https://doi.org/10.37420/j.cer.2026.038

TikTok Use and Social Anxiety Among University Students in China: The Role of Social Comparison

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Abstract

This study investigates the relationship between TikTok use and social anxiety among university students in first-tier cities in China through an online questionnaire survey, with a particular focus on the role of social comparison theory. It proposes that frequent use of TikTok may intensify social comparison tendencies, which may in turn increase levels of social anxiety. Data were collected from 18 undergraduate students aged 18 to 22 using a primarily quantitative approach. The questionnaire included open-ended questions to gather additional qualitative information, along with scales to measure social comparison tendencies (INCOM) and social anxiety symptoms (LSAS). Moreover, it examined how often and how long participants used TikTok.

Statistical analysis using SPSS showed that participants used TikTok often, mainly for entertainment and information. The initial results suggested a positive relationship between how much TikTok was used and the tendency to compare oneself to others. In addition, social comparison was also linked to higher levels of self-reported social anxiety. Responses to the open-ended questions further revealed that, although some students believed that frequent exposure to idealised content encouraged them to share more about their own lives, others reported that such exposure created pressure and even led to avoidance behaviours. The results of this study suggest that social comparison might help explain the connection between using TikTok and experiencing social anxiety. This study adds to the growing research on how social media affects the mental health of specific student groups. It also offers important information for mental health education, particularly about how university students use digital media.

Keywords

TikTok use; social anxiety; social comparison; university students; China

1 Introduction

In today's technological world, social media has become an important component of daily life for university students in first-tier cities in China. Rapid lifestyle, short videos have emerged as a means of releasing stress (Zhu, 2025).Data published by the China Internet Network Information Center in 2023 indicates that the short video usage rate among those aged 18-24 exceeded 92%, with college students representing a primary demo-

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graphic of active users (China internet information center, 2023). This trend not only reflects college students' dependence on content for entertainment but also raises numerous academic and social issues regarding its impact on their mental health.

Overuse of social media may lead to potentially harmful psychological impacts due to the overwhelming volume of information and emotions received (Li & Zhang, 2025). Data suggests that excessive or passive use of social media might elicit adverse emotional responses, including anxiety, loneliness, and depression (Correa, 2016). In discussions on mental health, social anxiety, as a psychological condition strongly linked with the social interaction environment, has attracted heightened interest from researchers. Social anxiety is defined by a severe apprehension of negative assessment, rejection, and humiliation during interpersonal interactions (Gilbert, 2000). In extreme instances, it may result in the avoidance of social interactions, hence impacting interpersonal relationships and academic progress (Li & Zhang, 2025). College students are at a decisive moment where interpersonal growth, role shifts, and academic and employment pressures converge, rendering them a high-risk demographic for social anxiety. College students' self-evaluation awareness and social comparison habits reinforce TikTok's unique algorithm and focus on interactive material (Yang, 2023). Frequent exposure to others' ideal moments on social media—such as success stories, lifestyles, and attractive appearances—can readily encourage "upward social comparison," wherein individuals compare themselves to those in superior conditions, resulting in negative self-assessment and increased anxiety and stress (Jain et.al, 2025) . Festinger's (1954) social comparison theory argues that in the absence of objective evaluative criteria, individuals develop self-awareness by comparing themselves to others. In the context of extensive social media engagement, such comparisons are becoming more common and unavoidable. Therefore, it is vital to investigate the theoretical and practical implications of whether the psychological mechanism of 'social comparison' intensifies social anxiety among college students when using TikTok (Wang, 2024).

This study focuses on college students in first-tier cities in China, applying a questionnaire survey method and using a standardized scale that includes measures of TikTok usage behavior, self-compiled usage motivation items, a simplified version of the INCOM social comparison tendency scale, and a simplified version of the LSAS social anxiety scale to gather data and perform quantitative analysis, aiming to address the following three core research questions: (1) What are the distributional characteristics of college students' motivations, as well as the distribution characteristics of duration and frequency? (2) Is TikTok usage behavior highly associated with social comparison tendencies? (3) Do social comparison tendencies regulate the relationship between TikTok usage and social anxiety? The goal of this study is to test a psychological mechanism model based on social comparison theory. This will give us both theoretical and practical information about how social media and mental health are connected and change over time.

