

Gender Differences in Anxiety Levels Among High School Students Due to Social Media Use in the Context of Gaokao Preparation

Suo Yanlong
College of Teacher Education
University of the Cordilleras
Gov. Pack Road, Baguio City, Philippines
Enoch International School
Hebei Province, China

James L. Patnao Jr.
College of Teacher Education
University of the Cordilleras
Gov. Pack Road, Baguio City
Philippines

Abstract: Social media has revolutionized the way individuals interact and access information, especially among adolescents. With its increased use during the COVID-19 pandemic, social media has become an essential tool for communication, education, and governance. However, its influence on adolescent mental health is multifaceted. While some studies, such as Huang (2019), highlight the benefits of social support and anxiety reduction through social media, others point to negative consequences like information overload, social comparison, cyberbullying, and increased anxiety (Yu et al., 2024). This is particularly concerning for high school students, who are already navigating the pressures of adolescence. In China, the gaokao, a critical national college entrance exam, adds an additional layer of stress. The gaokao's role in determining future opportunities has led to intense competition and immense parental pressure, with 80% of parents investing heavily in their children's preparation (Zhou & Chen, 2020). Despite the significant impact of these combined pressures, there is limited research on how social media use specifically affects anxiety levels among Chinese adolescents preparing for the gaokao. This study aims to fill this gap by comparing the anxiety levels associated with social media use among high school students of different genders within this unique high-stakes environment.

Keywords : Social media ; Anxiety ; High school students ; Gaokao ; Gender differences

1. INTRODUCTION

Social media has fundamentally transformed interpersonal communication and information dissemination. Its ubiquity, amplified by the COVID-19 pandemic, has rendered it indispensable for social interaction, education, and governance. While offering unprecedented convenience and access to information, its impact on adolescent mental health is complex. Positive aspects include social support and anxiety reduction (Huang, 2019), but excessive use can lead to information overload, social comparison, cyberbullying, and heightened anxiety (Yu et al., 2024). Given the heightened vulnerability of high school students during this developmental stage, understanding the interplay between social media, mental health, and academic pressure is crucial.

The Chinese gaokao, a highly selective national college entrance examination, epitomizes the intense academic pressure experienced by Chinese adolescents. Its historical significance as a social mobility mechanism has intensified competition and parental expectations. A staggering 80% of parents invest substantial resources to optimize their children's chances of success (Zhou & Chen, 2020). The burgeoning

number of applicants, reaching 13.42 million in 2024 (Ministry of Education, 2024), underscores the fierce competition. Existing research has primarily explored the correlation between social media use and general mental health outcomes (Fu & Xie et al., 2021). However, there is a paucity of studies examining the specific relationship between social media, anxiety, and the unique pressures faced by Chinese adolescents, particularly within the high-stakes gaokao environment.

The gaokao is a high-stakes examination exerting immense psychological pressure on Chinese students. Research indicates that a substantial proportion of gaokao candidates experience moderate to severe anxiety (Wang et al., 2018), with potential long-term mental health consequences. Concurrently, social media has become ubiquitous among Chinese adolescents, offering both benefits and challenges. While it can facilitate social interaction and information access, excessive use has been linked to heightened anxiety, information overload, and social comparison (Rostam-Abadi et al., 2024).

Despite the growing body of research on social media and adolescent mental health (Valkenburg et al., 2021), the specific impact on gaokao students remains understudied. This research gap necessitates a focused examination of how

social media use interacts with the unique pressures of the gaokao to influence anxiety levels.

2. LITERATURE REVIEW

Anxiety, a ubiquitous human emotion, manifests as a constellation of physiological and psychological responses to perceived threats or uncertainties (Lacombe et al., 2024). While adaptive in moderation, excessive or chronic anxiety can precipitate mental health disorders (Morgado et al., 2022). Rooted in evolutionary biology, anxiety serves as a protective mechanism, alerting individuals to potential dangers (Meherali et al., 2021).

A specific manifestation of anxiety, social anxiety disorder, is characterized by intense fear and avoidance of social situations. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), individuals with this disorder experience persistent fears of negative evaluation, often accompanied by somatic symptoms and behavioral avoidance (American Psychiatric Association, 2013). Social learning theory posits that social anxiety can be acquired through observational learning, reinforcing its complex etiology (Zhang, 2021).

Adolescence, a transitional phase marked by rapid physical, cognitive, and emotional changes, is a period of heightened vulnerability to mental health challenges (UNICEF, 2021). Piaget's theory of cognitive development characterizes adolescence as the formal operational stage, characterized by abstract reasoning, hypothetical thinking, and increased self-consciousness (Piaget et al., 1969). This cognitive sophistication, while empowering, can also contribute to rumination, self-criticism, and social anxiety.

