

Problematic social media use, self-compassion, and social self-efficacy among Chinese college students

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Abstract

In the digital era, social media has become an indispensable part of college students' daily lives. However, Problematic Social Media Use (PSMU) may negatively impact their mental health, academic performance, and social adaptation. This study surveyed 606 undergraduate students from a comprehensive university in China to explore the effects of PSMU on Self-Compassion (SC) and Social Self-Efficacy (SSE). The results showed that: (1) PSMU, SC, and SSE were all at moderate levels among college students. Female students, humanities majors, rural students, and non-only children exhibited significantly higher PSMU, while freshmen had lower PSMU levels. Students from non-single-parent families and male students scored higher in SC, while student leaders had significantly higher SSE than non-leaders**. Other demographic characteristics showed no significant differences across the three variables. (2) PSMU was significantly negatively correlated with both SC and SSE ($r=-0.310$, $r=-0.194$), while SC was positively correlated with SSE ($r=0.451$). The cognitive failure dimension of PSMU negatively predicted SSE, whereas self-kindness, common humanity, and isolation dimensions of SC positively predicted SSE. Based on these findings, this study proposes a comprehensive intervention program integrating Cognitive Behavioral Intervention, Mindfulness Training, and Social Skills Development to reduce PSMU, enhance SC, and improve SSE among Chinese college students. The findings provide theoretical and empirical support for optimizing mental health intervention strategies for college students.

Keywords: problematic social media use, self-compassion, social self-efficacy, mental health intervention, college students

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1. Introduction

In the digital age, social media has been deeply embedded in the daily life of college students, becoming an important channel for their information acquisition, interpersonal communication and emotional regulation. However, the growing phenomenon of Problematic Social Media Use (PSMU) has attracted widespread attention in psychology and education. Research has shown that PSMU not only causes cognitive impairment and behavioral dependence, but also significantly increases individuals' negative emotional experiences such as anxiety, depression, and loneliness (Mitropoulou et al., 2022). In this context, an individual's Social Self-Efficacy (SSE) is often suppressed and manifests itself in situations of impaired social functioning such as decreased interpersonal confidence and increased social avoidance behaviors. Meanwhile, Self-Compassion (SC), a positive psychological trait that is gradually gaining academic attention, can effectively alleviate social media-induced emotions such as anxiety, shame, and self-blame, thereby reducing the negative effects of PSMU on mental health (Daye et al., 2022).

Although existing research has examined the individual effects of problematic social media use (PSMU), self-compassion (SC), and social self-efficacy (SSE), most studies have focused on single variables or pairwise relationships, leaving the interactive effects among the three variables largely unexplored. In particular, the underlying mechanisms within a cultural context require further investigation. Therefore, this study aims to explore the effects of PSMU and SC on SSE, attempting to uncover the complex relationships between these variables. By doing so, this research seeks to provide new theoretical insights and practical guidance for promoting college students' mental health and social adaptation.

Problematic social media use (PSMU) refers to excessive, compulsive use behaviors exhibited by individuals when using social media, which can negatively impact daily life, learning, and mental health (Ma, 2022). Research has shown that problematic social media use not only affects an individual's mental health, which is strongly associated with depression, anxiety, and loneliness (Guimond et al., 2022), but it can also lead to impairments in social functioning. Arslan et al. (2022) found that social media addiction was negatively correlated with Self-compassion, and that Self-compassion could buffer the adverse effects of problematic social media use on mental health. Self-compassion (SC) refers to an individual's ability to treat themselves with understanding and caring and non-judgmental attitudes in the face of pain and failure (Neff, 2023). Research has shown that self-compassion is associated with a number of positive psychological outcomes, including increased emotional resilience and reduced stress (Neff, 2023). In recent years, there has been a growing body of research on self-compassion in Chinese college student populations. For example, Shi (2023) found that self-compassion can reduce social anxiety among college students. Social self-efficacy (SSE) refers to a person's beliefs about his or her ability to engage in social interactions and effectively establish social relationships (Li et al., 2022). Social self-efficacy is critical for successful social functioning and overall psychological well-being. Among Chinese college students, SSE is equally important in influencing their social life and psychological well-being. For example, Li (2024) found that Chinese college students' SSE levels were positively correlated with their friendship quality. This suggests that a high level of social self-efficacy can help college students better adapt to college life and enhance their social satisfaction. Although there have been a number of separate studies on problematic social media use, self-compassion, and social self-efficacy, relatively few studies have combined these three variables. Feng et al. (2023) study found that higher intensity of social media use was significantly associated with higher levels of social anxiety, which in turn affects individual s social self-efficacy. In addition, Self-Compassion may also be a potential buffer against the negative effects of problematic social media use on social self-efficacy, given its protective effects on mental health.

The results of this study contribute to a deeper understanding of the relationship between PSMU, SC, and SSE among college students, providing a scientific basis for the development of effective intervention measures. It is of great significance to Chinese college students, university administrators, and researchers. For Chinese university students, this study can help them better understand their social media use behaviors and their impact on their mental health, so that they can adopt more effective coping strategies. For university administrators, the results of this study can provide a reference for the design and implementation of school mental health services. For researchers, this study will enrich theoretical research in the field of problematic social media use, SC and SSE, especially empirical research in the Chinese cultural context, by elucidating the complex interactions between digital behaviors and psychological variables in non-Western contexts. Through this study, it is expected to discover the complex relationship between problematic social media use, SC and SSE, and to gain a comprehensive understanding of the current status of problematic social media use, Self-Compassion and social self-efficacy among Chinese college students. The results of the study are expected to show that SC can alleviate the negative effects of problematic social media use on SSE, thus providing new ideas and methods for mental health interventions for college students. In addition, the study may also identify differences in these three variables among students of different genders and grades, providing a basis for individualized mental health interventions.

Objectives of the Study - This study primarily explores the relationship between problematic social media use (PSMU), self-compassion (SC), and social self-efficacy (SSE) among Chinese college students. Specifically, it first examines the overall situation of Chinese college students in terms of PSMU, SC, and SSE. Then, it analyzes the differences in these three aspects based on demographic variables such as sex, major, grade level, whether they are only children, birthplace, whether they are student leaders, and whether they come from a single-parent family. Furthermore, this study aims to determine the relationship among respondents' problematic social media use, self-compassion, and social self-efficacy and to examine how problematic social media use affects their self-efficacy in social situations, as well as the role of self-compassion in this process.

2. Methods

Research Design - This study utilized a descriptive survey method for quantitative data collection from participants. This method consists of a structured questionnaire administered to a sample population to gather information about their thoughts, feelings, attitudes, and behaviors toward the variables of interest. The survey may have included items designed to measure problematic social media use, self-compassion, and social self-efficacy among Chinese college students. The data collected were analyzed using statistical techniques such as means, standard deviations, and correlations to describe the relationships between variables. The descriptive survey method was chosen because it allowed for the collection of data from a large number of participants in a relatively short period of time. By using a standardized questionnaire, researchers can ensure consistency in data collection and facilitate comparisons between participants. In addition, the method allows for the quantification of complex psychological constructs that can be analyzed objectively and systematically to assess the distribution of problematic social media use, self-compassion, and social self-efficacy among the target population. In addition, statistical analysis of the data allows for the identification of relationships between variables, providing valuable insights into the underlying mechanisms and influences on college students' mood and emotional expression. This information is critical to the development of targeted interventions and support services.

Participants of the Study - College students from a university in China are selected as the research. The present study adopted a convenience sampling design, selecting college students from a comprehensive university in Guangdong Province, China, as the research participants. Besides the three scales utilized, demographic data including gender, major, grade level, only-child status, place of origin, student leadership status, and single-parent family status were also collected. Regarding the sample size for investigating factors influencing variables, it is generally recommended to have at least 5-10 times the number of variables (Li et al., 2021). Considering an additional sampling error and anticipated invalid response rate of approximately

10%-20%, and given that the number of variables in this questionnaire was 64, the required sample size ranged from 400 to 640 respondents. After eliminating invalid questionnaires characterized by overly brief response times or incorrect answers to lie-detection items, the actual effective sample size used in the present study was 606 samples.

Measures

Problematic Mobile Social Media Use Scale. Scholar Jiang (2018) compiled the scale, which is mainly based on two aspects: physical and mental reactions and behavioral reactions. Physical and mental reactions include guilt, misplaced anxiety, cognitive failure, etc., and behavioral reactions include physical damage and increased stickiness. The scale consists of 20 self-assessment items and is scored on a 5-point scale, with 1 being “not at all consistent” and 5 being “completely consistent”. Scores were calculated by summing the scores for each question, with higher scores indicating a greater propensity for problematic social media use. The Cronbach's alpha reliability of the total questionnaire was 0.91, and the Cronbach's alpha reliabilities of the factors ranged from 0.70 to 0.91. The total score of the questionnaire and each factor were correlated with each other. There was a significant positive correlation ($p < 0.05$) between the total score and the factors of this questionnaire and the total score and the factors of the College Students' Cell Phone Dependence Scale, indicating that this questionnaire has a high correlation with other related measurement tools in the past, i.e., it has a high validity scale validity. Fan (2023) measured a Cronbach's alpha internal consistency coefficient of 0.935 when using this questionnaire with Chinese college students as the study population.

