 2021). Several studies have explored the interaction between social media use, social comparison, and self-esteem. For example, Bergagna et al. (2018) examined the role of social comparison in mediating the relationship between Facebook usage and self-esteem, finding that users with lower self-esteem were more likely to engage in frequent upward comparisons, leading to further declines in their self-perception.

This study will be conducted in Xiamen, a rapidly growing urban center in China, known for its educational institutions and vibrant student community. Xiamen's universities attract a diverse group of students who are active WeChat users, making it an ideal location for exploring the psychological effects of social media use. The respondents will be undergraduate students from several universities in Xiamen, selected due to their frequent engagement with WeChat for both social and academic purposes. This study is significant because it addresses the growing concern about the psychological impacts of social media use among college students. Understanding how WeChat usage influences social comparison and self-esteem can help students become more mindful of their online behaviors and reduce potential negative effects on their mental health. For educators and school

administrators, the findings will provide valuable insights into how social media influences student well-being, guiding the development of targeted interventions to promote healthier online practices. From a broader perspective, this research contributes to the field of psychology by exploring the nuances of social media interactions and their implications for mental health, particularly in a Chinese educational context.

Objectives of the Study - The primary objective of this study is to examine the relationship between WeChat usage, social comparison, and self-esteem among Chinese college students, with a focus on how these variables interact to impact their psychological well-being. Specifically, the study aims to identify the profile of the respondents in terms of their demographic characteristics such as gender, grade, and academic category, relationship status and only child or not ; measure the intensity of WeChat usage among the respondents; assess their levels of social comparison and self-esteem; analyze the potential differences in these variables based on the respondents' profiles; determine if there are significant correlations among WeChat usage, social comparison, and self-esteem; and finally, provide recommendations for educational and psychological interventions aimed at mitigating the negative impacts of social media on students' mental health.

2. Methods

Research Design - To investigate the impact of WeChat use on college students' self-esteem and their tendency toward social comparison, this study employs a descriptive quantitative research design, supplemented with correlational analysis. This approach allows for a systematic investigation of relationships between variables without manipulating them. Descriptive quantitative research aims to provide a comprehensive overview of a population, phenomenon, or condition by systematically gathering numerical data (McCombes, 2019). In this context, descriptive research helps to observe patterns in WeChat usage, social comparison tendencies, and self-esteem levels among Chinese college students. The descriptive approach is particularly useful when little is known about the problem, offering a foundational understanding of "what" occurs rather than "why" (Dovetail, 2023). The results from this stage can be used to form the basis for further exploratory or causal research. Furthermore, correlational research is utilized to examine the relationships between the variables of interest—WeChat usage, social comparison, and self-esteem. Correlational studies explore the strength and direction of associations between two or more variables, but they do not imply causality (McCombes, 2019). In this study, correlation analysis will be used to measure the relationships between the frequency of WeChat use (independent variable) and the psychological outcomes of social comparison and self-esteem (dependent variables). Regression analysis is a widely used statistical tool that measures the strength and nature of the relationship between two or more variables. In this study, it will help explore the predictive power of WeChat usage concerning psychological outcomes. While regression analysis can demonstrate associations and trends between variables, it does not imply a direct cause-and-effect relationship. Regression provides estimates of the degree to which one variable influence another but does not establish causality due to potential confounding factors (Shmueli et al., 2019). By using a combination of descriptive and correlational quantitative methods, this study will provide insights into how WeChat usage patterns relate to key psychological outcomes, while offering a foundation for future research aimed at exploring causal relationships.

Participants of the Study - The study targeted Chinese college students from universities across Xiamen, Fujian Province. These institutions provided a diverse range of academic disciplines and offered a suitable population for investigating the impact of WeChat usage on self-esteem and social comparison. According to recent statistics, there were approximately 100,000 undergraduate students enrolled in Xiamen's universities, which formed the basis for participant selection. A random sampling method was utilized to ensure the representativeness of the sample. The population was categorized by factors such as grade level, gender, academic discipline, relationship status, and family background.

Based on the **sample size formula** $n = \frac{Z^2 \cdot p \cdot (1-p)}{E^2}$ calculation for sample size, with a 95% confidence level where the $Z=1.96$, $p=0.5$, and $E=0.05$, the calculated sample size is 384 approximately. However, given the aim to ensure statistical power and subgroup analysis (by gender, grade, major, etc.), the study aims to collect

data from 900 students from colleges of Xiamen in Fujian Province. A convenience sampling method was utilized in the selection process to ensure sufficient responses. A total of **874 valid questionnaires** were obtained after collecting the data via Wenjuanxing website. The gender breakdown included **485 males (55.49%)** and **389 females (44.51%)**, with the following distribution across academic years: **2024 Grade (n = 78, 8.92%)**, **2023 Grade (n = 522, 59.73%)**, **2022 Grade (n = 162, 18.54%)**, **2021 Grade (n = 57, 6.52%)**, **2020 Grade (n = 50, 5.72%)**, and **2019 Grade (n = 5, 0.57%)**. Participants completed an online survey that included demographic questions, a section on WeChat usage, standardized scales to assess social comparison tendencies, and the Rosenberg Self-Esteem Scale, which was adapted for the Chinese context to measure self-esteem. This sample size of 874 participants ensured the statistical significance required for robust analysis, allowing the study to explore subgroup differences and provide insights into the psychological impact of WeChat usage on Chinese college students.

Measures - Survey on WeChat Use Among College Students. This survey is designed by Zhao (2018) to be used in measuring the motive and behaviour of using WeChat of the respondents. In this research, we have incorporated a pivotal tool from Zhao's master's thesis, "A Research on the Influence of College Students' WeChat Use on Loneliness," to assess the WeChat usage patterns of Chinese college students. The questionnaire developed provides a nuanced exploration of the dimensions of WeChat usage that are crucial for understanding its psychological implications. Zhao's questionnaire is meticulously designed to capture various facets of WeChat usage. It includes sections on usage frequency, where respondents indicate how often they engage with WeChat daily. The motivation section delves into the reasons behind the use of WeChat, ranging from communication and information seeking to entertainment and passing time. The dependency section assesses how much users rely on WeChat for their social interactions and daily activities. Zhao's questionnaire demonstrates strong psychometric properties. The reliability of the scales used in the questionnaire, measured by Cronbach's alpha, was found to be 0.856 above the acceptable threshold of 0.7, indicating good internal consistency across the scales. Specifically, the reliability coefficients for WeChat usage motives, dependency, and loneliness scales were all robust, supporting the internal consistency of the items within each scale. In terms of validity, both content and construct validity were thoroughly evaluated. Construct validity was confirmed through factor analysis, where the questionnaire items were found to load significantly onto the expected factors, demonstrating that the constructs measured by the questionnaire were indeed what they purported to measure. The KMO value of Wechat using motive and dependency above 0.9 indicates that the sample size is suitable for the factor analysis, and Bartlett's test is highly significant ($p < 0.001$), which supports the factorability of the correlation matrix. For the purpose of our research on "WeChat Use, Social Comparison, and Self-Esteem among Chinese College Students," Zhao's questionnaire serves as an instrumental baseline. However, to align it more closely with our research objectives focusing on social comparison and self-esteem, we have integrated additional items that specifically probe into aspects of social comparison on WeChat, such as frequency of comparing oneself with others and the impact of such comparisons on self-esteem. While maintaining the core components of Zhao's questionnaire, we have introduced modifications to ensure that it resonates with the context of our study. This includes adding questions that link WeChat use with self-perception and social comparison dynamics, as well as adapting the language to fit our targeted demographic of college students. Recognizing the importance of reliability and validity in research instruments, we have conducted a pilot study to test the modified questionnaire.

A preliminary survey was administered to a sample of 117 students to assess the psychometric properties of the instruments designed to measure WeChat usage. The reliability of the survey instrument was evaluated using Cronbach's alpha, which measures internal consistency, or how closely related a set of items are as a group. The Cronbach's alpha value of 0.944 suggests excellent internal consistency among the items in the survey. Factor analysis was employed to assess the construct validity of the survey, determining whether the factors identified correspond with the intended structure of the instrument. The KMO value of 0.884 indicates that the sample size is suitable for the factor analysis, and Bartlett's test is highly significant ($p < 0.001$), which supports the factorability of the correlation matrix. Each item's loading on its primary factor is substantial, indicating good

construct validity. The communalities, most above 0.60, suggest that a significant proportion of each item's variance is explained by the factors, reinforcing the relevance of these factors in explaining the constructs measured by the survey. The pilot results affirm its robustness and relevance, demonstrating satisfactory reliability and construct validity, which reinforces the credibility of our subsequent data analysis and findings

The Questionnaire of the Iowa-Netherlands Comparison Orientation Measure (INCOM). The Iowa-Netherlands Comparison Orientation Measure (INCOM), initially proposed by Gibbons and Buunk in 1999, is a refined instrument that facilitates the exploration of individuals' tendencies to engage in social comparison. This measure is designed to quantify the frequency and intensity with which individuals compare themselves to others across various dimensions of their lives, including their feelings, opinions, abilities, and situations. Social comparison is a fundamental process through which individuals evaluate themselves, often in relation to their peers. It is neither inherently positive nor negative but varies significantly across individuals. The German version of INCOM, adapted for cultural relevance and linguistic accuracy, retains the essence of the original measure while ensuring applicability to German-speaking populations. In the context of this research, INCOM serves as a critical tool for examining how college students utilize WeChat for social comparison and how this, in turn, impacts their self-esteem. The questionnaire is composed of statements to which respondents indicate their degree of agreement on a five-point Likert scale, ranging from strong disagreement to strong agreement. Social comparison is a fundamental process through which individuals evaluate themselves, often in relation to their peers. It is neither inherently positive nor negative but varies significantly across individuals. Recent research has demonstrated that the INCOM is not only relevant in Western contexts but also retains its reliability and validity when adapted for use among Chinese populations (Zhang et al., 2023; Yu et al., 2024). These studies confirm the INCOM's applicability in understanding social comparison behaviors in diverse cultural settings, reinforcing its utility in psychological and sociological research. Employing INCOM within this study will allow for a comprehensive assessment of social comparison orientations and provide insights into how these orientations influence the interplay between WeChat use and self-esteem. Given the instrument's focus on comparative behavior, it aligns well with the research objectives to unravel the underlying dynamics of social comparison facilitated by digital platforms like WeChat. As a relatively nuanced instrument, INCOM's role in this study is pivotal. It will enable a deeper understanding of the social comparison processes among college students, offering valuable insights into the psychological and social underpinnings of their interactions on WeChat. Further validation of the INCOM in this specific context will also contribute to the broader literature, enhancing our understanding of social comparison in digital environments.