Furthermore, this study argues that 'social comparison propensity' could act as a significant psychological mechanism influencing the relationship between the use of TikTok and social anxiety (Hu,2024). Using TikTok may not cause anxiety; instead, it could improve the user's propensity for social comparison, leading to feelings of social anxiety, such as anxiety and withdrawal in real social contexts. The goal of this study is to find out if this phenomenon is real among college students by creating a mediation route model with three variables: TikTok use, the tendency to compare yourself to others, and social anxiety.This empirical study will examine whether TikTok use affects social anxiety through social comparison. The essay combines seven

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parts to clarify social media's psychological effects and enrich higher level psychology education.

2 Literature Review

The steady growth of social media has led to TikTok establishing a sustained usage trend within communities. Since its initial release in 2016, TikTok has rapidly expanded its user base. Data shows that by the end of 2025, TikTok had reached 1 billion monthly active users worldwide (Business of Apps, 2025), with over 60% of users aged 16 to 24. The penetration rate of short video applications in China is significantly greater. By 2025, the quantity of short video consumers in China had reached 1.053 billion, representing more than 96% of the overall internet user demographic, and students represent a primary component of TikTok's user base (Exploding Topics, 2025). In first-tier cities, characterized by a rapid pace of life, college students, as the predominant socioeconomic group, exhibit heightened engagement and reliance on social media, rendering TikTok a principal medium for entertainment and information (Fox & Prinstein, 2015). The primary characteristics of the TikTok platform encompass an artificial information feed that presents an incessant array of short movies customized to users' interests, a disjointed yet highly engaging viewing experience, and user-friendly authoring tools that motivate content production (Nesi, 2015). These factors meet the immediate pleasure and social connectivity requirements of adolescent users; yet, excessive usage may adversely affect students' mental health.

Various research has commenced investigating the influence of TikTok on the mental health of adolescent users. Initially, there exists a correlation between addictive usage and mental health. Wang (2024) conducted a study including 1,346 adolescents, classifying TikTok usage as moderate or addicted. The findings indicated that individuals addicted to short videos exhibited markedly inferior mental health. In comparison to the moderate user group, the addictive group showed greater levels of melancholy, anxiety, stress, and loneliness, alongside diminished life satisfaction(Wang, 2024). Furthermore, Li &Wang (2024) executed an experimental investigation to empirically examine the psychological impacts of brief TikTok usage. The study revealed that university students who browsed TikTok for 20 minutes exhibited significantly elevated anxiety and depression scores compared to a control group that abstained from social media, with anxiety levels rising by approximately 15% and depression levels by 12% (Li &Wang, 2024). Although brief videos can reduce boredom to some extent, they concurrently diminish individuals' sense of connection, amplify feelings of loneliness, and exacerbate concern around others' activities (FOMO) (Vogel, 2014). The evidence indicates that even short-term engagement with TikTok may result in temporary psychological variations, encompassing heightened anxiety and other adverse emotions.

Secondly, the effect of TikTok on self-perception and social comparison is a significant area of research. As TikTok contains meticulously edited films produced by others, users automatically engage in self-comparison with the individuals featured in these videos during their browsing experience (Caplan, 2006). A study by Auf et al. (2023) on Saudi Arabian adolescents discovered that 89% of adolescents utilize TikTok, and these users exhibited markedly increased social comparison tendencies and significantly worse body image satisfaction compared to non-users. Such behavior indicates that adolescents who regularly utilize TikTok are more likely to suffer self-dissatisfaction stemming from comparison, encompassing discontent with their appearance and life situations. In a study of university students, Nasidi et al. (2024) found that students who used TikTok a lot

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tended to have higher self-esteem, but those who compared themselves to others were more affected in a negative way. The authors suggested that this phenomenon may arise from TikTok content encouraging upward comparison, resulting in feelings of inferiority while simultaneously developing a sense of belonging through community engagement with notable gender disparities (female users are more profoundly affected by comparison)(Nasidi, 2024). TikTok, a widely popular social media network, significantly impacts the mental well-being of young users through its algorithm-driven feed that displays the lives of others (Twenge, 2018). The research shows that excessive use of TikTok correlates with negative psychological effects, including anxiety, depression, and reduced self-image (Chen, 2021).