Self-Compassion Scale(SCS). The Self-Compassion Scale was developed by Neff (2003) and revised by Chinese scholars Chen et al. (2011) to measure the trait Self-Compassion, which consists of 26 items and includes six dimensions: Self-Kindness, Self-Judgment, Generalized Sexuality, Isolation, Positive Thoughts, and Overindulgence. In this study, the Self-Compassion Scale was scored on a 5-point scale, with 1 meaning “not at all” and 5 meaning “always”, in which the items corresponding to self-judgment, isolation, and over-indulgence were reversed scores, and the range of the total score of the SCS was from 26 to 130, with higher scores indicating a higher level of self-compassion. The total score of SCS ranges from 26 to 130, and the higher the score, the higher the level of individual Self-Compassion. Chen et al. tested the reliability of the Chinese version of the SCS with college students, and the results showed that the Chinese version of the SCS had good internal consistency, with a Cronbach's a coefficient of 0.84 and a re-test reliability of 0.89. The scale was significantly positively correlated with the Self-esteem Scale, the Life Satisfaction Scale, the Positive Emotional Distress Scale, and negatively correlated with the Negative Emotional Distress Scale, which had high validity scales. The validity of the scale is high. Zhao et al. (2024) measured a Cronbach's alpha coefficient of 0.864 when using the Chinese version of the Self-Compassion Scale with Chinese college students.

Perceived Social Self-Efficacy (PSSE) Developed by Smith and Betz in 2000, the Chinese version was revised by Fan et al. (2005). The Chinese version consists of 18 questions scored on a 5-point scale (1 means unable to do or not confident, 5 means able to do or fully confident). The test subjects were mainly college students and adults, and the questions mainly dealt with 6 major aspects of their social interactions, including the extent to which they were willing to make friends with strangers, the extent to which they pursued romantic relationships, the extent to which they presented themselves in public, the extent to which they were bold in their social interactions, the extent to which they were willing to participate in and actively organize various social activities, and the extent to which they were willing to offer or accept help from anyone. The scale is a one-factor scale with a total one-factor variance contribution of 35.1% and factor loadings between 0.52 and 0.69 for each item, indicating that the questionnaire has good construct validity. The Cronbach's alpha coefficient of the questionnaire was 0.90. The Cronbach's alpha coefficient measured by Li (2024) using this questionnaire with Chinese college students was 0.83.

Data Gathering Procedure - Preparation before data collection: In the preparatory phase preceding data collection, this study strictly adhered to standardized procedures in psychological research, systematically

completing three essential steps: Firstly, in terms of research design and ethical review, the research protocol—encompassing questionnaire content, data collection methods, and privacy protection measures—was submitted to the institutional ethics committee for approval. An informed consent form was also developed, clearly outlining the participant's right to withdraw at any point during participation. Secondly, regarding the design of the online questionnaire, standardized psychological scales with established reliability and validity were selected. After obtaining permission from the authors of these scales, an electronic questionnaire was created on the "Wenjuanxing" platform. Attention-check questions were embedded to ensure data validity. An introductory statement and informed consent form were placed at the beginning of the questionnaire, along with a contact email for participants to seek further clarification from the research leader. Thirdly, the questionnaire link was pilot-tested randomly among 30 students to examine link functionality, question wording, clarity, and to establish an understanding of the maximum, minimum, and average completion times required by participants. During the data collection phase, questionnaire links were disseminated via the "Xuexitong" platform, commonly utilized for classes, to all undergraduate students from freshman to senior levels. Accompanying the questionnaire link were detailed explanations regarding the research purpose and requirements. Data collection was conducted anonymously and voluntarily, contingent upon informed consent from the respondents, ensuring the authenticity and reliability of the collected data. Automatic reminders were enabled on the platform to alert participants of any unanswered items, ensuring the completeness of responses. After data collection, data were carefully reviewed and cleaned. Responses characterized by exceedingly brief completion times or incorrect answers on attention-check questions were excluded. Additionally, reverse-scored items were appropriately recorded. Finally, encryption was applied to securely store the data, safeguarding participant confidentiality.

Data Analysis - Survey data were analyzed using SPSS software. In the statistical processing, frequency, percentage, mean, and standard deviation will be used to determine the demographic characteristics of college students such as gender, grade level, major, whether they are only child, and place of birth. Independent samples t-test or ANOVA was used to explore the differences in problematic social media use, Self-Compassion, and social self-efficacy among college students on demographic variables. Spearman rank correlation was utilized to determine if there was a significant relationship between problematic social media use, Self-Compassion, and social self-efficacy. Regression analysis was used to examine the effects of problematic social media use, Self-Compassion on social self-efficacy.

Ethical Consideration - The Ethics Committee of Lyceum University applied for ethical review and received permission to conduct the study. This survey was conducted online. The researcher created the survey through an online questionnaire platform and generated a link to the online questionnaire. The link to the online questionnaire was then sent to the participants. The survey platform will check whether the answers are formatted correctly and completely, and the questionnaire can only be submitted successfully if it is filled out correctly. In the actual survey study, participants should first be informed of the purpose and significance of the study, the right to informed consent should be guaranteed, and the principle of voluntary participation should be followed. Those who do not agree shall not participate in the survey. Each participant will answer the questionnaire anonymously and all observations will be kept in an appropriate password to avoid disclosure of participants' personal information.

3. Results and discussion

Table 1 shows the frequency distribution of the demographic characteristics of the respondents. The table allows us to understand the specifics of the respondents in terms of sex, major, grade level, birthplace, if only children, if student leaders, and if a single-parent families. In terms of sex, 115 (19.0%) were male and 491 (81.0%) were female. This shows that there is a higher percentage of female students, which may be related to the school where the survey was conducted. Among the students who participated in the survey, there were more students majoring in teacher training, and being a teacher in China is considered to be a job well suited for women, so 81% of the students who participated in the survey were female, and even though males only accounted for 19% of the respondents, there were 115 of them, which is a statistically significant large sample

size.

Table 1

Respondents Profile (N=606)

Profile	Frequency (f)	Percentage (%)
Sex		
Male	115	19.0
Female	491	81.0
Major		
Liberal Arts	265	43.7
Science & Engineering	278	45.9
Arts	34	5.6
Sports	29	4.8
Others		
Grade Level		
Freshman	122	20.1
Sophomore	237	39.1
Junior	170	28.1
Senior	77	12.7
Birthplace		
Urban	202	33.3
Rural	404	66.7
If Only Child		
Yes	67	11.1
No	539	88.9
If Student Leader		
Yes	202	33.3
No	404	66.7
If Single Parent		
Yes	35	5.8
No	571	94.2

In terms of major, the largest number of respondents were from science and engineering majors with 278 (45.9%), followed by liberal arts majors with 265 (43.7%). Art students accounted for a relatively small percentage of 5.6% and physical education students accounted for 4.8%. This shows that the majority of students are concentrated in science and engineering and liberal arts majors, with relatively few art and sports students, which is in line with the general pattern of discipline distribution.

With regard to grade level, there were 122 (20.1%) freshmen, 237 (39.1%) sophomores, 170 (28.1%) juniors, and 77 (12.7%) seniors. The data shows that sophomores and juniors accounted for the highest percentage, which may be related to the fact that students in these two grades were more motivated to participate in the survey, while freshmen students were just enrolled in the university and had relatively fewer associations with their teachers, so the survey questionnaire was distributed to them in relatively fewer ways, resulting in a relatively small number of students. Senior students are in the preparation stage before graduation, busy with thesis writing, internships and job searching and other matters, basically not on campus, so the number of participants in the survey is relatively small, although the number of freshmen and seniors is not as much as that of sophomores and juniors, it also reaches the number of large samples in statistics.

In terms of birthplace, 404 respondents (66.7%) were from rural areas and 202 respondents (33.3%) were from urban areas. This indicates a higher percentage of students from rural areas, which may be related to the demographic distribution of China, where the rural population is already larger than the urban population. In terms of if only child, sixty-seven respondents (11.1%) were only child and 539 respondents (88.9%) were not only child. It can be seen that most of the respondents came from families with siblings, which may reflect the Chinese cultural custom that most Chinese believe that having many children is a blessing, so families usually prefer to have more than one child. In terms of if student leader, 33.3% of the respondents (202) were student cadres while 66.7% (404) were not. This ensures that the respondents cover a diversity of student leaders and ordinary students, and is in line with the fact that only a few can be student leaders after all, and the majority of students are not student leaders.

In terms of if single-parent family, only 35 respondents (5.8%) came from single-parent families, while the vast majority of the 571 respondents (94.2%) came from two-parent families. This indicates that the overall family structure of the respondents is relatively stable and that there are fewer single-parent families in the population itself. In summary, the respondents' characteristics revealed in Table 1 are highly representative and diverse, fully covering multiple socio-demographic dimensions such as sex, discipline, grade level, family background, etc., which lays a solid sample foundation for this study in terms of group comparison, variable control and extrapolation of results.