Rosenberg Self-Esteem Scale (RSES). The Rosenberg Self-Esteem Scale RSE, developed by sociologist Morris Rosenberg in 1965, is a widely used psychological instrument for assessing an individual's self-esteem. Comprising 10 items, the RSES measures global self-worth by assessing both positive and negative feelings about the self. The scale is based on the premise that self-esteem serves as a crucial psychological resource and reflects an individual's overall subjective emotional evaluation of their own worth. Self-esteem is a central psychological construct, influencing and being influenced by various socio-emotional conditions and behavioral outcomes. It is not characterized as inherently positive or negative; rather, it encompasses the individual's comprehensive evaluation of oneself, including feelings of superiority, inferiority, or an acceptance of one's own limitations. The Rosenberg Self-Esteem Scale has been adapted into numerous languages and cultural settings, retaining its core purpose while ensuring relevance across diverse populations. Studies have consistently demonstrated the scale's robust psychometric properties across different demographic groups and cultural settings (Ruddell, 2020; Jordan, 2020). The RSES consists of statements related to overall feelings of self-worth or self-acceptance, which respondents rate on a four-point Likert scale from strongly agree to strongly disagree. This scaling method helps in quantifying the degree of self-esteem, facilitating straightforward comparative analysis. The Rosenberg Self-Esteem Scale is renowned for its high reliability and validity, making it an esteemed tool in both psychological research and clinical assessment. Studies have consistently demonstrated the scale's robust psychometric properties across different demographic groups and cultural settings. Within this study, the RSES is instrumental in exploring how WeChat usage impacts self-esteem among college students. By

integrating this scale, the research aims to delve into the psychological impacts of online social interactions and digital self-presentation facilitated by WeChat. The scale's focus on general self-worth aligns perfectly with the research objectives to uncover the effects of digital communication on psychological well-being.

Data Gathering Procedure - Before initiating the study, the researcher engaged in thorough preparatory work, encompassing an extensive review of pertinent literature and assimilating valuable insights from work practice. This preparatory phase was crucial for refining the research focus on WeChat use, social comparison, and self-esteem among Chinese college students, identifying it as a significant subject warranting deeper exploration. The initial step involved a detailed examination of existing scholarly work on social media use, specifically WeChat, and its psychological implications, focusing on self-esteem and social comparison among college students. This review laid the groundwork for the development of research questions and hypotheses, aiming to unearth the intricate relationships between these variables within the context of Chinese cultural settings. Opting for a quantitative research approach, the study was designed to employ a survey method using questionnaires to collect data from participants. This method was chosen for its efficacy in capturing a wide array of responses pertaining to the usage of WeChat, social comparison tendencies, and levels of self-esteem among the target population. Prior to commencing data collection, the research proposal underwent scrutiny by an institutional review board to secure ethical clearance, ensuring that the study adhered to ethical standards concerning participant welfare and informed consent. To measure the key variables, the study utilized well-established instruments, including a questionnaire on WeChat usage developed specifically for this research. Additionally, the Iowa-Netherlands Comparison Orientation Measure (INCOM) – German Version, adapted for this study, was employed to assess social comparison orientation, alongside a renowned Rosenberg self-esteem scale. These tools were selected for their reliability and validity in previous studies. The study targeted a diverse group of Chinese college students from multiple universities in Xiamen of Fujian Province. Participants were invited through various channels to complete the online questionnaire, which was designed to be user-friendly and accessible, allowing for a broad and representative sample. Upon collecting the responses, data were processed and analyzed using statistical software like SPSS. The analysis included descriptive statistics, correlation analysis, regression analysis, and other relevant statistical tests to explore the relationships among WeChat use, social comparison, and self-esteem. The final stage involved interpreting the findings to address the research questions and test the formulated hypotheses. The study culminated in a comprehensive discussion of the results, underscoring their implications for understanding the psychological impacts of WeChat use and providing insightful recommendations for future research and practical interventions aimed at enhancing the well-being of Chinese college students.

Data Analysis - Data analysis will involve both statistical techniques to identify patterns and correlations in the survey data and thematic analysis to interpret the qualitative data from the interviews. By integrating findings from both data sources, the study aspires to unveil how WeChat's social dynamics affect self-esteem through the lens of social comparison among college students in China. With this, the following descriptive statistical tools will be employed. Frequency and percentage will be used in describing the profile of the respondents while mean is to use in determining respondents' level of Wechat usage, social comparison, and self-esteem. Likewise, analysis of variance (ANOVA) will be used in measuring differences of the three variables when compared based on respondents' profile whereas, Pearson r will be employed in testing possible relationship among the variables being studied.

Ethical Consideration - The study design received approval from the Research Ethics Review Committee (RERC) of the Lyceum of the Philippines University-Batangas Campus prior to commencement. This study strictly adheres to ethical principles, ensuring the rights of participants are protected. Key principles followed include voluntariness, confidentiality, and ensuring no harm or adverse effects. At the start of each questionnaire, researchers thoroughly explained the study's purpose and significance. Participants were provided with an informed consent form, and only after obtaining their consent did the survey proceed. The privacy of participants and the confidentiality of their responses were strictly maintained. Participation was entirely voluntary and anonymous, with participants encouraged to respond truthfully. They were also informed of their right to

withdraw from the survey at any time. In cases where the survey content might cause distress, researchers were prepared to offer appropriate psychological support.

3. Results and discussion

Table 1

Frequency Table for the Respondent's Demographic Profile (N=874)

		F	%
Gender	Male	485	55.49
	Female	389	44.51
Grade	2024	78	8.92
	2023	522	59.73
	2022	162	18.54
	2021	57	6.52
	2020	50	5.72
Major	2019	5	0.57
	Science and Engineering	483	55.26
	Humanities and Social Sciences	84	9.61
Relationship Status	Art	307	35.13
	Single	659	75.40
An Only Child	In a relationship (or married)	215	24.60
	Yes, only child	372	42.56
1.How long have you been using WeChat?	No, not an only child	502	57.44
	Less than a year	85	9.73
	One – three years	49	5.61
	Three – five years	286	32.72
2.How often do you use WeChat?	More than five years	454	51.95
	Almost never	81	9.27
	1 – 5 times per day	141	16.13
3.How much time do you spend on WeChat on a day?	More than 5 times per day	652	74.60
	30 minutes or less	129	14.76
	30 – 60 minutes	62	7.09
	1 – 2 hours	314	35.93
4.How man WeChat friends do you have?	Over 2 hours	369	42.22
	1 – 100	181	20.71
	101 - 300	311	35.58
	301 – 500	206	23.57
5. How many active WeChat groups do you have?	Over 500	176	20.14
	0 – 3 groups	394	45.08
	4 – 6 groups	264	30.21
	7 – 10 groups	107	12.24
	More than 11 groups	109	12.47
Total		874	100.0

The characteristics of the sample for this study included gender, grade, major category, state of relationship, and family background, for a total of 5 dimensions. In terms of gender, 55.49% are male and 44.51% are female. The gender distribution is relatively balanced. This means that in terms of gender, the sample is well represented and can more fairly reflect the differences or similarities between genders in terms of WeChat usage, social comparison, and self-esteem. In terms of grade level, a significant majority of the participants are from the 2023 graduating class, accounting for 522 respondents or 59.73% of the total sample. This is followed by 162 participants (18.54%) from the 2022 graduating class. The 2021, 2020, and 2019 graduating classes are less represented, with 57 (6.52%), 50 (5.72%), and 5 (0.57%) participants, respectively. Additionally, 78 participants (8.92%) belong to the 2024 graduating class, indicating a diverse range of academic standings among the respondents.

In terms of major category, participants predominantly come from the Science and Engineering disciplines,

comprising 483 individuals or 55.26% of the sample. This is followed by Arts majors, who represent 307 participants or 35.13%, and Humanities and Social Science majors, who make up the smallest group with 84 respondents accounting for 9.61% of the total. In terms of relationship status, the majority of the participants, 659 or 75.40%, reported being single. The remaining 215 participants (24.60%) indicated that they are in a relationship or married, suggesting that most respondents are not currently engaged in long-term committed relationships. In terms of family background, regarding family structure, 502 participants (57.44%) reported not being an only child, whereas 372 participants (42.56%) identified as only children. This distribution shows a higher prevalence of respondents having siblings.

The sample for this study consists of 874 college students from Xiamen, featuring a relatively balanced gender distribution, with 55.49% males and 44.51% females, reflecting gender equity in participation. Regarding academic standing, the majority of participants are from the 2023 graduating class, making up 59.73% of the respondents. This significant representation is accompanied by smaller cohorts from other years: 18.54% are from the 2022 graduating class, 6.52% are from the 2021 graduating class, 5.72% from the 2020 graduating class, 8.92% from the 2024 graduating class, and a very small portion, 0.57%, from the 2019 graduating class. This trend indicates a diverse academic representation within the sample. Academically, students from science and engineering disciplines dominate the sample, comprising 55.26%, illustrating a strong inclination towards technical fields among the participants. This is followed by arts with 35.13% and humanities and social sciences with 9.61%, underscoring a diverse academic engagement across the spectrum of available fields.