Festinger first proposed the social comparison theory in 1954. The fundamental concept is that individuals evaluate their competencies and stand by comparisons with others. In the absence of objective standards, individuals often utilize others as a reflection to determine their self-positioning (Suls &Wheeler, 2012). The classical theory classifies social comparison into upward and downward categories. Upward comparison entails evaluating oneself against individuals in a more favorable position, frequently resulting in adverse self-assessments and emotions like envy and frustration; downward comparison involves assessing oneself relative to those in a less favorable position, potentially creating an illusion of superiority and providing a temporary enhancement of self-esteem (Wu, 2024). However, upward comparison is more prevalent and exerts a greater influence in reality, as individuals are more inclined to recognize role models who exceed their capabilities (Sohail, 2024).This tendency is especially pertinent among college students, whose self-identity is still evolving and where external judgments greatly impact self-perception (Nesi & Prinstein, 2015). Social comparison also affects the mental health of college students, and the influence of social media on mental health is dynamic. Research shows the kind of influence is contingent upon usage patterns—active engagement on social media (such as interaction or publishing) may have beneficial effects, whereas passive consumption is more likely to cause negative emotions (Vogel, 2014). Li et al. (2021) conducted a study of 1,740 university students in China, revealing that passive social media usage (merely seeing others' content) exhibited a positive correlation with social anxiety levels, but active use (posting or commenting) had a negative correlation with social anxiety (Li, 2021). It suggests that university students who spend extended durations on social media without contact may encounter heightened psychological stress and negative emotions (Lee, 2022).

Social anxiety is an intense sensation of anxiety and discomfort in social contexts, stemming from the fear of negative judgment, frequently accompanied by avoidance behavior. Kele(2020) stated that social anxiety is characterized by an overwhelming concern with others' assessments, apprehension of rejection or humiliation, and, in severe cases, the evasion of social interactions. University students experience a phase that involves substantial social network expansion and increased self-awareness, characterized by frequent interactions with others and requirements from academics and employment, rendering them a high-risk demographic for social anxiety (Mann, 2020). While social anxiety is not limited to adolescents and young adults, evidence suggests that late adolescence–early adulthood is a key time for the emergence and intensification of social anxiety symptoms (Stefana et al, 2022). At this stage, individuals exhibit major concern for their self-image, striving to integrate into peer groups while also fearing rejection, resulting in prevalent social anxiety within university environments (Vannucci, 2017). Overall, this interaction is intricate and reciprocal. Individuals with elevated social anxiety may utilize social media as an alternative means of communication. Due to the relative anonymity and controllability of online interactions, individuals with social anxiety may

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favor expressing themselves in virtual contexts to circumvent face-to-face tension (Caplan, 2006). The 'social compensation' concept argues that those apprehensive of face-to-face social encounters may engage more extensively in online socialization, resulting in increased social media usage rates (Liu, 2025). Conversely, excessive social media usage may increase anxiety in individuals who were previously less nervous. One mechanism contributing to such an increase is the previously noted upward social comparison: when college students consistently observe the glamorous social lives or accomplishments of others on social media, they inevitably question their own recognition by peers, which generates worry about their social competencies. In summary, the usage of social media is intricately linked to the mental health of college students, and we intend to investigate the underlying psychological mechanisms within a certain sample of college students through a quantitative survey.

3 Methodology

3.1 Research Design

This study primarily adopts a quantitative approach, with some qualitative elements, to examine the influence of TikTok usage on social anxiety among university students aged 18–22 in first-tier cities in China. Drawing on social comparison theory, this study explores university students' interest in the TikTok application, the features that attract them, and their reflections and emotional responses after using it. The research investigates the interrelationship among TikTok usage intensity, social comparison tendencies, and social anxiety. The primary aim of this study is to examine the following hypothesised pathway: an increase in TikTok usage frequency may strengthen social comparison tendencies, which may in turn raise levels of social anxiety. In quantitative research, such chained effects are often discussed in relation to mediation analysis. More specifically, this study proposes a possible sequential relationship in which TikTok usage may influence social anxiety through increased social comparison tendencies. Chain mediation refers to a process in which one variable indirectly affects another through a series of mediating factors (Wang, 2024). In this process, each mediating variable influences the next, thereby forming a sequential causal link. In the context of this study, excessive TikTok usage may expose users to carefully curated content, which may reinforce social comparison tendencies and generate thoughts such as "my life is less exciting than others'". These comparisons may then trigger negative self-evaluations, such as "I am not attractive enough", ultimately contributing to heightened social anxiety, including a fear of being judged by others in social situations (Stefana et al., 2022).