Table 2

Respondents level of Problematic Social Media Use (N=606)

Sub-Scales	Weighted Mean	Std Dev.	R ank	Verbal Interpretation
Viscosity Increase	17.0743	4.4919	1	Median/Average
Physiological Damage	14.9752	4.3648	2	Median/Average
Omission Anxiety	12.0924	3.8416	4	Median/Average
Cognitive Failure	13.0132	3.3584	3	Median/Average
Guilt	6.9125	2.1483	5	Median/Average
PSMU	64.0677	14.493		Median/Average
		10		

Table 2 shows the statistical results of problematic social media use and its dimensions. The table gives an idea of the respondents' scores on the total PSMU score and each subscale, and a detailed analysis of the results is presented below:

The weighted mean score of the viscosity increase dimension is 17.0743 with a standard deviation of 4.49199, which is the highest among all the five sub-dimensions and ranked No. 1, indicating that Chinese university students have the most prominent problem in the “stickiness” of social media use. Increased stickiness reflects the tendency of individuals to find it difficult to withdraw from social media and to use it for a longer period of time without realizing it. This mean score is close to the upper limit of the scale's median level, indicating that a significant number of college students often get caught up in social media platforms and linger. For example, some students may plan to browse Weibo or WeChat friend circles for only a few minutes, but often spend tens of minutes or even hours. This high stickiness makes it difficult for them to stop using social media in a timely manner, demonstrating a kind of increased usage stickiness and tolerance. The standard deviation of about 4.49 means that there is some variation in this tendency across students, but overall the high scores reflect a wide range of moderate Viscosity behaviors. It indicates that most respondents tend to have difficulty in stopping their use of social media once they have started using it, showing a moderate degree of continuity of use, with relatively frequent and prolonged use. This may lead to difficulties in controlling the duration of their use, affecting their daily lives and studies.

Emotional factors also play an important role in promoting increased social media stickiness. Research has shown that emotions serve as predictors that significantly influence the extent of social media use at both the individual and group levels (Yang et al., 2024). Emotional content on social media elicits immediate emotional responses from users, and these responses further influence their usage behavior. Positive emotional experiences motivate users to continue browsing and using social media, whereas negative emotions may cause users to temporarily reduce their use. However, due to the constant stimulation of social media platforms and personalized recommendation algorithms, users often find it difficult to resist their appeal and may return to the platforms even after experiencing negative emotions, thus exacerbating Viscosity.

Studies have pointed out that some features of social media design, such as infinite scrolling and personalized recommendations, aim to prolong users' dwell time, and these design strategies contribute to some

extent to users' overuse and difficulty in self-control (Cheng et. al.2020). In addition emotional content on social media can stimulate immediate emotional responses from users, and these responses further influence their usage behavior. Positive emotional experiences motivate users to continue browsing and using social media, whereas negative emotions may cause users to temporarily reduce their usage. However, due to the constant stimulation of social media platforms and personalized recommendation algorithms, users often find it difficult to resist their appeal and may return to the platforms even after experiencing negative emotions, thus exacerbating Viscosity.

The physiological damage dimension had a weighted mean score of 14.9752 and a standard deviation of 4.36489, ranking 2nd out of the five dimensions, again at a moderate level. This dimension reflects the extent of physiological health problems that college students experience as a result of overuse of social media. From the scores, Chinese college students on average feel a moderate level of adverse physiological effects, but the overall degree is slightly lower than the increase in stickiness. This means that many students experience some signs of physical discomfort or impairment, such as eye fatigue, neck and shoulder aches, headaches, and lack of sleep, after frequent use of cell phones and social media. A standard deviation of about 4.36 indicates that individual differences exist: some students may barely notice physical problems, while others report more pronounced physical discomfort. However, the second highest overall ranking suggests that compromised physical health is a more prevalent and concerning aspect of problematic use.

This is consistent with findings in recent years on the health effects of excessive screen time. Ning et. al.(2024) noted that frequent use of social media before bedtime among Chinese college students led to a significant increase in the rate of difficulty falling asleep and chronic fatigue, especially after the epidemic when cell phone use further increased. A study among Chinese college students found that more than five hours of daily smartphone use more than tripled the risk of poor sleep (PSQI scale score >7) (Huang et. al.2020). Specifically, students who were addicted to their cell phones for extended periods of time each day were more likely to report sleep difficulties and insufficient sleep duration.

According to the I-PACE model (Interaction Model of Personality-Emotion-Cognition-Execution), some college students may resort to social media to seek relief due to emotional stress or negative feelings (Fu et. al.2023). For example, swiping on the cell phone to escape when feeling academic stress results in the formation of a habit of procrastination before bedtime, which further impairs sleep and health in the long run. This pattern of emotion regulation through behavior also reinforces reliance on social media. The problems reflected in the physiological impairment dimension do not exist in isolation, but are closely linked to psychological motivators and behavioral patterns, reflecting a vicious cycle of psychological-behavioral-physiological dimensions.

The weighted mean score of the omission anxiety dimension is 12.0924, with a standard deviation of 3.84166, ranking 4th among the five dimensions, which is moderately low. This dimension mainly measures the degree of anxiety and uneasiness experienced by college students when they are unable to use or leave social media, which is commonly referred to as "Fear of Missing Out" (FoMO). In terms of average scores, the FoMO tendency of Chinese college students is moderate, lower than the dimensions of increased stickiness and physical impairment. This means that in general, college students have a certain degree of fear of missing out on their friends' updates and fresh information, but this anxiety is not very strong or widespread to the extreme.

Research has shown that problematic social media use is closely related to missing out anxiety (FoMO). Missing out anxiety, as defined by FoMO theory, is a fear that others are engaging in interesting or meaningful activities and one is not able to participate (Montag et. al.2023). In the highly developed environment of social media, college students can always see the happy moments shared by their friends and the discussion of popular topics, so they naturally worry that they are out of the loop; therefore, FoMO can be regarded as one of the triggers of PSMU. This anxiety prompts users to check social media frequently to avoid missing any information or interactions, thus increasing their dependence on the platforms (Wang et. al.2022).Lin et al. (2024) found that college students frequently go online to check social media platforms for fear of missing out on updates in their circle of friends, notifications from their class groups, and hot topics, etc. This kind of "passive connection" can

be seen as one of the causes of PSMU. This “passive connection” anxiety significantly affects their concentration and mental health.

The cognitive failure dimension has a weighted mean score of 13.0132 and a standard deviation of 3.35845, ranking 3rd out of the five sub-dimensions, which is slightly below the medium level. This dimension measures college students' impaired daily cognitive functioning due to social media use, including inattention, memory loss, and increased errors in work and study. The average score was about 13 (if the scale totaled 20), indicating that the college students in the sample had moderate problems in this area, not as universally severe as increased stickiness and physiological impairments, but still worthy of attention. This supports the idea that overuse of social media may have a negative impact on cognitive functions such as memory and attention. For example, some students may forget to complete their homework because they are addicted to tweeting, or they may be distracted by cell phone messages in class and miss the main points of the lecture. These are typical manifestations of “cognitive failure”.

According to media dependence theory, when people become overly dependent on media, they will reduce their ability to deal with realistic tasks (Meng et. al.2025). If college students are accustomed to getting pleasure and instant feedback through fragmented information streams, they will be more easily distracted and burned out when facing learning tasks that require continuous efforts, resulting in the so-called “cognitive laziness in the digital age”. Guo et al. (2023) showed that frequent use of short-form video platforms interrupts the task-attention cycle, which affects learning efficiency and information retention, and that long-term use may be associated with a risk of “cognitive fragmentation”. Problematic social media use is also associated with multitasking, which may lead to reduced cognitive control. In addition, PSMU has been strongly linked to mental health issues such as depression, anxiety and cognitive dysfunction, which may exacerbate users' feelings of cognitive failure and physical impairment (Tarik, 2023).

The guilt dimension has a weighted mean score of 6.9125 with a standard deviation of 2.14837, which is the lowest score among all the dimensions and ranked 5th, which is in the middle slightly lower level. It can be judged that most college students do not feel strong guilt or self-blame for their social media use. Despite the fact that many of them spend a lot of time on social media and are even aware of some negative effects, guilt is not prominent overall. The standard deviation was about 2.15, indicating that there was little difference in this emotional feeling between students - it was low overall. Only a small number of students are likely to blame themselves profoundly after becoming addicted, while majority only sometimes feel mild remorse such as “it's not a good idea to play too much”, and more often don't consider their behavior to be much of a problem.

According to the Behavioral Addiction Model, guilt/conflict usually occurs in the later stages of addiction, when the individual begins to realize that the behavior is damaging to his or her life and conflicts with self-worth. This can involve dramatic events such as academic failure and relationship breakdown. Current college students, on average, have only moderate levels of PSMU and have not yet progressed to extreme severity, so many have not yet experienced intense internal conflict. In addition, social norm theory states that when a behavior is widely accepted in a group, individuals are less likely to be ashamed of it. On Chinese university campuses, playing with one's head down and socializing online at all times is a common sight, and cell phones can be seen in class, during self-study, and even at parties. When everyone is doing this, individuals naturally don't feel that it's a “wrong” thing to feel guilty about.

Some users may feel guilty or upset by these negative emotions after using social media, and this self-blame can exacerbate mood swings, especially when exams are approaching and important learning opportunities are missed. Research suggests that majority of students, guilt may not be as strong, possibly because they do not yet fully recognize the negative effects of excessive social media use or believe that such behavior is prevalent among their peers, and therefore do not feel strong guilt (Zeng, 2024).