In terms of relationship status, a large majority, 75.40%, of students reported being single, whereas 24.60% are in relationships or married, reflecting typical relationship dynamics at the undergraduate level. From a family background perspective, 57.44% reported having siblings, indicating that most students come from multi-child families. Overall, this demographic portrait illustrates a youthful and academically diverse group of college students from Xiamen, with a strong representation across different fields of study and varied familial backgrounds, providing a rich context for exploring deeper psychological and social dynamics within this population.

This study assessed the WeChat usage patterns among 874 college students from Xiamen. The analysis focused on five key variables that represent different dimensions of WeChat engagement: registration duration, usage frequency, daily usage duration, number of friends, and active group participation. In terms of registration duration, 51.95% of the students have been using WeChat for more than five years, reflecting the deep-rooted adoption of the platform among the student population. This finding aligns with research by Pang et al. (2023), who found that habitual use of WeChat contributes to a stronger sense of school connectedness, which positively impacts college adjustment and academic performance. Meanwhile, 32.72% have been using WeChat for three to five years, 5.61% for one to three years, and 9.73% for less than a year, indicating varying levels of integration into and reliance on the platform's features, potentially affecting their college adjustment differently.

In terms of usage frequency, 74.60% of participants reported using WeChat more than five times per day, indicating the platform's critical role in daily communications and interactions. Meanwhile, 16.13% of participants use WeChat 1-5 times per day, and 9.27% almost never use it. Pang et al. (2023) also highlight how frequent WeChat use facilitates better college adjustment, suggesting that the platform's centrality in student life could have broader implications for their academic and social well-being. In terms of daily usage duration, 42.22% of the respondents spend over two hours daily on WeChat, with an additional 35.93% using the app for one to two hours. Another 7.09% use it for 30-60 minutes, and 14.76% spend 30 minutes or less. Gao et al. (2021) found that excessive social media use, including platforms like WeChat, is linked to unmet psychological needs and negative affective states, such as anxiety and depression. This finding suggests that while high daily usage might enhance social connections and academic collaborations, it could also have adverse effects if it becomes excessive.

As for the number of friends and active group participation, the study revealed that 35.58% of students have

between 101 and 300 WeChat friends, 23.57% have 301-500 friends, and 20.71% have between 1-100 friends, while 20.14% have over 500 friends. For active group participation, 45.08% of students are active in up to three WeChat groups, 30.21% in four to six groups, 12.24% in seven to ten groups, and 12.47% in more than 11 groups. The level of connectivity demonstrated by these students highlights WeChat's role as a hub for forming and maintaining social ties. This is consistent with research showing that WeChat significantly contributes to both bridging and bonding social capital, which enhances users' social connectedness and life satisfaction, especially in intercultural settings (Pang, 2018). However, the intensity of WeChat use can also lead to challenges, such as increased loneliness and anxiety when excessive use displaces time for face-to-face interactions, thereby weakening strong social ties (Li et al.,2021). These findings suggest that while WeChat facilitates important social engagement, there is a potential for problematic behaviors if usage becomes excessive, impacting students' psychological well-being.

The findings provide compelling insights into the extensive engagement of college students with WeChat, underscoring its significant role in their social and academic lives. The long-term platform engagement, frequent daily use, significant time investment, expansive social networks, and active participation in group activities reflect a multifaceted influence on students' psychological and social dynamics. These results align with existing literature, emphasizing both the benefits and potential risks associated with heavy social media use.

Table 2
Respondent's WeChat Usage (n=874)

item	Mean	Rank	Interpretation
6.3. I can learn about the latest updates from my friends through Moments.	3.723	1	Agree
6.4. Through WeChat, I can maintain regular contact with family, classmates, and friends, thereby strengthening existing relationships.	3.721	2	Agree
6.8. I can interact with friends by liking or commenting on their Moments.	3.701	3	Agree
7.1. Using WeChat is a daily habit for me.	3.675	4	Agree
6.7. I can freely choose who to chat with without feeling too constrained.	3.666	5	Agree
7.9. I worry that my friends might judge the content I share on WeChat.	3.326	26	Neutral
7.8. Spending too much time on WeChat reduces my time for study and rest..	3.325	27	Neutral
7.14. I worry that others might not like the content I share on WeChat.	3.310	28	Neutral
7.13. I often compare my quality of life with others on WeChat.	3.224	29	Neutral
7.16. I often worry that someone in my WeChat circle looks down on me.	3.215	30	Neutral
Composite Mean	3.49	3.5(Md)	Neutral

Legend: 1.00 – 1.49 strongly disagree, 1.50 – 2.49 disagree, 2.50 – 3.49 neutral, 3.50 – 4.49 agree, 4.50 – 5.00 strongly agree

This section delves into the perceptions and engagement patterns of WeChat usage among 874 college students, focusing on their interactions with the platform's features and the personal experiences associated with social interaction, psychological well-being, and time management. A detailed analysis using mean scores, rankings, and interpretative categories evaluates the significance of WeChat in participants' daily lives. In terms of social interaction, two key items — “Through WeChat, I can maintain regular contact with family, classmates, and friends, thereby strengthening existing relationships” (mean = 3.721) and “I can freely choose who to chat with without feeling too constrained” (mean = 3.666) — highlight WeChat's pivotal role in maintaining social connections. These findings are consistent with research by Yue et al. (2023), which emphasizes that frequent social media usage, particularly platforms like WeChat, enhances social bonds among peers and family members, providing essential social and emotional support. Similarly, Zhang et al. (2023) support this by showing that maintaining strong social ties through platforms like WeChat contributes to a sense of social connectedness, which is critical for psychological well-being.

The ability to stay updated on friends' activities via WeChat Moments received the highest mean score (3.723), illustrating the value participants place on this feature. This interaction through liking and commenting on Moments (mean = 3.701) further underscores WeChat's role in daily social exchanges. These findings are in line with Pang's (2018) research, which showed that social media platforms like WeChat can significantly

enhance perceived social capital. Perceived social capital — the sense of connectedness and resources one can access through social networks — has been found to positively influence students' social adjustment and overall well-being. Dong et al. (2023) extended this understanding by demonstrating that engaging in purposeful social interactions through social media, particularly in international student settings, promotes learning engagement and social adjustment.

WeChat is deeply ingrained in participants' daily routines, as indicated by the item "Using WeChat is a daily habit for me" (mean = 3.675). This habitual usage suggests that WeChat is an integral part of students' lives, which can have both positive and negative consequences. On the positive side, frequent use of WeChat facilitates social connectivity, which supports emotional well-being and provides psychological benefits by enhancing the perception of social support (Yue et al., 2023; Sampasa-Kanyinga et al., 2022). However, this habitual engagement also raises concerns about potential negative impacts on time management and academic performance. Kolhar et al. (2021) emphasized that excessive use of social media, including WeChat, can distract students from their academic responsibilities, affecting both their learning and overall time management.

The item "Spending too much time on WeChat reduces my time for study and rest" received a neutral response (mean = 3.325), indicating that students have mixed feelings about WeChat's influence on their time management. This ambivalence is reflected in broader research. For example, Zhang et al. (2023) found that social media usage can have dual effects, where some students benefit from increased social support, while others experience distractions that negatively affect their academic performance. Ahmad et al. (2023) also highlighted that university students often find it challenging to balance academic commitments with non-academic social media usage, further complicating the relationship between technology use and time management.

Participants' responses related to psychological impacts, such as concerns about social comparison and content-related anxiety, further demonstrate the complex relationship between WeChat usage and well-being. Items such as "I often compare my quality of life with others on WeChat" (mean = 3.224) and "I worry that my friends might judge the content I share on WeChat" (mean = 3.310) reflect moderate levels of concern about these aspects of social media use. These findings are consistent with research that links excessive social media usage to negative mental health outcomes, including decreased self-esteem and increased anxiety. Hou et al. (2019) demonstrated that social media addiction could lead to poorer mental health outcomes, exacerbating feelings of inadequacy and anxiety through constant comparisons. McComb et al. (2023) also pointed out that upward social comparisons — a common behavior on platforms like WeChat — are often associated with negative self-evaluations, contributing to feelings of depression and social anxiety.

Despite the potential negative impacts, some studies suggest that social media can provide short-term psychological benefits through positive social interactions. However, these benefits are often fleeting and do not provide sustained improvements in self-esteem or well-being (Pang, 2018). The current findings highlight both the positive and negative facets of WeChat usage, illustrating how it can serve as both a tool for social engagement and a source of psychological stress.

In summary, WeChat plays a significant role in shaping social interactions, psychological well-being, and time management among college students. While the platform enhances social connectivity and provides avenues for emotional support, its overuse can lead to issues related to time management and mental health. This duality is reflective of the broader complexities of social media usage, where benefits such as enhanced social capital and well-being coexist with challenges like increased anxiety and academic distractions. Future research should explore strategies to balance the positive aspects of social media with its potential to negatively impact psychological and academic outcomes.