This study employs social comparison theory as the fundamental framework. This idea suggests that individuals evaluate themselves by making comparisons with others, which subsequently affects their self-perception and emotional reactions (MacKinnon, 2012). In current social media surroundings, it is claimed that the frequency of TikTok usage may exacerbate social comparison tendencies among university students, prompting them to engage in more frequent comparisons with peers on the platform (Suls, 2012). Excessive social comparison with more idealized individuals may result in diminished self-assessment, thereby creating or intensifying social anxiety (Suls, 2012). This study developed a model suggesting that how much time students spend on TikTok (independent variable) is likely to increase their tendency to compare themselves to others (mediating variable), which is expected to lead to higher levels of social anxiety (dependent variable). The desire for social comparison functions as a mediating variable, serving as a mechanism that intervenes

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between two or more variables. This study, based on the theoretical framework, investigates the key research question: What is the effect of frequent TikTok usage on social anxiety levels among university students aged 18–22 in China's first-tier cities? Three hypotheses have been proposed:

1. The frequency of using TikTok shows a substantial positive correlation with social comparison inclinations among university students.

2. Tendencies for social comparison show a positive correlation with degrees of social anxiety.

3. Dispositions for social comparison mediate the link between the intensity of TikTok usage and social anxiety.

This research design enables exploration of the impact of short video platforms on the psychological anxiety levels of university students in first-tier cities.

3.2 Sampling

The study participants were university students from first-tier cities in China, specifically Chengdu, Shanghai, and Beijing. The research recruited participants through personal connections and online methods, then distributed a questionnaire using the 'QuestionStar' app. All participants engaged voluntarily and were aware of the study's goal and confidentiality. The sample included students aged 18 to 22, with a total of 18 valid surveys gathered. The vast majority of participants were sourced through my friends who completed high school in China and are presently enrolled in institutions there. Among the gathered samples, there were 7 males and 11 females. The age distribution is predominantly between 20 and 22 years old, comprising 6 participants aged 20 (33.3%), 7 aged 21 (38.9%), and 5 aged 22 (27.8%), yielding an average age of roughly 21 years, consistent with the age range deemed suitable for university students in this research. All participants were college students from first-tier cities who regularly used TikTok, reflecting a degree of homogeneity in geographic and usage characteristics.

Homogeneity refers to a significant level of resemblance or uniformity among research subjects, samples, or groups regarding a particular trait or variable (MacKinnon, 2007). In statistics, psychology, and social science research, homogeneity refers to the extent of similarity among individuals within a sample; greater homogeneity signifies reduced differences among individuals, while heterogeneity indicates significant variations among them (Liu, 2025). This sample reduces the impact of confounding variables, allowing researchers to more distinctly analyze the link between the independent variable (X) and the dependent variable (Y).

This additionally sets obligations for participants. Initially, they must have used TikTok, suggesting that their family has electronic equipment. This is the rationale for selecting students from China's 'first-tier' cities as the sample population, as the majority of students in busy urban areas are inclined to use electronic devices and social media (Wang et.al, 2017). The research intentionally chose college students in premier cities like Beijing, Shanghai, and Guangzhou as research participants due to their elevated internet usage rates (98.2%). Furthermore, students aged 18–22 were selected because of the increased autonomy in mobile phone usage that Chinese college students typically experience upon commencing university life. China's 'Gaokao' examination system imposes strict constraints on electronic device usage for most pupils until they attain maturity (Chen, 2021). Upon reaching adulthood, individuals encounter more pressures, as emphasized by Nesi &

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Prinstein (2015), who observed that university students often engage in social comparison through social media platforms (e.g., Instagram), which may intensify anxiety.

3.3 Research methods and Ethic consideration

This study used a self-constructed questionnaire as a tool for data collection, consisting of three separate sections. The first part concentrated on fundamental facts and the use of TikTok. The research seeks to comprehend the principal motivations for users' use of TikTok by statistically analyzing gender, age, average daily usage duration, methods of usage, and goals of using. The second component includes the Social Comparison Orientation Scale to assess individuals' tendencies for social comparison, specifically the degree to which they compare themselves to others. The questionnaire employs the Chinese variant of the Iowa-Netherlands Comparison Orientation Measure (INCOM) created by Gibbons and Buunk (Rytwinski et al, 2009). This section belongs to questions 6 through 16 of the questionnaire, comprising a total of 11 items, each assessed on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). A higher score implies a greater propensity for social comparison. Given that all participants were Chinese university students, the language of several items was modified to align with the local context, improving comprehension and enabling suitable responses from participants. In the third portion, we employed the Liebowitz Social Anxiety Scale (LSAS) framework. In light of the extensive array of items in the whole LSAS, seven items relevant to the daily social contexts of college students were chosen and modified for this study (equivalent to questions 17–23 in the questionnaire). These items include common social scenarios, like public speaking, conversing with strangers, and concerns with others' assessments. An online questionnaire was conducted via professional survey platforms like Wenjuan Xing, and a QR code was provided for participants to complete it.