The weighted mean score of the total PSMU scale was 64.0677, with a standard deviation of 14.49310, indicating that the participants' PSMU scores were at a moderate level, and that most of the students had some

overuse problems to a greater or lesser extent, but on average had not yet reached the level of extremely severe addiction. This finding is broadly consistent with national and international research. On the one hand, extensive and frequent use of social media has long been the norm among Chinese college students (Huang et. al.2023). Total PSMU score Medium suggests that the current social media use problem among Chinese college students as a whole should not be ignored but need not be exaggerated as a widespread problem. This is similar to the international assessment of youth in the digital age - they are deeply involved in the online world, gaining unprecedented connectivity and access to information, while also taking the risk of new types of psychological and behavioral problems that come with it (Fu et. al.2023; Jin et al., 2024).

This study reveals the current status and nuanced structure of problematic social media use among Chinese college students: overall at a moderate level, the“viscosity increase” was the most significant, “physiological damage” and “cognitive failure” were also more prevalent, while “omission anxiety” was moderate and “guilt” was the least . This spectrum suggests that the problem of social media overuse among contemporary college students is more of a habitual and physiological/cognitive impact, while the subjective emotional and ethical dimensions have not yet attracted equal proportions of alertness and burden. This has both a positive side (indicating that most students are not yet deep into the point of no return) and a negative side (reminding us that many problems may be accumulating unnoticed). In this study, viscosity increase and physiological damage scored the highest, suggesting that these two areas may be the focus of intervention.

Table 3

Respondents level of Self-Compassion Scale (N=606)

Subscales	Weighted Mean	Std Dev.	R ank	Verbal Interpretation
Self kindness	16.8663	3.5185	1	Median/Average
Self judgment	15.7970	3.3397	2	Median/Average
Common humanity	12.6370	2.6876	4	Median/Average
Isolation	12.1815	3.2453	5	Median/Average
Mindfulness	13.1733	2.7933	3	Median/Average
Over identification	11.1947	2.7969	6	Median/Average
SCS	81.8498	13.073		Median/Average
		30		

Weighted mean score of self-kindness dimension is 16.87 (standard deviation 3.52), ranking No.1 and belonging to the median level. This is consistent with Neff's theory, indicating that Chinese college students are able to be moderately kind and relieved when facing difficulties, and do not show excessive self-criticism or indulgence. he mean score of the self-judgment dimension is 15.80 (standard deviation 3.34), indicating that the subjects moderately self-criticize, which is in equilibrium with self-kindness. It reflects that individuals tend to treat themselves in a gentle and understanding way when facing failure or pain, but still accompanied by a certain degree of self-criticism. This result supports Tan (2024) finding that Chinese college students maintain a delicate balance between self-kindness and self-judgment, noting that despite cultural traditions that emphasize self-reflection, individuals have begun to adopt more caring strategies for the self. This simultaneous mechanism of self-acceptance and critique is also seen in Neff's (2023) study, noting that self-compassion in Eastern and Western cultures, manifested in different forms, has the same core mechanism.

Common Humanity scored 12.64 (standard deviation 2.69) indicating that subjects moderately recognize that suffering is a common human experience. The weighed mean of isolation is 12.18 (standard deviation 3.25), suggesting that subjects occasionally felt lonely but not consistently severe. The weighted means of Common Humanity and The weighted mean values of Common Humanity and Isolation are both close to the median, indicating that when facing difficulties, the respondents can partially realize that they are not the only ones

experiencing these sufferings, and that their own predicament is a similar challenge that other people may be facing, and that they can partially understand the idea that “suffering is a common human experience”, but they still have feelings of isolation and marginalization. feelings of isolation and marginalization.

This cognitive split may be related to the “pressure of social expectations” in collectivist cultures (Xu et al., 2024). In East Asian cultures, especially Chinese cultures, which emphasize the close ties between individuals and their societies and families, the social identities and behaviors of individuals are often profoundly shaped by collective and family expectations (Chen, 2021), and individuals often display strong self-critical tendencies in the face of failure due to the profound influence of social expectations, family pressures, and cultural traditions. Individuals often display strong self-critical tendencies in the face of failure due to the profound influence of social expectations, family pressures, and cultural traditions. In such cultures, individuals not only blame the failure on the individual, but also often worry that it will damage the face of the family or society, which in turn triggers excessive self-criticism and guilt. Chinese participants were also dialectical in their understanding of self-compassion, valuing both negative self-criticism and reflection and positive self-acceptance and caring. This unique understanding may be related to the dialectical thinking in traditional Chinese culture and the dual focus on self-transformative social participation. Individuals may therefore emphasize group belonging while at the same time feeling alienated by failing to meet social expectations.

However, on the other hand, despite the deep-rooted collectivist culture, with the rapid development of modern society, especially in the college student group, the individual's self-awareness and independence are gradually increasing. Although respondents were able to reduce their sense of isolation when they realized the universality of their predicament, the expectations of social recognition and family responsibilities in collectivist culture may still lead individuals to feel isolated in the face of failures or difficulties as a personal defect or dereliction of duty. However, college students in the post-epidemic era have begun to pay more attention to mental health and have gradually developed healthier strategies for emotion regulation by engaging in activities such as mental health education and emotion regulation training, learning to maintain interpersonal connections in times of distress, avoiding excessive isolation, and enhancing feelings of self-empathy (Chio et al., 2021).

Mindfulness mean score of 13.17 (standard deviation 2.79) ranked 3rd, showing that subjects were able to examine emotions moderately objectively. And Over-identification over-indulgence has a mean score of 11.19 (standard deviation 2.80) and ranks 6th, showing that the subjects are less likely to get overly caught up in negative emotions. It shows that the respondents tend to remain somewhat aware of their emotions and have not over-indulged in negative emotions. This trend suggests that positive thinking training has begun to show results among some college students, especially in high-pressure educational environments. Wang et. al. (2024) showed that positive thinking training can enhance college students' tolerance to emotional fluctuations and reduce emotional over-identification. This is consistent with the findings of He (2023).

Chinese culture is heavily influenced by Confucianism, which emphasizes self-reflection and introspection, which is compatible with the core concept of positive thinking. Mindfulness encourages individuals to be aware of present experiences in a non-judgmental manner, while introspection is an important avenue of personal cultivation in traditional Chinese culture, which helps college students maintain emotional balance in the face of difficulties. However, collectivist culture may also lead individuals to tend to repress or ignore negative emotions in the face of them in order to avoid burdening the collective, which may trigger emotional over-identification. With the popularization of mental health education, mindfulness training has been gradually promoted, and studies have shown that it can effectively enhance college students' self-awareness, reduce emotional over-identification, and promote well-being and reduce negative emotions (Wang et. al.2024).

Overall, the respondents' self-compassion score is 81.85, which is at the “moderate/average” level. This indicates that Chinese university students show a moderate degree of self-care in the face of their own difficulties: they are able to be kind to themselves to a certain extent, identify with the common humanity and maintain positive thoughts, and at the same time, they may also experience moderate self-criticism, isolation and

emotional overload, but these negative reactions do not reach a high level. The moderate scores on the total scale reflect that the subjects maintained a relatively balanced psychological state between the positive and negative dimensions. The total self-compassion score represents the level of an individual's integrated self-attitude in difficult situations. Our results show that this composite attitude is moderate among Chinese college students, suggesting that they are neither highly self-compassionate nor severely lacking in self-compassion, but rather a healthy intermediate state in between. This is also consistent with the findings of Lu et al. (2022) and Chio et al. (2021). With the popularization of psychological knowledge, Chinese university students are gradually getting rid of the tendency of emotional suppression in traditional culture, trying to deal with setbacks with a “growth mindset”, and developing healthy coping mechanisms.

The results of this study reveal that self-compassion has a certain foundation in Chinese university students, but there is still room for improvement. Although self-kindness, mindfulness, and other positive dimensions scored relatively high, self-judgment and isolation also accounted for a significant proportion of the scores, suggesting that individuals are still deeply influenced by traditional culture, such as Confucian ethics, self-restraint, and social evaluation mechanisms. Chen (2021) argued, Chinese collectivist culture emphasizes the individual's social role fitness and family responsibilities, which tends to magnify the social shame of failure, thus affecting the formation of Self-Compassion. College students, as a group in the identity transition period, have a heavy psychological load, and are prone to conflicts as they have to fulfill academic and family expectations, and at the same time want to achieve self-independence. In recent years, the topic of mental health has been increasingly emphasized by all sectors of society, especially on college campuses. With the widespread dissemination of psychology, the college population is gradually recognizing the importance of self-acceptance and is beginning to adopt more mature ways of coping with failure and stress, such as alleviating negative emotions through self-care and emotion regulation strategies (Lu et al., 2022). The impact of social change and globalization has prompted China's younger generation to pay more attention to self-growth and mental health, and they are more inclined to maintain an attitude of self-compassion and understanding in the face of challenges, and view difficulties as opportunities for growth rather than as symbols of failure (Chio et al., 2021).

In summary, despite the strong self-critical tendency in collectivist culture, which tends to trigger a sense of isolation and over-identification modern education, social change, and the spread of psychology are helping China's younger generation, especially the college student population, to be able to deal with negative emotions in a more tolerant and accepting mindset in the face of failures and pressures, and thus promote the development of self-compassion.