Table 3
Respondent's Social Comparison Scale (n=874)

	Mean	Rank	Interpretation
1. I often compare the well-being of my loved ones (partner, family members, etc.) with that of others.	3.27	10	Neutral
2. I always pay strong attention to how I do things compared to others.	3.41	9	Neutral
3. When I want to find out how well I've done something, I compare my results with those of other people.	3.51	7	Agree
4. I often compare my social skills and popularity with those of other individuals.	3.42	8	Neutral
5. I'm not the type of person who often compares myself to others.	3.42	8	Neutral
6. I frequently compare myself to others in terms of what I have achieved in life (so far).	3.63	5	Agree
7. I enjoy exchanging opinions and experiences with others frequently.	3.61	6	Agree
8. I often try to find out what others who are facing similar problems to mine think.	3.66	2	Agree
9. I always want to know how others would behave in a similar situation.	3.71	1	Agree
10. When I want to learn more about something, I try to find out what others think or know about it.	3.65	3	Agree
11. I never evaluate my life situation in comparison to that of other people.	3.64	4	Agree
<i>Overall</i>	<i>3.54</i>	<i>3.59(md)</i>	<i>Agree</i>

Legend: 1.00 – 1.49 strongly disagree, 1.50 – 2.49 disagree, 2.50 – 3.49 neutral, 3.50 – 4.49 agree, 4.50 – 5.00 strongly agree

The results from the Social Comparison Scale (Table 3) provide important insights into the social comparison behaviors of college students, revealing an overall mean score of 3.54, indicating a general tendency toward agreement in engaging in various forms of social comparison. The responses, evaluated on a 5-point Likert scale, highlight a complex interplay of social comparison behaviors, with students actively engaging in comparisons in some areas, while showing reluctance in others. The item with the highest mean score, 3.71, “I always want to know how others would behave in a similar situation,” suggests that students are highly attuned to social norms and seek to align their behaviors with the expectations and actions of their peers. This tendency is consistent with Festinger’s (1954) Social Comparison Theory, which posits that individuals compare themselves with others to reduce uncertainty about their abilities and behaviors. The nature of WeChat, where users often share experiences, achievements, and social activities, further amplifies this behavior. Chu et al. (2021) found that social comparison is a way for students to gauge their self-efficacy, particularly in academic settings, providing further explanation for why students may look to their peers as a guide for behavior.

The high mean score of 3.66 for the item “I often try to find out what others who are facing similar problems to mine think” reflects the students' strong inclination toward peer-based problem-solving. In collectivist cultures like China, peer influence plays a substantial role in decision-making and emotional support. Chu et al. (2021) emphasized that social comparison in such cultures is not only a way of assessing individual success but also fosters social connections and helps students navigate academic challenges. Platforms like WeChat offer an easy and accessible means to gauge how peers are coping with similar academic or personal difficulties, reinforcing this reliance on social comparison for problem-solving. The statement, “I frequently compare myself to others in terms of what I have achieved in life” (mean = 3.63), underscores the significant role of achievement-based comparison among Chinese students. This is particularly relevant in China’s competitive academic environment, where personal success is often evaluated relative to one’s peers. Hamam et al. (2023) found that upward social comparison on social media platforms, such as WeChat or Instagram, contributes to heightened stress and lower academic performance among university students, as they frequently measure their achievements against those of others. These comparisons, particularly regarding life milestones and academic successes, exacerbate students' feelings of inadequacy and increase psychological pressure to meet perceived social standards.

Interestingly, the results also reveal an ambivalence in the students’ approach to social comparison, particularly in more personal areas. For instance, the item “I never evaluate my life situation in comparison to that of other people” scored a relatively high mean of 3.64, suggesting that students may actively avoid comparisons in areas where such behavior might negatively impact their self-esteem. This selective avoidance reflects a defensive strategy, a pattern also observed by Chu et al. (2021), where students reported intentionally avoiding comparisons in more vulnerable areas such as family life or personal relationships. This can be

understood through Tesser's (1988) Self-Evaluation Maintenance (SEM) Model, which proposes that individuals are more likely to avoid comparisons in domains where they feel they may come up short, protecting their psychological well-being from the damaging effects of upward comparisons. Despite these defensive behaviors, the students' strong engagement in social comparison for academic and achievement-based metrics underscores the potential risks such behavior poses to mental health. While social comparison can serve as a tool for self-improvement and peer learning, it can also be detrimental, particularly when individuals engage in frequent upward comparisons that highlight their perceived shortcomings. Schmuck et al. (2019) demonstrated that mobile social networking platforms, by facilitating constant upward social comparison, often lead to decreased self-esteem and increased stress. For students, the stakes are particularly high in academic environments where the pressure to succeed is immense, and social comparison only heightens that pressure.

In conclusion, the results highlight the nuanced and context-dependent nature of social comparison among Chinese college students. While social comparison serves as a tool for personal growth and learning, it also carries significant risks to self-esteem and mental health, particularly when students engage in frequent upward comparisons in competitive academic settings. The findings align with broader literature on the psychological effects of social media use, demonstrating that platforms like WeChat exacerbate feelings of inadequacy and academic stress through constant exposure to the achievements and successes of others. As WeChat continues to play a prominent role in the lives of Chinese students, further research is needed to explore potential interventions that could mitigate the negative psychological effects of social comparison, and promote healthier social media engagement.

Table 4
Respondent's Self Esteem (n=874)

	Mean	Rank	Interpretation
1. On the whole, I am satisfied with myself.	3.00	3	Agree
2. At times I think I am no good at all.	2.22	8	Disagree
3. I feel that I have a number of good qualities.	2.96	4	Agree
4. I am able to do things as well as most other people.	3.03	1	Agree
5. I feel I do not have much to be proud of.	2.17	9	Disagree
6. I certainly feel useless at times.	2.49	6	Disagree
7. I feel that I'm a person of worth, at least on an equal plane with others.	3.01	2	Agree
8. I wish I could have more respect for myself.	2.30	7	Disagree
9. All in all, I am inclined to feel that I am a failure.	2.63	5	Agree
10. I take a positive attitude toward myself.	3.01	2	Agree
<i>Overall</i>	<i>2.68</i>	<i>2.60 (md)</i>	<i>Agree</i> <i>Above median</i>

Legend: 1.00 – 1.49 strongly disagree, 1.50 – 2.49 disagree, 2.50 – 3.49 agree, 3.50-4.00 strongly agree

Table 4 presents the results of the Self-Esteem Scale responses, with an overall mean score of 2.68, indicating that students generally agree with holding positive views about themselves, although the results also reveal some areas of concern. The median score of 2.60 places the self-esteem of respondents above the neutral threshold, suggesting a moderate level of self-satisfaction and self-worth among the student population. Several studies have emphasized the pivotal role of upward and downward social comparisons in shaping individuals' self-esteem, especially in the context of social media use. Schmuck et al. (2019) demonstrated that upward comparisons—comparing oneself to others who are perceived as more successful or fortunate—tend to lower self-esteem, as individuals often feel inadequate when compared to idealized versions of others' lives displayed on social media. Conversely, downward comparisons, where individuals compare themselves to those perceived as worse off, can temporarily boost self-esteem by reinforcing a sense of superiority.

These findings align with the data in Table 4, where students reported feeling relatively satisfied with themselves (mean = 3.00) but still expressed occasional feelings of inadequacy (mean = 2.22 for "At times I think I am no good at all"). This ambivalence may reflect the mixed emotional outcomes of engaging in both upward and downward comparisons. The Rosenberg Self-Esteem Scale captures these fluctuations, illustrating how social media, like WeChat, fosters an environment in which students are exposed to both positive and negative comparisons, depending on the context.

Wang et al. (2017) expanded on the concept of upward social comparison, demonstrating how it mediates the relationship between social networking site usage and subjective well-being. Their study found that upward social comparisons on platforms like WeChat can significantly lower self-esteem, especially for students who are more prone to social comparison. This aligns with the present study, where students reported feelings of inadequacy and self-doubt when comparing their achievements to others. The finding that students felt "I wish I could have more respect for myself" (mean = 2.30) supports the notion that upward comparisons often lead to dissatisfaction with one's own progress or accomplishments. Moreover, self-esteem plays a mediating role in how students react to social comparisons. Wang et al. (2017) found that students with higher self-esteem were more resilient to the negative effects of upward comparison, whereas those with lower self-esteem were more susceptible to the emotional impacts of these comparisons. This dynamic is evident in the study's findings, where students who engaged in upward comparisons on WeChat exhibited fluctuating self-esteem levels, as shown by responses like "I am inclined to feel that I am a failure" (mean = 2.63).

Chen et al. (2023) further explored the relationship between self-esteem and mobile phone addiction, showing that low self-esteem significantly predicts higher levels of mobile phone addiction. Their findings suggest that social avoidance and fragile peer relationships mediate this relationship, meaning students with low self-esteem are more likely to experience issues like social withdrawal, which in turn heightens their reliance on mobile phones and social media platforms like WeChat. The response to "I feel useless at times" (mean = 2.49) reflects these struggles, as students with lower self-esteem may be more prone to feelings of isolation when their social comparisons leave them feeling inadequate. This chain of effects highlights the critical role of self-esteem in moderating the psychological and social impacts of mobile phone use.

The relationship between social media use and emotional well-being is further influenced by social comparison orientation. Abdellatif (2022) showed that individuals with lower self-esteem often exhibit more fragile peer relationships, which can contribute to social media addiction and dependence on social media for validation. This is particularly relevant in the case of WeChat, where users may rely on peer interactions and feedback to maintain a sense of belonging or acceptance. The response to "I feel useless at times" (mean = 2.49) reflects these struggles, as students with lower self-esteem may be more prone to feelings of isolation when their social comparisons leave them feeling inadequate.

In conclusion, the results highlight the significant role of social comparison—both upward and downward—in shaping students' self-esteem on platforms like WeChat. The overall mean score of 2.68 suggests that students generally maintain positive views of themselves, but their self-esteem is susceptible to fluctuations based on their social comparisons. The findings from Schmuck et al. (2019), Wang et al. (2017), Chen et al. (2023), and Abdellatif (2022) reinforce the idea that upward comparisons often result in self-doubt and reduced self-worth, while downward comparisons can provide temporary boosts to self-esteem but are unlikely to foster long-term emotional stability. As social media continues to play a central role in the lives of university students, further research is necessary to understand how these comparisons can be managed to promote healthier self-esteem and emotional well-being.