Research consistently demonstrates that adolescence is a peak period for the onset of mental disorders, with anxiety and depression being particularly prevalent (WHO, 2021). The confluence of biological, psychological, and social factors during this developmental stage creates a fertile ground for the emergence of anxiety symptoms.

The ubiquitous nature of social media has introduced novel stressors for adolescents. Cyberbullying, fear of missing out (FOMO), and unrealistic social comparisons can exacerbate anxiety symptoms (Valkenburg et al., 2021b). The drive for social validation, intensified during adolescence, can lead to excessive self-monitoring and fear of negative evaluation on social media platforms.

The gaokao, China's highly competitive college entrance examination, imposes immense academic pressure on students. The intense focus on academic achievement, coupled with societal expectations and parental pressure, creates a fertile ground for anxiety (Hu, 2023). The fear of failure, the burden of unrealistic expectations, and the hyper-competitive environment can all contribute to elevated anxiety levels among gaokao students.

Furthermore, the gaokao system's emphasis on standardized testing can lead to a narrow focus on academic subjects at the expense of holistic development, potentially exacerbating anxiety and reducing overall well-being (Hu, 2024).

3. METHODOLOGY

Given the research questions and objectives, a quantitative research design was employed. This methodological approach enables the systematic collection and analysis of numerical data, facilitating the identification of patterns and relationships between variables. To this end, an online survey was administered to collect data, which was subsequently analyzed using SPSS 27.0 statistical software.

The Social Anxiety Scale for Social Media Users (Alkis et al., 2017b) was adapted for this study. This instrument assesses social anxiety within the context of social media use, encompassing four primary domains: Shared Content Anxiety (SCA), Privacy Information Concern Anxiety (PCA), Interaction Anxiety (IA), and Self-Evaluation Anxiety (SEA). A five-point Likert scale was utilized to measure respondents' agreement with each item.

To provide essential demographic information, participants were asked to complete a brief demographic questionnaire capturing age, gender, grade level, school type, and geographic location.

A stratified random sampling technique was employed to select participants for this study. The target population comprised gaokao students within a specific city. Stratification was implemented based on school type (public versus private) and gender to enhance sample representativeness. A sample size of 368 students was determined using the Morgan table (Krejcie & Morgan, 1970), as presented in Table 3-2.

Participants were aged 18-19, a demographic characterized by heightened social media use and vulnerability to anxiety. The sample consisted of 185 female and 183 male students.

Table 1: Morgan Table for Sample Size Determination

<i>N</i>	<i>S'</i>	<i>N</i>	<i>S'</i>	<i>N</i>	<i>S'</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3200	346
85	70	440	205	4000	351
90	73	460	210	4300	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S'* is sample size.

Source: Krejcie & Morgan, 1970

4. FINDINGS

In response to the research questions raised in this study, SPSS was used to organize and analyze the data. Descriptive analysis and inferential analysis were used, and the 21 items were analyzed for frequency, average and T-test.

Based on the results, it can be concluded that the participants' responses to these different forms of self-evaluation anxiety are roughly similar, with means ranging from 3.69 to 3.72, indicating that most participants have moderate anxiety in these aspects. The standard deviation of the scores of each question is relatively consistent, indicating that on each question, the scores of the participants have a certain degree of dispersion, reflecting the different degrees of response of different individuals to these questions. Anxiety in worrying about others' poor evaluation of oneself (SEA2) is slightly higher than other aspects. The anxiety in worrying about leaving a negative impression on others (SEA1) and not being able to meet others' expectations (SEA3) was slightly lower than in other aspects.

In the independent test process, the gender of self-evaluation anxiety in social media use, in SEA1, the p value was .238 ($> .05$), indicating that there was no significant difference in self-evaluation anxiety between men and women in SEA1 (worrying about leaving a negative impression on others). However, in SEA2 (worrying about others' poor evaluation of oneself) and SEA3 (worrying about not being able to meet others' expectations), the p values were .094 and .043 ($< .1$ or $< .05$), respectively, indicating that there was a significant difference in self-evaluation anxiety between men and women in these two scales. The mean difference of SEA2 was -.228, indicating that women showed higher anxiety levels in worrying about others' poor evaluation of themselves than men. The mean difference of SEA3 was -.272, which also showed that women had higher anxiety levels in this regard than men. The 95% confidence intervals of SEA2 and SEA3 excluded 0, further supporting the existence of differences between the two groups.

5. DISCUSSION AND CONCLUSION

Based on the above detailed analysis of data from four dimensions (shared content, privacy, interaction and self-evaluation), the following characteristics and conclusions about high school students' use of social media are summarized:

Sharing Content (SCA): High school students showed moderate levels of anxiety when sharing content, with mean values ranging from 3.65 to 3.74. Women's anxiety is higher than men's on all shared content-related issues, especially in "worry about others' approval of their behavior", the difference is significant. There was less variability in women's ratings, suggesting that women responded more consistently on these questions.