Overall, this sample shows that Chinese college students' total score of self-compassion and its dimensions are at a moderate level. Among the six sub-dimensions, self-kindness scores are the highest, indicating that subjects are more inclined to look at themselves in a gentle manner; and over-identification scores are the lowest, showing that when facing difficulties, subjects are not easy to over-identification is the lowest, indicating that when facing difficulties, subjects are less likely to fall into emotional distress. According to Neff's theoretical model of self-compassion, the three core elements of self-compassion and its opposites: self-kindness vs. self-judgment, common humanity vs. isolation, and mindfulness vs. over-identification were also all largely in balance in this study. This provides a new basis for further self-compassionate interventions in the Chinese cultural context.

Table 4

Respondents level of Social Self-Efficacy (N=606)

SSES	Weighted Mean	Std Dev.	Verbal Interpretation
Total Score SSES	51.9538	11.5322	Median/Average Md=52.0000
		5	

According to the data in Table 4, it can be seen that the weighted mean value of Chinese college students in the SSES scale is 51.95, which is close to the median of the scale (Md=52.00), which indicates that the social

self-efficacy of college students is at a medium level on the whole, which is specifically manifested in the fact that most of the students are more moderately confident about their self-efficacy in social behaviors, and they have a certain degree of social competence and self-confidence, but there is still a certain improvement space.

This result is consistent with Guo et. al.(2023). College students are in the transition from adolescence to adulthood, and social self-efficacy is often influenced by personal experience and maturity. Many college students have relatively limited social experiences in high school, especially in highly competitive China, where the main goal of students is to get into the desired university, so social activities may be relegated to the back burner of studies, thus affecting the training of social skills and the accumulation of social experiences. After entering university, although they face more socialization opportunities, they often lack mature interpersonal skills and experience in dealing with complex social situations. When facing different social situations, college students often feel both a certain degree of self-confidence, but also face uncertainty and pressure, which keeps their social self-efficacy at a moderate level. Liu et al. (2024) pointed out that Chinese college students, influenced by exam-based education and limited social opportunities, have an overall level of social confidence that is moderately high but still slightly conservative compared to that of youth in Western countries. They are still slightly more conservative than the SSE of young people in Western countries. This may be related to the social expectations of “modesty” and “conflict avoidance” in Chinese culture, which leads students to be less likely to express themselves or take the initiative to express their opinions in public, and to be more introverted and cautious in social situations, taking into account the collective interests and the feelings of others when expressing themselves. When expressing themselves, they would take into account the collective interests and feelings of others, as well as the evaluation of themselves by others, thus affecting the development of their social self-efficacy to a certain extent.

Table 5

Differences of Responses on Problematic Social Media Use when grouped according to Profile (N=606)

Profile Variables/ PSMU	t/F	p-Value	Interpretation
SEX			
Viscosity Increase	-0.912	0.362	Not Significant
Physiological Damage	-2.579	0.010	Significant
Omission Anxiety	-3.113	0.002	Significant
Cognitive Failure	-2.526	0.012	Significant
Guilt	-3.155	0.002	Significant
PSMU	-2.940	0.003	Significant
MAJOR			
Viscosity Increase	2.067	0.103	Not Significant
Physiological Damage	5.239	0.001	Significant
Omission Anxiety	3.980	0.008	Significant
Cognitive Failure	2.982	0.031	Significant
Guilt	3.588	0.014	Significant
PSMU	4.639	0.003	Significant
GRADE LEVEL			
Viscosity Increase	0.213	0.887	Not Significant
Physiological Damage	4.774	0.003	Significant
Omission Anxiety	1.716	0.162	Not Significant
Cognitive Failure	4.160	0.006	Significant
Guilt	1.270	0.284	Not Significant
PSMU	2.294	0.077	Not Significant
IF ONLY CHILD			
Viscosity Increase	1.212	0.226	Not Significant
Physiological Damage	-0.455	0.649	Not Significant
Omission Anxiety	0.836	0.403	Not Significant
Cognitive Failure	-2.710	0.007	Significant
Guilt	-2.308	0.021	Significant
PSMU	-0.505	0.614	Not Significant
BIRTHPLACE			
Viscosity Increase	-0.863	0.388	Not Significant
Physiological Damage	-1.561	0.119	Not Significant
Omission Anxiety	-0.777	0.437	Not Significant

Cognitive Failure	-3.223	0.001	Significant
Guilt	-1.097	0.273	Not Significant
PSMU	-1.851	0.065	Not Significant
IF Student Leader			
Viscosity Increase	1.382	0.167	Not Significant
Physiological Damage	1.661	0.097	Not Significant
Omission Anxiety	0.927	0.354	Not Significant
Cognitive Failure	0.675	0.500	Not Significant
Guilt	0.227	0.820	Not Significant
PSMU	1.365	0.173	Not Significant
IF SINGLE PARENT			
Viscosity Increase	-0.023	0.981	Not Significant
Physiological Damage	-0.923	0.356	Not Significant
Omission Anxiety	1.532	0.126	Not Significant
Cognitive Failure	-0.542	0.588	Not Significant
Guilt	-0.805	0.421	Not Significant
PSMU	-0.124	0.901	Not Significant

Table 5 shows whether the difference between the total PSMU score and its dimensions on demographic variables is significant or not, with the following results:

On sex and major, the PSMU total score and all other dimensions except the viscosity increase dimension differed significantly; on grade level, two dimensions, physiological damage and cognitive failure, differed significantly; on if only one child, two dimensions, cognitive failure and guilt were significant; on birthplace, only one dimension, cognitive failure, was significant; In contrast, the differences in PSMU total scores and its dimensions were not significant on whether or not they were student leaders and on single-parent families.

Further analysis found that PSMU of female students is higher than male students. This is consistent with previous research (Ma, 2022). It was found that females use social media more for maintaining existing relationships, managing tasks, and obtaining information and educational fulfillment than males. They uploaded more selfies and commented or liked others' selfies to a greater extent than men, which led to women being more addicted to social activities (Kircaburun et al., 2020). In addition, females are more susceptible to the negative effects of social media use, which is manifested in the fact that females score higher than males on Facebook addiction (Alsamhori et al., 2023). In addition, with the development of society, many dress-up and beauty platforms are more attractive to girls, and there are more gaming platforms developed for women, such as parenting games and animal forests, which make girls also likely to be addicted to online games (Gao, 2021), which can lead to problematic social media use.

Through post hoc tests, it was found that the PSMU of Liberal Arts majors was higher than that of other majors, which may be related to the disciplinary characteristics of liberal arts majors, which emphasize the communication of ideas, expression of emotions, and interpersonal interactions of individuals, and students tend to rely more on social interactions to express their personal viewpoints and emotions in the learning process (Wang, 2020). In addition, the learning content of liberal arts students often involves a lot of text and theoretical analysis, and students may be more inclined to use social media to relieve anxiety when they feel stressed, thus forming an over-reliance behavioral pattern (Liu et al., 2022). In addition, many social media platforms (e.g., Weibo, Zhihu) are particularly appealing to liberal arts students, especially those involved in the arts, culture, and literature. These platforms emphasize self-expression and social engagement, which are highly compatible with the academic needs and interests of Liberal Arts students. This may result in a higher use of social media by Liberal Arts majors, with a resulting higher risk of problematic social media use. Further post hoc tests proved that PSMU was lowest for first-year college freshmen on the two dimensions that were significantly different by grade level. The reason for this is that first-year college freshmen face the transition from high school to college, a phase in which they typically experience stronger academic stress and adjustment problems. During this process, they are more cautious in their social activities and are not yet fully integrated into college life, so their social media use may be relatively low. Research suggests that students new to college are typically more focused on academic adjustment and establishing campus life, which may lead to a lower reliance on social media (Candussi et al., 2023). In addition, new students may tend to socialize face-to-face rather than rely

excessively on social media because they are more excited about the novelty of college life, which may also lead to their lower PSMU use during this period (Sujarwoto et al., 2023).

Further analysis revealed higher PSMU among non-only children, which may be related to the non-only child group within the family structure. Research suggests that non-only children may feel more competition and pressure in social interactions due to the presence of more siblings in their families, and this pressure may motivate them to seek emotional support and social acceptance through social media. Social media platforms can provide them with instant feedback, and this feedback mechanism may allow them to develop dependence and increase the risk of problematic use (Zhao , 2021). In addition, non-only children may be exposed to and use social media earlier due to their parents' limited energy and inability to adequately take care of their children, and thus they may develop a higher frequency of use and dependency.

Further analysis revealed that PSMU was higher for college students originating from rural areas than for those originating from urban areas, and that PSMU was lower for college students whose families were in better financial situations. Rural students tend to face greater social adjustment pressures and emotional isolation when they enter college. Social media provides a way for them to stay in touch with friends and family, and this connection plays an important role in alleviating their loneliness and social adjustment stress (Islam et al., 2021). As a result, rural students may use social media more frequently, leading to their higher PSMU. A study by Mamun et al. (2019) mentioned that students from lower economic backgrounds, especially rural students, tend to show higher dependence on mental health issues and social needs.