Table 5

Difference on the Respondent's WeChat Usage when compared according to Profile (N=874)

	t/F	p-value	Interpretation
Gender	-3.249	0.001**	Significant
Grade	0.497	0.778	Not Significant
Major	1.110	0.330	Not Significant
Relationship Status	-0.912	0.362	Not Significant
Only Child	-1.070	0.285	Not Significant

Legend: Difference is significant at 0.05 alpha level

Table 5 outlines the differences in WeChat usage among college students based on several demographic factors, including gender, grade, major, relationship status, and whether the individual is an only child. The analysis was conducted using t-tests and F-tests, with a significance threshold set at 0.05.

The t-test results reveal a statistically significant difference in WeChat usage between male and female students, with a t-value of -3.249 and a p-value of 0.001. This suggests that gender plays a significant role in how students engage with WeChat, with females potentially using the platform more intensively than their male counterparts. Deng et al. (2015) explored how gender influences information-sharing behavior on WeChat, finding that females tend to share more socially oriented content and engage more frequently in interpersonal communication, while males are more likely to use WeChat for information-seeking and entertainment. This gender-based difference aligns with other research, such as that of Liu et al. (2024), which found that females often engage more in emotional and relational exchanges on social media, whereas males focus more on entertainment or goal-oriented interactions. Further supporting this notion, Rozgonjuk et al. (2019) emphasized that personality traits like neuroticism and social comparison orientation significantly impact how individuals use social media, with females potentially being more prone to emotional and social comparisons that drive more frequent platform engagement. This could help explain the higher intensity of WeChat usage observed in female students.

The one-way ANOVA results for grade level (F-value = 0.497, p-value = 0.778) suggest no significant differences in WeChat usage across academic years. This implies that students at different stages of their academic careers—whether they are first-year or final-year students—use WeChat similarly. As Liu et al. (2024) highlighted, social media platforms like WeChat are ubiquitous in university settings, acting as both academic and social tools regardless of academic standing. WeChat's consistent usage across grades may reflect its pervasive role in facilitating both academic collaboration and social networking for students of all levels. The ANOVA results for major (F-value = 1.110, p-value = 0.330) suggest that students' fields of study do not significantly affect how they use WeChat. This supports the notion that WeChat's broad appeal makes it useful for students from a wide range of academic disciplines. Whether students are in STEM fields or Humanities, they use WeChat for similar purposes: academic collaboration, peer communication, and personal use. Deng et al. (2015) similarly found that demographic factors such as education level and academic focus do not substantially alter how students share information or interact on social media platforms, indicating that WeChat serves as a universal communication tool, cutting across academic boundaries.

No significant differences were found based on relationship status (t-value = -0.912, p-value = 0.362), suggesting that both single and partnered students engage with WeChat similarly. This aligns with research by Morry et al. (2018), who noted that while relationship status does not necessarily influence overall social media usage patterns, it may influence the type of content individuals engage with. Students in relationships might use WeChat for maintaining romantic communication, while single students might focus more on maintaining friendships and academic collaboration. However, the lack of significant differences indicates that the core functionalities of WeChat are equally important across relationship statuses.

Similarly, the analysis revealed no significant differences in WeChat usage between only children and those with siblings (t-value = -1.070, p-value = 0.285). Rozgonjuk et al. (2019) emphasized that personality traits, such as neuroticism or social comparison orientation, are more likely to influence how individuals use social media than family background variables like sibling status. The present findings support the notion that family size does not affect students' engagement with WeChat. Whether students come from smaller or larger families, their WeChat usage is shaped more by peer influence and academic needs than by their family background.

The demographic analysis of WeChat usage offers valuable insights into how different groups of students engage with the platform. The significant gender difference suggests that female students use WeChat more frequently for relational communication, which is consistent with findings by Deng et al. (2015) and Liu et al. (2024), who highlighted gender-specific social media behaviors. The lack of significant differences across grade, major, relationship status, and only child status underscores the pervasive role of WeChat as a social and academic tool, transcending demographic distinctions. The findings from Rozgonjuk et al. (2019) and Morry et al. (2018) further support the idea that personality traits and social comparison tendencies may play a larger role in WeChat usage than demographic factors.

In conclusion, while gender significantly influences WeChat usage, other factors like grade, major, relationship status, and only child status do not appear to impact usage patterns. These findings align with prior research, emphasizing that WeChat is a universal communication platform used by students for both academic and social purposes. Future research could explore the role of social comparison orientation in influencing WeChat engagement, particularly how it may contribute to competitive behavior or social anxiety in a highly academic environment like a university.

Table 6*Difference on the Respondent's Social Comparison when compared according to Profile (N=874)*

	t/F	p-value	Interpretation
Gender	-2.659	0.008**	Significant
Grade	1.976	0.080	Not Significant
Major	10.771	0.000**	Significant
Relationship Status	1.729	0.084	Not Significant
Only Child	-1.654	0.099	Not Significant

Legend: Difference is significant at 0.05 alpha level

Table 6 examines the differences in social comparison behaviors among a sample of 874 college students, categorized by gender, grade, major, relationship status, and only child status. The analysis reveals insights into how these demographic factors influence the extent to which students engage in social comparison. The significance threshold was set at 0.05. The t-test analysis revealed a statistically significant difference in social comparison behaviors between male and female students, with a t-value of -2.659 and a p-value of 0.008. This suggests that gender plays a significant role in shaping social comparison tendencies, with female students potentially engaging more frequently in social comparisons than male students. Research by Valls (2022) supports this finding, noting that female students tend to compare themselves more frequently to others, particularly in academic and social domains. This has a considerable impact on self-esteem and self-perception, often amplifying feelings of inadequacy, particularly in competitive academic environments.

Keyserlingk et al. (2021) also explored how social comparisons influence university major choices and found that female students are more likely to engage in upward social comparisons in academic settings. This can lead to self-doubt and lower academic self-confidence. The gender differences observed in the current study may also be influenced by the types of content shared on social media platforms like WeChat, where users often post curated versions of their achievements, which can drive upward social comparisons, particularly for female students.

For grade level, the ANOVA result (F-value = 1.976, p-value = 0.080) indicated no statistically significant difference in social comparison behaviors across academic years. This suggests that social comparison tendencies are consistent among students, regardless of whether they are in their first year or final year. The consistency across grades may reflect the pervasive influence of social media platforms like WeChat, which are embedded in the daily routines of students throughout their university experience. As Hong et al. (2022) highlighted, social comparisons in academic settings are frequent, but they do not seem to vary significantly by grade level, suggesting that students are exposed to similar social pressures to compare their achievements and social status with peers regardless of their academic standing.

The one-way ANOVA results for major (F-value = 10.771, p-value = 0.000) showed a statistically significant difference in social comparison behaviors based on students' fields of study. This suggests that students from different academic disciplines, such as sciences, arts, and humanities, exhibit different tendencies in social comparison. Keyserlingk et al. (2021) found that students' perceptions of academic success and self-efficacy are often shaped by comparisons within their specific disciplines. Students in subjective fields, such as the arts and humanities, may engage in more frequent social comparisons, as their achievements are often assessed in relation to peer performance and creative outputs, which are more difficult to measure objectively.

Conversely, students in STEM disciplines, where performance metrics like test scores and project outcomes are more quantifiable, may rely less on social comparison and more on objective indicators of success. This

difference highlights how the nature of evaluation in different academic fields influences students' propensity to engage in social comparison, especially when peer assessment plays a critical role in shaping self-perception. Pulford et al. (2018) also noted that academic self-confidence in areas like numeracy or writing may be more closely tied to individual performance rather than peer comparisons in STEM fields, whereas subjective fields may see a higher reliance on social comparison.

The t-test analysis for relationship status (t -value = 1.729, p -value = 0.084) indicated no statistically significant difference in social comparison behaviors between students in relationships and those who are single. This suggests that relationship status does not significantly influence how students engage in social comparison behaviors. However, Valls (2022) noted that individuals in relationships might still engage in social comparison related to their romantic lives, particularly in how they perceive their relationships compared to those of their peers. Despite this, such comparisons may not be as frequent or impactful as academic or career-related comparisons, which could explain the lack of significance in this study.

The results for only child status (t -value = -1.654, p -value = 0.099) suggest no significant difference in social comparison behaviors between students who are only children and those with siblings. This finding aligns with Rozgonjuk et al. (2019), who emphasized that personality traits and social comparison orientation, rather than familial structure, are stronger predictors of social comparison behaviors. While family background may influence other aspects of social behavior, it appears to have little effect on how university students engage in social comparison within digital environments like WeChat.

The results of this study show that gender and major are significant factors influencing social comparison behaviors among Chinese college students, while grade, relationship status, and only child status do not significantly impact social comparison tendencies. The significant gender difference underscores the importance of considering gendered experiences in academic and social contexts, particularly in environments where social validation and peer comparison play critical roles in shaping students' self-concept. Valls (2022) emphasized that gender can significantly affect self-concept through social comparison, with females generally exhibiting greater sensitivity to upward comparisons.

The significant effect of major on social comparison highlights how academic disciplines shape students' self-evaluation processes. As Keyserlingk et al. (2021) discussed, dimensional comparisons within academic fields can influence students' perceptions of success. In more subjectively evaluated fields, such as arts and humanities, students may rely more heavily on social comparison to gauge their standing among peers, which can either motivate or undermine their academic self-confidence.

The findings suggest that the academic environment and the digital landscape of WeChat provide fertile ground for social comparison behaviors, particularly among female students and those in subjective fields like arts and humanities. This underscores the need for interventions that help students develop resilience to the potentially negative effects of social comparison on self-esteem and psychological well-being.