Privacy (PCA) anxiety level: High school students show moderate to high levels of anxiety on privacy issues, with mean values ranging from 3.49 to 4.01. Gender differences:

Women are generally more anxious about privacy issues than men, especially in terms of "worry about private information being shared publicly." The difference is significant. Women's scores are clustered, and men's scores are more variable.

Interaction (IA): High school students have higher anxiety levels in social interactions, with the mean value ranging from 3.55 to 3.94. Women's anxiety is higher than men's on all interaction-related issues, especially in the aspect of "fear when interacting with others", the difference is significant. Men's scores were more variable, and women's scores were more concentrated.

Self-evaluation (SEA): High school students' anxiety in self-evaluation is moderate, with the mean value ranging from 3.57 to 3.84. Women's anxiety is higher than men's on all self-evaluation-related issues, especially in "worry about not being able to meet other people's expectations." The difference is significant. Men's scores were more variable, and women's scores were more concentrated.

As noted above, women reported significantly higher levels of anxiety than men on all four dimensions. This suggests that women face greater psychological pressure when using social media, especially regarding privacy and interaction. Men's ratings on most questions were more variable, reflecting men's more diverse responses on these questions. High school students have higher levels of privacy and interaction anxiety, especially nervousness about the security of private information and when interacting with others.

The findings of this study provide valuable insights into the anxiety levels associated with self-evaluation among high school students using social media, with a specific focus on gender differences. The results indicate that overall, participants experience moderate levels of self-evaluation anxiety, as reflected by the mean scores ranging from 3.69 to 3.72. This suggests that social media use is a significant source of anxiety for high school students, a critical developmental stage where peer acceptance and self-image are highly influential.

The standard deviation consistency across the questions highlights a certain degree of dispersion in responses, pointing to individual variations in anxiety levels. This variation underscores the subjective nature of anxiety and how differently individuals perceive and react to social media stimuli. Notably, the highest anxiety was observed in participants' concerns about others' poor evaluations (SEA2), while concerns about leaving a negative impression (SEA1) and not meeting others' expectations (SEA3) were slightly lower. This pattern suggests that high school students may be more troubled by negative judgments from their peers than by their self-imposed standards or fears of failing to meet expectations.

The gender analysis reveals critical differences in self-evaluation anxiety. In SEA1, there was no significant

difference between males and females, indicating that both genders equally worry about leaving a negative impression on others. However, significant gender differences were found in SEA2 and SEA3. Females reported higher anxiety levels concerning others' poor evaluations and not meeting others' expectations than males. Specifically, the mean differences of $-.228$ for SEA2 and $-.272$ for SEA3 indicate that females experience higher anxiety in these areas. The 95% confidence intervals for SEA2 and SEA3 further reinforce these findings, as they exclude 0, confirming the statistical significance of these gender differences.

These gender-based differences can be attributed to various socio-cultural and psychological factors. Females often face greater societal pressure to conform to social norms and are more likely to engage in social comparison, which can exacerbate self-evaluation anxiety. The tendency for females to internalize others' opinions and strive for social acceptance may also explain their heightened anxiety levels. Conversely, males may be socialized to adopt a more resilient or dismissive attitude towards external evaluations, thus experiencing lower anxiety.

The implications of these findings are significant for educators, parents, and policymakers. Understanding that females are more susceptible to self-evaluation anxiety related to social media use can inform targeted interventions to support mental well-being. Schools can implement programs that promote digital literacy and resilience, teaching students how to navigate social media pressures healthily. Parents can foster open communication and provide emotional support to help adolescents cope with anxiety. Additionally, policymakers can advocate for regulations that promote safer online environments, reducing cyberbullying and negative social comparisons.

In conclusion, this study highlights the pervasive impact of social media on adolescent self-evaluation anxiety, with notable gender differences. While both males and females experience moderate anxiety, females are more affected by concerns about others' evaluations and meeting expectations. These findings underscore the need for targeted strategies to support adolescents' mental health in the digital age. By addressing the unique challenges faced by high school students, particularly females, stakeholders can foster a healthier, more supportive online environment that mitigates anxiety and promotes positive self-evaluation. Further research is needed to explore the underlying mechanisms of these gender differences and to develop effective interventions that address the complex interplay between social media use and adolescent mental health.

Therefore, the author provides the following suggestions. Mental health education: For female high school students, mental health education should be strengthened to help them correctly face and handle the pressure caused by social media. Especially in terms of privacy protection and social interaction, more psychological support and counseling will be provided. Privacy protection awareness: Strengthen

privacy protection awareness education for all high school students, teach them how to use social media safely and protect personal information from being leaked. Social skills training: Through social skills training, we can help students improve their confidence and ability to interact with others and reduce anxiety caused by social interactions. Support from parents and schools. Encourage parents and schools to jointly pay attention to the mental health of students when using social media, provide necessary support and help, and promptly identify and solve possible problems.

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