Further analysis revealed that college students from rural areas exhibited higher levels of problematic social media use (PSMU) compared to their urban counterparts. Rural students often face greater social adaptation pressures and feelings of emotional loneliness upon entering university. Social media provides an important avenue for them to maintain contact with family and friends, significantly alleviating their loneliness and social adaptation stress (Islam et al., 2021). Consequently, rural students may engage with social media more frequently, contributing to elevated levels of PSMU. Additionally, Mamun et al. (2019) indicated that students from lower socioeconomic backgrounds, particularly rural students, are more likely to demonstrate higher dependency on social media to address their psychological health concerns and social needs.

Problematic social media use among college students did not differ significantly on whether they were student leaders or not and whether they were single parents or not, which may be explained by the fact that although student cadres often carry more social responsibilities and organizational tasks, these tasks may make them use social media more rationally, simply as a tool for information acquisition and organizing activities rather than as a medium for emotional escapism, and thus as a member of the college student population, their social media use is no different from other college students. Although students from single-parent families may face more emotional vacancies, it is not absolute, especially in Chinese culture, and may be taken care of by more other relatives, and for college students, they generally have their own friends, so school and friend groups may reduce their reliance on social media. In addition modern college students generally have strong social media use and adaptability, and students from single-parent families, like other students, are able to express their emotions and interact socially through social media, which tends to bring their social media use patterns in line with those of students from other family backgrounds.

In conclusion, this study showed differences in PSMU and its dimensions across demographic variables. Sex was significant ($p<0.05$) for physiological damage, omission anxiety, cognitive failure, guilt, and total score; major was significant except for viscosity increase; and grade level was significant for physiological damage and cognitive failure. Other variables such as if only one child, place of birth, if student leader, if single parent, differed only in individual dimensions such as cognitive failure and guilt. This indicates that sex and major have a more significant effect on PSMU.

Table 6 shows the differences between SC and its dimensions on demographic variables, which are analyzed below:

On sex, only one dimension, over identification, differed significantly and it was boys who had higher over identification than girls, while the differences in the other dimensions and total scores were not significant. It shows that boys may over-commit and over-emotionally react when encountering difficulties and challenges, which is consistent with Huang's (2020) study, but there is also a study that shows no significant difference in sex (He,2022), probably because the study only counted the total score in the data statistics, and did not test the difference in the dimension scores. In Chinese society and culture, men are required and expected to be "strong" and "independent" in the face of problems, which may lead to a tendency to over-internalize emotions in stressful situations, which may be manifested as over-identification. The other SC dimensions did not show significant differences between genders (He, 2022). dimensions did not differ significantly by gender, possibly due to the fact that these dimensions are influenced by a wider range of social and cultural factors, resulting in smaller differences between men and women.

Table 6

Differences of Responses on Self-compassion when grouped according to Profile (N=606)

Profile Variables/ SCS	t/F	p-Value	Interpretation
SEX			
Self-kindness	-1.640	0.101	Not Significant
Self-judgment	-0.259	0.796	Not Significant
Common humanity	0.954	0.341	Not Significant
Isolation	-0.100	0.921	Not Significant
Mindfulness	0.707	0.480	Not Significant
Over identification	-2.515	0.012	Significant
SCS	-0.987	0.324	Not Significant
MAJOR			
Self-kindness	0.966	0.409	Not Significant
Self-judgment	0.158	0.925	Not Significant
Common humanity	0.155	0.926	Not Significant
Isolation	0.537	0.657	Not Significant
Mindfulness	0.465	0.707	Not Significant
Over identification	0.796	0.496	Not Significant
SCS	0.952	0.415	Not Significant
GRADE LEVEL			
Self-kindness	0.822	0.482	Not Significant
Self-judgment	1.018	0.384	Not Significant
Common humanity	0.840	0.472	Not Significant
Isolation	1.714	0.163	Not Significant
Mindfulness	0.625	0.599	Not Significant
Over identification	1.485	0.217	Not Significant
SCS	0.856	0.464	Not Significant
IF ONLY CHILD			
Self-kindness	0.771	0.441	Not Significant
Self-judgment	-0.644	0.520	Not Significant
Common humanity	0.256	0.798	Not Significant
Isolation	0.405	0.685	Not Significant
Mindfulness	-0.306	0.760	Not Significant
Over identification	0.650	0.516	Not Significant
SCS	0.370	0.711	Not Significant
BIRTHPLACE			
Self-kindness	-0.196	0.845	Not Significant
Self-judgment	0.593	0.553	Not Significant
Common humanity	0.363	0.717	Not Significant
Isolation	0.389	0.697	Not Significant
Mindfulness	-0.586	0.558	Not Significant
Over identification	1.305	0.192	Not Significant
SCS	0.581	0.562	Not Significant
IF STUDENT LEADER			
Self-kindness	1.004	0.316	Not Significant
Self-judgment	0.052	0.959	Not Significant
Common humanity	1.037	0.300	Not Significant
Isolation	-1.738	0.083	Not Significant
Mindfulness	1.018	0.309	Not Significant
Over identification	-0.390	0.697	Not Significant

Problematic social media use, self-compassion, and social self-efficacy among Chinese college students

SCS	0.274	0.784	Not Significant
IF SINGLE PARENT			
Self-kindness	-0.956	0.339	Not Significant
Self-judgment	1.718	0.086	Not Significant
Common humanity	-0.407	0.684	Not Significant
Isolation	2.172	0.030	Significant
Mindfulness	-0.129	0.898	Not Significant
Over identification	2.237	0.026	Significant
SCS	1.487	0.138	Not Significant

On the if single parent, the differences were significant on the Isolation and over identification dimensions, both of which were scored higher by children from non-single parent families, while the differences on the other dimensions and the total score were not significant. This reflects the fact that children from non-single parent families feel isolated or overly immersed in negative emotions when perceiving their own predicament. This may be related to the fact that children from non-single parent families may face higher family expectations and social pressures.

Such expectations and pressures may lead them to perceive themselves as isolated and unable to share their predicament with others when they encounter failures or difficulties. Liu et al. (2020) noted that the fear of negative evaluations and social anxiety may exacerbate an individual's sense of isolation, especially when the individual feels unable to meet external expectations. Wu et. al.(2023) mentioned that adolescents tend to be influenced by their surroundings as they grow up, especially family expectations, which may exacerbate their feelings of isolation, especially in terms of social interaction and self-acceptance. Therefore, children from non-single-parent families may be more likely to feel isolated due to external pressures.

Lathren et al. (2021) found that self-compassion is closely related to interpersonal relationships, and that over-identification often stems from an individual's failure to effectively deal with emotional conflict and distress. Children from non-single-parent families may be subject to high expectations from family members, which leads to their inability to effectively express negative emotions and thus fall into the emotional dilemma of over-identifying with themselves. Additionally, children from non-single-parent families may be subject to stricter emotional management and expectations within the family, which makes it likely that they may find it difficult to obtain the necessary support when experiencing emotional distress. Rifani et al. (2024) state that adolescents are prone to over-identify themselves with their distressing emotions and are unable to engage in positive emotion regulation strategies in the absence of effective emotional support. This lack of emotional regulation makes it likely that they are more likely to fall into the emotional dilemma of over identification.

On the demographic characteristics of major, grade level, if only one child, birthplace, and if student leader, the differences between the total SC score and its dimensions were not significant. This is consistent with previous researchers (Huang, 2020; Kong, 2021; He, 2022). This may be related to China's traditional culture. Buddhism and Confucianism are the two core ideological systems of traditional Chinese culture, and they have formed a wide influence in Chinese society for a long time. The concept of "compassion" in Buddhism emphasizes tolerance and care for oneself and others, which is in line with the core concept of self-compassion. Confucianism, on the other hand, focuses on individual moral cultivation and self-reflection, and emphasizes the role and responsibility of the individual in the collective. Whether in schooling or in family education, these cultural values emphasize introspection and self-restraint rather than excessive self-indulgence and self-tolerance. Both of these two core thought systems happen to be closely related to the formation of self-compassion. Chinese traditional culture has shaped college students' emotional cognition and behavioral styles through the long process of education and socialization, and through the subtle influence of family, school, and daily life. Therefore, most of the differences in demographic characteristics of Chinese college students' self-compassion are not significant.

In conclusion, this study showed no significant differences in self-compassion across most demographic variables. Only sex reached significance on the dimension of "over identification", indicating that there are

differences between sex in terms of emotional over involvement. There was also a significant difference between if single parent on the “isolation” and “over-identification” dimensions, possibly reflecting the influence of family background on an individual's self-experience of emotions. The rest of the variables did not differ significantly on the total SC score and the dimensions, and the effects were small.

Table 7 shows the differences in SSE on demographic variables, which are analyzed below: On the demographic characteristic of if student leader, the difference in SSE is significant, and the SSE scores of student cadres are higher than those of non-student cadres, i.e., student cadres have a stronger sense of social self-efficacy, which is in line with Guo (2023) result that college students who can run to be student cadres should be more capable themselves, and so their social self-efficacy will be stronger, and being a student cadre As student leaders, they often need to deal with tasks such as team management, communication and coordination, and have more opportunities to be exposed to social situations, and these practical social tasks can further exercise their social skills and help them to improve their self-efficacy in social situations.