In conclusion, gender and major are significant predictors of social comparison behaviors among Chinese college students. Female students and those in subjectively assessed disciplines, such as arts and humanities, are more likely to engage in social comparison, potentially due to the nature of evaluation in these fields and the reliance on peer feedback. Other demographic factors, such as grade level, relationship status, and only child status, do not significantly affect social comparison tendencies. These results align with previous research, emphasizing the role of self-concept and dimensional comparisons in shaping how students engage with their peers in both academic and social contexts. Future research should explore interventions aimed at mitigating the negative effects of social comparison, particularly for vulnerable groups, such as female students and those in subjectively assessed academic disciplines.

Table 7*Difference on the Respondent's Self Esteem when compared according to Profile (n=874)*

	t/F	p-value	Interpretation
Gender	-1.845	0.065	Not Significant
Grade	2.640	0.022*	Significant
Major	10.356	0.000**	Significant
Relationship Status	-0.803	0.422	Not Significant
Only Child	-4.290	0.000**	Significant

Legend: Difference is significant at 0.05 alpha level

Table 7 examines the differences in self-esteem among a sample of 874 college students, categorized by gender, grade, major, relationship status, and only child status. The analysis uses t-tests and F-tests to explore the potential influence of these demographic factors on self-esteem, with significance set at 0.05.

The t-test for gender yielded a t-value of -1.845 and a p-value of 0.065, indicating no statistically significant difference in self-esteem between male and female students. This result contrasts with prior research, such as Bergagna et al. (2018), which found that gender differences in social media use, particularly through platforms like Facebook, influence self-esteem through social comparison mechanisms. Specifically, female students were found to engage in more frequent social comparisons, which had a greater impact on their self-esteem compared to their male counterparts. However, in this study, the lack of significant difference might indicate that gender-based pressures, particularly in the Chinese academic environment, are less pronounced in influencing self-esteem. García-Castilla et al. (2020) also emphasize that gender may influence certain dimensions of well-being, but not always self-esteem in academic settings.

The ANOVA result for grade level (F-value = 2.640, p-value = 0.022) indicates a significant difference in self-esteem across academic years, suggesting that students' self-esteem is influenced by their academic progression. Yu et al. (2022) found that self-esteem tends to fluctuate as students advance in their academic careers, often due to increased academic pressures and career planning demands. Students in higher grades may experience more stress related to post-graduation plans, which can negatively affect self-esteem. This aligns with the current study's finding that grade level significantly impacts self-esteem, as students approaching graduation might feel heightened pressure regarding their future prospects.

The ANOVA results for major (F-value = 10.356, p-value = 0.000) reveal a statistically significant difference in self-esteem across different fields of study. Academic specialization plays a critical role in shaping students' self-worth, with students in STEM fields generally reporting more stable self-esteem compared to those in arts or humanities. Pulford et al. (2018) suggested that the quantifiable nature of success in STEM disciplines, such as test scores and measurable achievements, may contribute to greater self-confidence. In contrast, students in subjective fields like arts or humanities, where success is often more subjective and dependent on external feedback, may experience more fluctuation in self-esteem. This variability may explain the significant difference in self-esteem across different academic disciplines in this study.

The t-test for relationship status resulted in a t-value of -0.803 and a p-value of 0.422, indicating that relationship status does not significantly affect self-esteem in this sample. While García-Castilla et al. (2020) found that relationship status can influence emotional well-being, particularly through dimensions such as personal growth and purpose in life, the current study suggests that self-esteem among students is more influenced by academic and personal achievements than by romantic involvement. Bergagna et al. (2018) also observed that relationship status and social interactions on social media platforms might affect how young people perceive themselves, but this effect was not as pronounced as other factors, such as academic performance.

The t-test for only child status yielded a t-value of -4.290 and a p-value of 0.000, indicating a significant difference in self-esteem between only children and those with siblings. Fukuya et al. (2021) found that family dynamics, including birth order and sibling status, play a crucial role in shaping mental health outcomes, including self-esteem. Only children often receive more individualized attention from their parents, which can

lead to higher self-esteem, although they may also face greater expectations. Students with siblings, on the other hand, may experience shared attention, which could affect how they develop their self-worth. The significant difference in self-esteem between only children and those with siblings highlights the importance of family structure in shaping self-perception.

Bergagna et al. (2018) highlighted that social media platforms, like Facebook, play a key role in mediating the relationship between self-esteem and social comparison, particularly among females. Female users, in particular, often engage in social comparison on these platforms, which can lower self-esteem when the comparisons are upward (i.e., comparing oneself to others perceived as more successful or attractive). Although this study focused on Facebook, the findings are relevant to other platforms like WeChat, which similarly expose users to curated content that can prompt social comparisons. The impact of social comparison on self-esteem is an important consideration, especially when evaluating how students' engagement with social media affects their overall self-worth.

The analysis reveals that grade level, academic major, and only child status are significant predictors of self-esteem among Chinese college students, while gender and relationship status are not. The significant differences in grade level highlight how academic progression affects students' self-worth, particularly as they face increased academic demands in their later years. The influence of academic major on self-esteem reflects how disciplinary culture and evaluation methods shape students' perceptions of success. Additionally, the impact of only child status underscores the importance of family dynamics in the development of self-esteem, as only children may benefit from more focused attention but also experience higher parental expectations. Social comparison, particularly through social media platforms like WeChat, remains a critical factor in understanding fluctuations in self-esteem, as highlighted by Bergagna et al. (2018).

Further research is needed to explore interventions aimed at supporting students in subjectively evaluated fields or those facing increased academic pressures in their later years of study. Additionally, addressing the negative impacts of social comparison on self-esteem, particularly for female students, may help mitigate the psychological consequences of pervasive social media use.

Table 8 shows the correlation analysis of WeChat usage, social comparison, and self-esteem among 874 college students. It provides key insights into the dynamics of social media behavior and psychological well-being.

Table 8
Correlation Matrix of the Variables of the Study (n=874)

	WeChat Usage			Social Comparison			Self Esteem				
	rx	xy	p-value	Int.	rx	xy	p-value	Int.	rx	xy	p-value
WeChat Usage	-	-	-	-	.508	.000	HS	.028	.413	NS	
Social Comparison	.508	.000	HS	-	-	-	-0.105	.0003	S		
Self Esteem	.028	.413	NS	-0.105	.0003	-	-	-			

Legend: Relationship is significant at 0.05 alpha level, S = Significant, NS = Not Significant, HS = Highly Significant

The strong positive correlation between WeChat usage and social comparison ($r = .508, p < .000$) indicates that frequent WeChat users are more likely to engage in social comparison. This finding underscores how social media platforms, especially WeChat, amplify the tendency to compare oneself with others. WeChat's "Moments" feature, which allows users to post life updates, achievements, and daily activities, creates an ideal environment for upward social comparison.

According to Pang (2021), both passive and active interactions on social media platforms like WeChat contribute to this tendency. Passive interactions, such as scrolling through posts without commenting or liking, may particularly encourage upward comparisons, as users consume highly curated, often idealized portrayals of others' lives. This is supported by Hou et al. (2021), who found that emotional engagement with WeChat, especially passive consumption of content, is positively correlated with upward social comparison. While

WeChat usage frequency itself may not directly correlate with social comparison, the nature of the interaction, particularly passive engagement, plays a critical role in fostering social comparison (Hou et al., 2021). Additionally, social media platforms inherently promote visibility and comparison by constantly showcasing peer achievements and lifestyle milestones. Pang (2021) highlights how WeChat fosters a social environment where students are not only aware of others' accomplishments but are also subtly encouraged to align their own actions with the social norms displayed on the platform. This high visibility of peer success, combined with the platform's accessibility, significantly enhances upward social comparison, which can lead to both motivational and detrimental outcomes.

Interestingly, the correlation between WeChat usage and self-esteem ($r = .028$, $p = .413$) was found to be insignificant, suggesting that the frequency of WeChat use does not have a direct impact on self-esteem among college students. This finding points to a more complex relationship between social media engagement and self-esteem, where other mediating factors might play a more significant role.

Zainuddin et al. (2022) found that the amount of time students spent on social media did not have a significant effect on their self-esteem, which aligns with the insignificant correlation found in this study between WeChat usage and self-esteem. This suggests that simply spending time on social media platforms, such as WeChat, may not directly influence self-worth, and other factors such as the nature and quality of social interactions on these platforms might be more relevant. Zainuddin et al. (2022) also emphasize that further research is needed to explore other factors influencing self-esteem, indicating that time spent on social media alone may not be the key determinant. While Zainuddin et al. (2022) focus on usage time, Cingel et al. (2022) explain that positive feedback mechanisms on social media, such as receiving likes or comments, can temporarily enhance self-esteem by providing social validation. However, this effect is highly context-dependent and individual-specific. For some users, especially those who frequently engage in positive social interactions, feedback on WeChat may temporarily boost self-esteem. For others who do not receive positive reinforcement or focus more on passive engagement, the absence of validation can lead to a decline in self-esteem.

The significant negative correlation between social comparison and self-esteem ($r = -0.105$, $p = .003$) suggests that the more students engage in social comparison, the lower their self-esteem tends to be. While the correlation is moderate, it confirms a general pattern observed in the literature: frequent comparisons, especially upward comparisons, tend to erode self-esteem over time.