Table 7

Differences of Responses on Social Self-efficacy when grouped according to Profile (N=606)

Profile Variables/ SSE	t/F	p-Value	Interpretation
SEX	1.496	0.135	Not Significant
MAJOR	0.243	0.866	Not Significant
GRADE LEVEL	0.303	0.823	Not Significant
IF ONLY CHILD	1.553	0.121	Not Significant
BIRTHPLACE	1.363	0.173	Not Significant
IF STUDENT LEADER	4.464	0.000	Significant
SINGLE PARENT	-1.411	0.159	Not Significant

The differences in SSE scores on demographic characteristics such as sex, major, grade level, if only one child, birthplace, and if single parent are not significant. This is consistent and inconsistent with previous studies, for example, Guo (2023) and Zhang (2021) showed that SSE was higher for males than females, and SSE was higher for first-year and second-year university students than for third-year and fourth-year students, which is inconsistent with the results of the present study, the reason for which may be related to the fact that the sample of the present study had more teacher education majors, which have more women in their programs more, and in this scenario, women also behave more generously and appropriately, have more opportunities to participate in various activities, and have more social interactions, so there is no significant difference in SSE between males and females. Freshmen have just entered the university but are still in the stage of adaptation and confusion, sophomores and juniors have adapted well to the university life but have encountered some challenges, and seniors are busy with dissertations, internships, etc., and the stress they encounter while looking for a job may be transformed into social anxiety, which affects their social self-efficacy to a certain extent, and thus may lead to a non-significant difference of grade level in SSE. Guo (2023) study showed insignificant differences in demographic characteristics such as major, , birthplace, and if single parent, which is consistent with the present study.

In Chinese universities nowadays, campus activities are rich and colorful, and students of different majors have equal opportunities to participate in various social activities, i.e., they have equal opportunities to improve their social skills and accumulate social experience, so in general SSE does not differ significantly by major. Nowadays, Chinese society is developing very fast and the difference between urban and rural areas is decreasing, especially in most universities in China, urban and rural students may face similar social challenges, so there is no significant difference in the effect of birthplace on SSE. Although only children may have lower SSE due to a lack of sibling interaction, only children may also compensate for low SSE due to a lack of sibling interaction by receiving more parental attention and resource support, so the difference in SSE on whether or not they are only children is not significant. The effect of family on SSE is more complex, such as parenting style, family financial situation, family atmosphere, and parental support and attention, etc., and whether or not to have a single parent may have advantages and disadvantages in each of these areas, so the difference in SSE on whether or not to have a single parent is also not significant.

In conclusion, Table 7 shows that there is no significant difference in SSE on the variables of sex, major, grade level, if only one child, birthplace and if single parent family, indicating that these factors do not have much influence on SSE. The only significant difference was in the variable of “if student leader”, which indicated that individuals who are student leaders showed higher self-efficacy in terms of social interaction and self-confidence.

Table 8 shows the results of the correlation analysis between the PSMU, SC, and SSE variables in this study. The results show that there is a significant negative correlation between problematic social media use and self-compassion ($r=-0.310$, $p<0.001$), which means that the more severe the problematic social media use, the lower the level of self-compassion of the individual.

Table 8

Correlation Matrix of the three variables (N=606)

S	VARIABLE	SC			Interpretation	SSE			Interpretation
		r_s	$alue$	$p-v$		r_s	$alue$	$p-v$	
	PCMU	0**	00	0.0	HS	4**	00	0.0	HS
	SC					1**	00	0.0	HS

***. Correlation is significant at the 0.01 level (2-tailed)*

There was also a significant negative correlation between problematic social media use and social self-efficacy ($r=-0.194$, $p<0.001$), meaning that the more severe the problematic social media use, the lower the individual's social self-efficacy. There was a significant positive correlation between self-compassion and social self-efficacy ($r=0.451$, $p<0.001$), meaning that the higher the individual's level of self-compassion, the higher the social self-efficacy.

According to relevant studies in recent years, there is a significant negative correlation between problematic social media use and self-compassion ($r=-0.310$, $p<0.001$). This result reflects a possible interaction between problematic social media use and an individual's ability to self-compassion. In this context, this paper will explore the possible mechanisms of this negative correlation, taking into account the relevant literature within the last five years, and looking at various factors such as the psychological impact of social media use, social comparison, and emotion regulation.

Research has found that PSMU is often strongly associated with emotional distress, social isolation, and mental health problems such as anxiety and depression (Phillips et al., 2021). Excessive use of social media, especially when individuals are unable to effectively control the duration and content of use, can exacerbate the accumulation of negative emotions such as anxiety, depression, and self-doubt (Mitropoulou et al., 2022). Social media provides users with a platform to present their personal lives and images, which is often incomplete and filled with idealized content. This idealized content exacerbates social comparisons, making individuals more prone to negative comparisons with others, self-criticism, and anxiety, which leads to an accumulation of negative emotions, which can cause individuals to lose tolerance and acceptance of self, increase self-criticism and emotional instability (Varaona et al., 2024), and in turn, decrease levels of self-compassion (Keutler et al., 2022). On the other hand, self-compassion can act as a protective factor to mitigate the negative psychological effects of excessive social media use. For example, Zargaran (2023) noted in his study that self-compassion can help individuals better regulate their emotions and reduce anxiety and depressive symptoms associated with social media use. Therefore, cultivating self-compassion may be an important intervention strategy to improve the psychological health of social media users (Mohamad et al., 2020).

Research suggests that excessive social media use reduces opportunities for face-to-face interactions, which may leave individuals lacking the necessary social skills to reduce their social self-efficacy in real-world situations (Lopes et al., 2022). Low social self-efficacy may manifest itself in social avoidance, anxiety, and

loneliness, emotional responses that are often closely associated with problematic social media use (Paakkari et al., 2021). The virtual nature of social media and non-face-to-face interactions weaken an individual's social skills, leading to poor performance in actual social situations, which creates a vicious cycle that further exacerbates the decline in social self-efficacy (Bányai et al., 2017).

In contrast to problematic social media use, Self-compassion is typically associated with higher social self-efficacy. Research has shown that Self-compassion can alleviate individuals' self-criticism and negative emotions, thereby increasing their psychological resilience and social confidence (Liao et al., 2021). Individuals with higher self-compassion in social interactions are more likely to accept their social inadequacies and be willing to learn and grow from them, which leads to higher self-confidence and sense of competence when facing social challenges (Neff et al., 2020). Enhancement of self-compassion is effective in enhancing individuals' social self-efficacy because it helps individuals to better regulate emotions, maintain positive social attitudes, and exhibit more positive behaviors in social situations (Egan et al., 2022). In addition, self-compassion reduces individuals' fear of social failure, enabling them to face social interactions more positively and show more initiative and adaptability in the face of challenges (Neff, 2023). The effect of this psychological trait not only improves social competence, but also enhances an individual's emotional support network, which in turn enhances social self-efficacy (Conversano et al., 2020).

This study showed that PSMU was significantly and negatively correlated with both SC and SSE, indicating that the higher the level of problematic use, the lower an individual's self-compassion and social efficacy. There was a significant positive correlation between SC and SSE, suggesting that individuals with higher levels of self-compassion typically also possess greater social confidence and competence.

Table 9

Predictors of Problematic Social Media Use and Self-compassion (N=606)

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	28.605	4.062		7.043	.000
	Viscosity Increase	-.022	.125	-.008	-.174	.862
	Physiological Damage	.088	.133	.033	.658	.511
	Omission Anxiety	.088	.160	.029	.552	.581
	Cognitive Failure	-.360	.174	-.105	-2.066	.039
	Guilt	-.307	.253	-.057	-1.216	.224
	Self-kindness	.779	.314	.238	2.484	.013
	Common humanity	.679	.283	.158	2.397	.017
	Isolation	1.123	.345	.316	3.253	.001
	Mindfulness	.018	.256	.004	.069	.945
	Over identification	.160	.367	.039	.437	.662
	SC	-.113	.202	-.129	-.563	.574

a. Dependent Variable: SSES

**Excluded variables: PSMU Overall and Self-judgment are not good predictors of SSE*

Table 9 shows the predictors of social self-efficacy; specifically, cognitive failure negatively predicts SSE, while self-kindness, common humanity, and isolation positively predict social self-efficacy.

Cognitive failure is a dimension of problematic social media use that is often associated with distraction, memory loss, and inefficient task completion (Huang, 2022). Prolonged social media use disrupts an individual's attentional resources, which may lead to inattention and decision-making difficulties in social interactions, which in turn diminishes his or her self-confidence and ability to perform in social situations, thereby reducing social self-efficacy (Lopes et al., 2022). For example, Verrastro et al. (2021) stated that problematic social media use leads individuals to show more social anxiety and feelings of powerlessness in social interactions, which in turn affects their confidence and performance in complex social situations. In addition, research by Kristensen et al. (2022) suggests that cognitive dysfunction not only directly affects social competence, but also further

diminishes social self-efficacy by exacerbating emotional distress (e.g., anxiety and depression).