Although Zainuddin et al. (2022) did not specifically address social comparison, their research supports the idea that social media usage can influence self-esteem indirectly. However, in this study, it is the social comparison behavior itself—particularly upward comparisons on WeChat—that has a direct negative impact on self-esteem. This finding is consistent with research that highlights how upward social comparison—where individuals compare themselves to those they perceive as more successful—often leads to a diminished sense of self-worth. Over time, students who frequently engage in upward comparison may experience cognitive distortions, where they overestimate the success of others while underestimating their own achievements. This can lead to persistent feelings of inadequacy and lowered self-esteem. The insignificant correlation between WeChat usage and self-esteem, combined with the negative impact of social comparison on self-esteem, suggests that individual differences play a critical role in determining how social media use influences self-esteem. While Zainuddin et al. (2022) found no direct relationship between time spent on social media and self-esteem, they emphasize that further research is needed to explore the underlying factors. For students with a high tendency toward upward social comparison, even minimal social media engagement could negatively affect self-esteem, whereas those with lower comparison tendencies may be more resilient. Moreover, the context in which social comparison occurs matters. Students with a growth mindset, for example, may view upward social comparisons as opportunities for self-improvement, thereby mitigating the negative effects on self-esteem. Conversely, students with a fixed mindset may perceive upward comparisons as evidence of their own failures, exacerbating negative feelings and reducing self-esteem. Cingel et al. (2022) further elaborates on the complex relationship between social media use and self-esteem, pointing out that these effects are often person-specific. Some

students may find that social media offers validation and social support, while others may experience a negative psychological toll due to increased comparisons. This individual susceptibility highlights the need for interventions aimed at promoting positive coping mechanisms to reduce the negative impact of social comparison on students' self-worth.

The findings reveal a complex relationship between WeChat usage, social comparison, and self-esteem. While WeChat usage strongly predicts social comparison, its direct impact on self-esteem is minimal. Social comparison, particularly upward comparison, emerges as a significant factor influencing self-esteem, suggesting that students' self-worth is shaped by their comparative behaviors on social media. However, the extent to which social comparison impacts self-esteem depends on various moderating factors, such as resilience, coping strategies, and social support networks. As social media platforms continue to shape the social landscapes of college students, interventions aimed at promoting positive coping mechanisms and reducing upward social comparison may help mitigate the negative psychological effects of social media use.

Table 9
Regression Analysis of The Variables of the Study

Predictor Variable	Dependent Variable	R-square	Std.error	Beta	p-value	Interpretation
WeChat Usage	Social Comparison	.258	.013	.508	.000	Predictor
WeChat Usage	Self Esteem	.001	.004	.028	.413	Not Predictor

In the regression model, the strong relationship between WeChat usage and social comparison (R-square = 0.258, Beta = 0.508, $p < 0.001$) suggests that WeChat usage significantly predicts social comparison behavior. Approximately 25.8% of the variance in social comparison can be explained by how frequently students use WeChat, indicating that those who use WeChat more often are more likely to engage in social comparison.

One of the key characteristics of social media platforms like WeChat is their constant display of curated content, making it easy for users to compare themselves with others. Features such as "Moments" encourage users to post idealized portrayals of their lives, facilitating upward social comparison. As Pang (2021) highlights, passive interactions, such as browsing content without direct engagement (liking or commenting), are particularly prone to promoting social comparison because users are exposed to selective, idealized snapshots of others' lives. Hou et al. (2021) also underscore that emotional engagement with this curated content intensifies upward comparisons.

According to **Festinger's (1954)** Social Comparison Theory, individuals have an inherent drive to evaluate themselves through comparisons with others. In the context of modern social media, WeChat provides an ideal environment for such evaluations. This comparison behavior is not only spontaneous but also driven by the platform's design. The continuous exposure to peer successes and achievements naturally triggers upward social comparison, especially in competitive environments like universities, where students are constantly evaluating their academic and social progress against their peers.

Frequent upward social comparison can lead to negative self-evaluations, particularly in areas such as academic achievements and lifestyle choices. University students, who are often under significant pressure to succeed, are more vulnerable to the negative effects of social comparison, which can lead to feelings of inadequacy and stress. The predictive power of WeChat usage on social comparison underscores how social media can exacerbate these feelings by making peer success more visible and seemingly constant. The relationship between WeChat usage and self-esteem was found to be weak (R-square = 0.001, Beta = 0.028, $p = 0.413$), indicating that WeChat usage does not significantly predict self-esteem among college students.

Self-esteem is influenced by multiple complex factors beyond social media engagement. According to Rosenberg's theory, self-esteem is a comprehensive evaluation of one's self-worth, which is shaped by personal experiences, social feedback, and achievements. While social media may provide temporary boosts to self-esteem through positive feedback, such as likes and comments (Cingel et al., 2022), these effects are typically short-lived and context-dependent. Zainuddin et al. (2022) also found no significant relationship

between social media usage time and self-esteem, suggesting that self-esteem is influenced by a broader array of factors. The relationship between WeChat usage and self-esteem is likely moderated by several individual factors, including psychological resilience, social support, and personality traits. Students who are more resilient or have better coping mechanisms may be less affected by the negative impacts of social comparison (Cingel et al., 2022).

On the other hand, students who are more sensitive to external validation or who already have lower self-esteem might experience greater stress and self-doubt when engaging with social media. Therefore, while WeChat usage itself does not directly affect self-esteem, it may influence students indirectly through these mediating factors. Although WeChat usage has little direct effect on self-esteem, its strong influence on social comparison suggests that social media could indirectly impact self-evaluation. Upward social comparison may be a key mechanism leading to diminished self-esteem. For students without effective coping mechanisms, frequent exposure to peer achievements could amplify feelings of inadequacy and contribute to increased anxiety and self-doubt, further affecting their overall psychological well-being. In practice, this social comparison likely extends beyond online interactions to real-life social situations, reinforcing negative self-perceptions. For instance, students may compare their offline achievements and social standing to the idealized versions of others' lives they see on WeChat, which can perpetuate a cycle of negative self-evaluation. Thus, while WeChat usage itself does not directly predict self-esteem, the comparative behaviors it fosters may indirectly contribute to lower self-worth over time. Given the significant predictive power of WeChat usage on social comparison and its weaker association with self-esteem, future research should focus on the mediating factors between social media use and self-esteem. Intervention strategies could include fostering a growth mindset among students, helping them view social comparisons as opportunities for self-improvement rather than evidence of personal failure. Such interventions may mitigate the negative effects of social comparison and help boost self-esteem. Additionally, universities and counseling services could play a key role in supporting students by helping them manage the psychological stress caused by social comparisons. Providing students with tools to recognize and address feelings of inadequacy, as well as building strong social support networks, could help reduce the negative psychological effects associated with frequent social media engagement. WeChat usage strongly predicts social comparison behavior among college students, and this comparison often leads to negative self-evaluations, especially when students frequently engage in upward comparisons. However, the weak association between WeChat usage and self-esteem suggests that self-esteem is influenced by a broader set of factors, including individual personality traits and offline social interactions. Future research and interventions should focus on reducing the harmful effects of social comparison and promoting healthier ways for students to engage with social media, ultimately helping them maintain a positive sense of self-worth.

Table 10

Mediation Effect Test Results (N=823)

Variable Relationship	B	Standard Error	t-value	p-value	β	95% CI Lower Limit	95% CI Upper Limit
WUS-total \Rightarrow SC-total \Rightarrow RSES-total (Indirect)	-0.013	0.026	-0.481	0.630	-	-0.140	-0.036
WUS-total \Rightarrow SC-total	0.222	0.013	16.878	0.000	0.508	0.196	0.248
SC-total \Rightarrow RSES-total	-0.057	0.013	-4.411	0.000	-0.176	-0.083	-0.032
WUS-total \Rightarrow RSES-total (Direct)	0.020	0.006	3.535	0.000	0.141	0.009	0.031
WUS-total \Rightarrow RSES-total (Total)	0.007	0.005	1.487	0.137	0.052	-0.002	0.017

This study examines the direct and mediated relationships between WeChat usage (WUS), social comparison (SC), and self-esteem (RSES) among university students. The results from the mediation analysis provide critical insights into how WeChat usage influences these psychological constructs.

The direct effect of WeChat usage on self-esteem is significant, with a regression coefficient of 0.020, a t-value of 3.535, and a p-value less than 0.001. This suggests that increased WeChat usage leads to a positive

impact on self-esteem, independent of the influence of social comparison. This supports earlier research by Zainuddin et al. (2022), who found that social media can have positive effects on self-esteem, particularly through social engagement and positive feedback mechanisms. However, the complexity of this relationship should be noted. Schmuck et al. (2019) point out that while SNSs provide opportunities for social engagement, they can also present idealized versions of others' lives, leading to negative consequences for self-esteem when individuals engage in upward social comparison. The longitudinal data from Schmuck et al. (2019) shows that upward social comparisons on platforms like Facebook and Instagram negatively impact self-esteem and well-being over time. This finding highlights the dual nature of WeChat usage: while it can foster a sense of belonging through positive interactions, it may also erode self-esteem if users are constantly exposed to idealized portrayals of success, resulting in feelings of inadequacy.

The significant predictive relationship between WeChat usage and social comparison is evident, with a coefficient of 0.222, a t-value of 16.878, and a p-value less than 0.001. This confirms that higher levels of WeChat usage are closely associated with more frequent or intense social comparison behaviors. Pang (2021) and Hou et al. (2021) suggest that social media platforms like WeChat foster an environment where users are constantly exposed to others' successes, achievements, and life events, thus amplifying the likelihood of upward social comparison. In particular, Schmuck et al. (2019) emphasizes that mobile SNS use enables real-time comparison due to constant connectivity, leading users to engage in upward comparisons more frequently. This aligns with the findings from WeChat, where passive interactions (e.g., scrolling through others' posts without direct engagement) can enhance upward social comparison, where users evaluate themselves against peers who appear more successful or accomplished. This dynamic is critical in understanding how WeChat usage drives social comparison behaviors and its subsequent psychological impact on users.

The negative relationship between social comparison and self-esteem is significant, with a coefficient of -0.057, a t-value of -4.411, and a p-value less than 0.001. This suggests that individuals who engage in more frequent social comparisons tend to have lower levels of self-esteem. Research on social media usage suggests that upward social comparisons, particularly in platforms like WeChat, can lead to negative psychological outcomes, including decreased self-esteem and increased stress (Pang, 2021).

Social comparisons, especially upward ones, can erode self-esteem, leading to negative mental health outcomes. While upward social comparisons may occasionally serve as motivational tools, they more often result in feelings of inadequacy and self-doubt, particularly when users feel they cannot match the perceived achievements of their peers. This dynamic has been well-documented, including in studies like Schmuck et al. (2019), which highlight the long-term negative effects of upward comparison on both self-esteem and overall well-being.

Interestingly, the mediation analysis reveals that social comparison does not significantly mediate the relationship between WeChat usage and self-esteem, as indicated by the indirect effect of -0.013, a t-value of -0.481, and a p-value of 0.630. This finding suggests that while WeChat usage strongly predicts social comparison, its direct impact on self-esteem is largely independent of social comparison behaviors. The findings of this study highlight the complex dynamics between WeChat usage, social comparison, and self-esteem. While WeChat usage fosters environments conducive to social comparison, it also directly influences self-esteem through mechanisms not fully explained by comparative behaviors. This underscores the need for future research to explore other potential mediators, such as emotional support, feedback quality, and offline interactions, to gain a more comprehensive understanding of how social media impacts psychological well-being. The nuanced relationship between these variables calls for further exploration into how students' digital behaviors interact with their self-perceptions and overall mental health.

The mediation analysis in Table 11 reveals complex interactions between different dimensions of WeChat usage and self-esteem, with mixed results for social comparison as a mediating factor. This nuanced outcome reflects the intricate dynamics of social media interactions and psychological well-being. The analysis shows a

direct effect of WeChat usage on self-esteem across different dimensions, but the results vary in terms of significance. The most notable findings are for **W6 (motives of WeChat usage)** and **W7 (behavioral patterns of WeChat use)**, which exhibit unique effects on self-esteem.

Table 11
Mediation Effect Test Results with Effect Sizes and Proportions (N=823)

WeChat Usage Dimension	Direct Effect on Self-Esteem (B, p-value)	Indirect Effect		Mediation Conclusion	Proportion Mediated (%)
		Through Social Comparison (B, p-value)	Total Effect (B, p-value)		
W1	0.187, p = 0.115	0.002, p = 0.679	0.189, p = 0.114	Not Significant	0%
W2	0.229, p = 0.197	-0.018, p = 0.000	0.211, p = 0.238	Not Significant	0%
W3	0.443, p = 0.000	0.018, p = 0.000	0.461, p = 0.000	Not Significant	0%
W4	0.080, p = 0.467	0.017, p = 0.001	0.097, p = 0.380	Not Significant	0%
W5	-0.197, p = 0.075	-0.015, p = 0.483	-0.202, p = 0.071	Not Significant	0%
W6	0.105, p = 0.000	-0.005, p = 0.600	0.100, p = 0.000	Suppression effect	5.192%
W7	-0.076, p = 0.000	-0.015, p = 0.483	-0.091, p = 0.000	Partial mediation	16.547%

For **W6 (motives of usage)**, a suppression effect is observed, where the direct effect on self-esteem is positive ($B = 0.105$, $p = 0.000$), but the indirect effect via social comparison is negative and insignificant ($B = -0.005$, $p = 0.600$). This suggests that while being highly motivated to use WeChat might boost self-esteem directly (e.g., through positive feedback and social interactions), social comparison does not play a mediating role in this relationship. The minimal 5.192% suppression effect highlights those other factors, such as emotional engagement or offline social support, may be more influential in shaping the relationship between WeChat usage and self-esteem.

For **W7 (behavioral patterns)**, the partial mediation observed suggests that how users interact on WeChat influences their self-esteem through social comparison. The direct effect ($B = -0.076$, $p = 0.000$) and total effect ($B = -0.091$, $p = 0.000$) are significant, indicating that engaging in certain behaviors (e.g., active participation, interactions) impacts self-esteem, with 16.547% of the effect mediated by social comparison. This finding aligns with studies by Pang (2021) and Hou et al. (2021), which emphasize that active interactions on WeChat can lead to upward social comparisons, ultimately affecting self-esteem and well-being. The more users engage in visible behaviors like sharing updates and comparing themselves to others, the more they expose themselves to potential feelings of inadequacy, especially when comparing upward.

The analysis shows that social comparison does not significantly mediate the effects of most WeChat usage dimensions on self-esteem, except for W7. For dimensions like W1 (duration of usage), W2 (frequency of usage), and W3 (time spent on WeChat daily), the mediation analysis reveals no significant indirect effects, suggesting that simply using WeChat more often does not inherently trigger social comparisons that impact self-esteem. This finding is consistent with Wang (2021), who argued that the psychological impacts of social media depend not on the quantity of usage but on the quality of engagement and the type of interactions individuals have. The non-significant mediation effects in dimensions like W4 (intensity of use) and W5 (active group participation) further emphasize that it is not just the amount of use but the nature of use that determines psychological outcomes. For example, Schmuck et al. (2019) found that frequent use of social media platforms like WeChat increases the likelihood of upward social comparisons, which can subsequently affect self-esteem and well-being. However, W5 (active group participation) suggests that active participation in social groups on WeChat might enhance self-esteem by fostering social connections and support, without being directly mediated by social comparison. The suppression effect found in W6 (motives of WeChat usage) highlights an interesting phenomenon where WeChat might directly enhance self-esteem, but social comparison does not play a significant mediating role. This aligns with research by Cingel et al. (2022), which suggests that other

psychosocial factors, such as perceived social support or offline interactions, may be critical in determining self-esteem, rather than social comparison alone. In contrast, the partial mediation effect in W7 (behavioral patterns) indicates that certain behaviors on WeChat (e.g., interaction styles) do affect self-esteem through social comparison, which partially mediates the relationship. This supports findings from Pang (2021) and Hou et al. (2021), which suggest that WeChat fosters environments conducive to upward social comparison, especially when users engage more visibly on the platform.

The mediation analysis illustrates that different dimensions of WeChat usage influence self-esteem in diverse ways, with behavioral patterns and activeness having the most substantial effects. The study also confirms that social comparison does not universally mediate the relationship between WeChat usage and self-esteem, reinforcing the idea that digital engagement is a complex and multi-dimensional phenomenon. Future research should explore additional mediators, such as emotional engagement and offline social dynamics, to fully understand how WeChat usage impacts mental health and well-being. By dissecting the different types of WeChat interactions, researchers can better understand the specific behaviors that drive positive or negative outcomes in users' self-perceptions and psychological health.

4. Conclusions and recommendation

The majority of the respondents were undergraduate students primarily from the 2023 grade, representing most of the sample. The respondents are a diverse group of college students, with balanced gender representation and varied academic standings. Most are from science and engineering fields, are single, and have siblings. The extensive and frequent WeChat use among respondents, with a majority being long-term users who engage heavily on a daily basis. **WeChat is a central platform for social interaction** among college students, facilitating both positive connections and engagement but also presenting potential challenges related to time management, social comparison, and psychological well-being. While most students maintain generally positive self-views, the **tendency for upward social comparisons on social media** can exacerbate feelings of inadequacy and lower self-esteem. The demographic factors such as gender and major significantly influence both WeChat usage and social comparison behaviors among college students. However, demographic factors like grade, relationship status, and only-child status do not show significant effects on these variables. In terms of self-esteem, grade, major, and only-child status are significant predictors, suggesting that these factors play more substantial roles in shaping students' self-perceptions. A robust relationship between WeChat usage and social comparison, highlighting the platform's role in promoting comparative behaviors. However, the direct impact of WeChat usage on self-esteem is minimal, and the negative influence of social comparison on self-esteem is relatively weak. WeChat usage strongly predicts social comparison behaviors, its impact on self-esteem is minimal. This suggests that social media platforms like WeChat play a significant role in fostering an environment conducive to social comparison, but their influence on self-esteem is more complex and likely depends on a variety of other psychological and social factors. WeChat usage positively affects self-esteem directly, but the mediation role of social comparison is not significant. Not all forms of WeChat engagement impact self-esteem equally; rather, certain dimensions of WeChat usage, such as behavioral patterns and activeness, can significantly impact self-esteem.

Integrate Digital Literacy Programs into Education: It is essential to incorporate digital literacy programs within the educational curriculum to help students understand the psychological impacts of excessive social media use. These programs should equip students with strategies for managing their online behavior, recognizing triggers of social comparison, and adopting a critical approach to online content consumption. **Promote Healthy social media Habits:** Institutions should facilitate initiatives that encourage healthy social media use. This could include guiding students to limit their time on social media, curate their online feeds with positive and realistic content, and become aware of the often-misleading portrayal of perfection found online. **Educate on Social Media Etiquette:** Providing education on social media etiquette can foster a culture of respectful and constructive online interactions. Such education may help alleviate the stress and anxiety associated with negative comparisons and interactions on platforms like WeChat. **Offer Specialized Counseling Services:** Institutions

should provide specialized counseling services tailored to address the challenges associated with social media use, particularly those related to social comparison. These services could support students in developing effective coping strategies to manage the psychological impacts of these dynamics. Organize Workshops on Self-Esteem and Resilience: Organizing workshops aimed at enhancing self-esteem and resilience in the digital age can help students recognize their intrinsic worth, independent of social media validation. These sessions should also provide skills for managing and counteracting the negative effects of social comparison. Collaborate with Social Media Platforms: Collaborating with social media platforms to regulate algorithms that may exacerbate social comparison and mental health issues could be beneficial. Such policies should advocate for algorithms that promote a diverse range of content, including realistic life portrayals and educational material that supports mental health. Launch Public Health Campaigns: Public health campaigns could play a vital role in raising awareness about the potential psychological impacts of social media. These campaigns should aim to educate the public on healthy usage practices and emphasize the importance of maintaining a balance between digital and real-life interactions.

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