Self-kindness, as one of the core dimensions of self-compassion, can promote an individual's self-confidence and adaptability in social interactions by alleviating self-criticism and enhancing psychological resilience (Neff et al., 2022). A meta-analysis by Liao et al. (2021) found that there was a significant positive relationship between Self-kindness and self-efficacy. There is a significant positive correlation between Self-kindness and self-efficacy, which suggests that individuals with Self-kindness traits are more capable of coping with social barriers in a positive way when faced with social challenges, thus enhancing their social self-efficacy. Egan et al. (2022) further noted that Self-kindness can also help individuals alleviate the negative emotions brought about by social frustration, thus providing them with a more open and accepting social mindset. This positive emotion regulation mechanism may be a key way in which Self-kindness promotes social self-efficacy.

Common humanity emphasizes the individual's awareness that his or her pain and inadequacies are common human experiences rather than isolated phenomena (Neff, 2023). This awareness can reduce an individual's isolation in social situations and increase their sense of social connectedness, which in turn can enhance their social self-efficacy (Conversano et al., 2020). For example, an intervention study by Datu et al. (2021) showed that by fostering common humanity cognitions, individuals were able to construct social support networks more effectively and showed greater resilience in the face of social stress. This is consistent with the results of the present study, suggesting that common humanity is an important protective factor for enhancing social self-efficacy.

Theoretically, isolation should have a negative predictive effect on social self-efficacy, but isolation is reverse scored during statistical scoring, so that higher scores represent lower isolation. Thus a decrease in isolation means that individuals no longer view their negative experiences as unique or incomprehensible phenomena to others. This shift can significantly reduce anxiety in socialization and enhance social adjustment (Conversano et al., 2020). Kristensen et al. (2022), through a cross-temporal study, found that individuals with lower Isolation showed higher levels of social-emotional support and a sense of belonging, which are factors that directly enhance an individual's social self-efficacy. Additionally, diminished isolation improves an individual's ability to regulate emotions. Egan et al.'s (2022) study noted that when individuals feel emotionally connected to others, they are able to cope with social challenges and frustrations more effectively. This positive emotion regulation ability further reduces fearfulness and withdrawal behaviors in social interaction, setting the stage for increased social self-efficacy.

Overall, from the results in Table 9, significant predictors of SSE included cognitive failure, self-kindness, common humanity, and isolation. Among them, cognitive failure was negative predictors of SSE, implying that impaired cognitive functioning reduces an individual's social confidence, while the latter three were positive predictor variables, indicating that individuals with higher feelings of self-compassion have greater social self-efficacy. Other variables such as positive thoughts and over identification did not reach significance, suggesting that they have a limited effect on SSE.

Table 10
Proposed Behavioral Intervention Plan for Chinese College Students

Key Result	Objectives	Intervention	Person	Success
Area		Strategies/Activities	nel Involved	Indicators
Average Problematic Social Media Use (PSMU)	1. Reduce behavioral dependence on excessive social media use (viscosity). 2. Reduce behavioral symptoms of viscosity and physiological damage by providing alternative real-life activities. 3. Improve media	1. Thematic lecture: "Why Can't I Stop?" + questionnaire feedback and small-group reflection. 2. Digital Detox Challenge (e.g., weekly "No-Social-Media Day") + offline activities (sports, social gatherings). 3. Use tracking apps + create a personal "social media detox" plan	– Psychological counselors – University psychology instructors – Mental health class leaders – Class advisors	– PSMU scores reduced (target: $\geq 10\%$ reduction). – Daily usage time reduced (target: ≥ 30 minutes less).

Average Self-Compassion (SC)	self-regulation and sense of control.	with check-ins.	– Student peer leaders	
	1. Improve mindfulness and present awareness. 2. Reduce feelings of isolation. 3. Reduce self-judgment and inner criticism.	1. Daily 5-minute mindfulness breathing practice. 2. “I thought I was the only one” group sharing session. 3. Write a compassionate letter to oneself.	– Psychological counselors – University psychology instructors – Mental health class leaders – Mindfulness trainers	– SCS total score improved (target: $\geq 10\%$). – Significant decrease in self-judgment subscale.
Average Social Self-Efficacy (SSE)	1. Boost confidence in social communication.	1. One-minute impromptu speech training in small groups.	–	– SSES score increased (target: $\geq 10\%$).
	2. Learn and enhance social interaction skills. 3. Encourage proactive social engagement and real-world application of self-efficacy.	2. Social skills micro-lecture + roleplay (e.g., active listening, body language). 3. Weekly social challenge cards (e.g., speak in class, meet a new friend, organize a team activity).	Psychological counselors – Mental health class leaders – Class advisors – Student peer mentors	– Higher participation rate in social activities. – Reported decrease in social anxiety, increased confidence.

Table 10 shows an integrated intervention program constructed based on a theoretical framework to address the current situation of Chinese college students on three psychological variables: problematic social media use, self-compassion, and social self-efficacy. The program focuses on the three key result area, with three specific goals under each domain, which are matched with implementable and outcome-oriented intervention strategies and activities, aiming to achieve positive changes in students' behaviors, emotions, and cognitions.

The whole intervention system emphasizes the active participation of students and the sustainability of their daily behaviors, and is designed to take into account the goals of cognitive regulation, emotional relief and behavioral construction. The implementation process was carried out by counselors, university teachers, psychologists, and student leaders to ensure the generalizability and applicability of the intervention program. The success indicators of each strategy were constructed based on the changes in the scores of psychological assessment scales and the records of behavioral punching cards, which had a clear and quantifiable basis for evaluation.

4. Conclusions and recommendations

Female respondents are in the majority, the proportion of science and engineering and literature students is higher, sophomores and juniors are predominant, most respondents come from non-only-child families and rural areas. The overall performance of college students in PSMU, SC and SSE is moderate, indicating that college students have some problematic social media use, some self-tolerance, but still have a sense of self-criticism and isolation, and that there is room for improvement in their self-confidence and competence in complex social situations. Female students, students majoring in humanities, rural students, and non-only children tend to have higher levels of Problematic Social Media Use (PSMU). Conversely, freshmen exhibit lower levels of PSMU. The status of being a student leader or coming from a single-parent family has no significant impact on PSMU. Students from non-single-parent families and male students demonstrate better self-compassion. However, academic major and grade level do not significantly affect self-compassion. Regarding Social Self-Efficacy (SSE), student leaders show significantly higher levels of SSE compared to non-leaders. However, sex, academic major, grade level, only-child status, birthplace, and single-parent family background have no significant impact on SSE. Problematic social media use was significantly negatively correlated with self-compassion and social self-efficacy, respectively, and there was a significant positive correlation between self-compassion and social self-efficacy. That is, the higher the level of problematic use, the lower the individual's self-compassion and social efficacy, and people with higher self-compassion usually also have greater social confidence and competence. Cognitive Failure, one of the dimensions of PSMU, negatively predicted SSE, while the three dimensions of SC (Self-kindness, Common humanity, and Isolation) positively predicted SSE. To reduce problematic social media use among Chinese college students, enhance their self-compassion, and improve their social self-efficacy, an intervention program has been proposed.

College students may set time limits for social media use and enhance self-compassion through meditation and positive thinking to avoid negative comparisons with others. By actively participating in face-to-face social activities and group work, they can enhance their social self-efficacy and gradually build up self-confidence. In addition, students should learn to manage their emotions by exercising or communicating with friends face-to-face, and avoid over-reliance on social media for emotional comfort. Teachers may help students understand the importance of self-compassion through classroom discussions and counseling, and encourage students to find the value of learning and sharing in healthy social media use. Teachers should provide a supportive classroom environment for students to help them cope with the stress caused by social media and to enhance students' social confidence and competence through social skills lessons or group activities. School counselors may organize regular mental health talks and individual counseling to help students enhance their sense of self-compassion and increase their social self-efficacy through group activities or counseling. Counselors should also help students balance online and offline social interactions, pay attention to students' psychological status in a timely manner, and provide personalized support and emotional help, especially when semester stress is high. School administrators may establish a comprehensive mental health service system and provide regular mental health lectures and individual counseling to help students improve their self-compassion and social self-efficacy. At the same time, they should guide students to use social platforms rationally by formulating a healthy social media usage policy, and organize rich extracurricular activities to promote face-to-face social interaction and enhance students' social skills. China Ministry Education may need to pay great attention to the relationship between college students' media behavior and mental health. It should promote the development of the Guidelines for the Development of Media Literacy for Students in Colleges and Universities, and incorporate digital self-discipline and media psychological risk management into the guidance framework of the education system. At the same time, the Guidelines for Mental Health Education in Colleges and Universities should be updated to incorporate positive thinking training and self-compassion education into the curriculum modules, and faculty and financial support should be provided. It is recommended that cross-regional psychological and media behavior tracking studies be promoted to provide a scientific basis for policy formulation, and that an evaluation system for the healthy development of university students' psychological and media behavior be established. Future researchers may also conduct intervention studies to propose culturally competent intervention programs and evaluate the effectiveness of different mental health intervention strategies in reducing problematic social media use and enhancing self-compassion and social self-efficacy, so as to provide stronger support for policy formulation and practice. Interdisciplinary collaboration will also bring a more comprehensive perspective to research in this area and promote a deeper integration of theory and practice. The proposed intervention plan may be checked, reviewed, and validated by experts first before its utilization for further improvement.

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