Before starting data gathering, I considered various ethical factors. Initially, all participants were apprised of the study's objectives, the principles of anonymity, and voluntary involvement on the first page of the questionnaire, and they completed an informed permission form (Appendix 2). Participants could exit at any moment without disclosing personal information or incurring any risks; they also had the right to change their comments at any time. We avoided using inductive language. To maintain confidentiality (i.e., participants should remain unidentifiable to third parties, Carpenter, 2023), all questions were handled anonymously. For sensitive topics, such as the emergence of anxiety in social contexts that may induce psychological discomfort in participants, I informed them that all questions were optional, allowing them to decline to answer any question or withdraw from the study altogether. Thus, we avoided using inductive language. Data gathering strictly complied with research ethics, ensuring all responses remained secret and were utilized exclusively for academic analysis. All files were securely maintained on an external hard drive during the study period, and all interview recordings were erased upon the study's conclusion. After collecting the data, I did an initial check of the questionnaire answers, removing any that were obviously wrong (like those with logical errors, a lot of missing information, or unusual answers). This guaranteed that all gathered questionnaires were appropriate for the study.

3.4 Data Analysis

This research collected a total of 18 valid questionnaires. Upon collecting the legitimate questionnaire data, the information had already been arranged and pre-processed. A preliminary descriptive statistical analysis

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was performed. Descriptive statistical analysis is a crucial phase in data analysis, intended to encapsulate the overall attributes of the data using basic numerical metrics, including mean, maximum, minimum, and standard deviation (Hu, 2020). These indicators offer a summary of the overall amounts and distribution of variables within the sample. This method does not entail extensive causal analysis but offers a clear and succinct overview of the data, establishing a preliminary basis for more intricate statistical evaluations (Hayes, 2015). This study employed descriptive statistics to analyze the gender ratio, age distribution, daily TikTok usage, and scores on the social comparison and social anxiety scales of the participants. This procedure enabled us to verify the data's completeness and validity, detect any irregularities, and establish a foundational reference for future study. Sweet (1999) emphasized that robust descriptive statistics are an essential requirement before engaging in data analysis. However, its The drawback is its capacity to solely describe the existing sample, avoiding the inference of causal linkages or the testing of previous hypotheses (Huang, 2017). This study employed descriptive statistics to verify that the mean values of all variables were at reasonable levels and appropriately distributed, with no significant missing values or abnormal deviations, thereby establishing a more comprehensible data foundation for later reliability and correlation analyses.

Next, a simple test of reliability was performed on the gathered data. Reliability is a procedure to evaluate the stability, consistency, and dependability of a questionnaire's content, which serves as the instrument for measuring research outcomes. ‘Reliability testing is like using a scale to measure weight; if the results are consistent each time, the scale is reliable.’ (Price, 2015) Using questionnaires and scales to assess certain psychological qualities, such as 'social anxiety,' indicates that a high reliability score means the instrument works as an accurate benchmark, yielding consistent results across comparable populations. Consequently, it becomes an important precursor to data analysis (Liu, 2025). Furthermore, the reliability test often uses Cronbach's α coefficient.

Cronbach's α coefficient was first calculated from the KR-20 equation introduced by Kuder and Richardson in 1937, which was employed in computer science to evaluate the reliability of dichotomous variables, such as basic yes/no questions (Bland, 1997). In 1951, psychologist Lee Cronbach enhanced this formula in his seminal study by applying it to continuous variables (such as scales frequently utilized in questionnaire surveys) and defining the α coefficient, which is widely used today for reliability tests (Bland,1997). Reliability testing can be used to ascertain whether these inquiries are genuinely assessing the same construct (e.g., 'anxiety') (Price, 2015). If the scoring patterns of all questions are uniform—for instance, all participants respond 'agree' to every question—the α value will be elevated, signifying that the questionnaire is well constructed (Bland, 1997). However, if certain questions assess social anxiety while others abruptly ask unrelated inquiries, such as "What do you enjoy eating?" The resulting alpha value from the data analysis will be reduced, signifying that the questionnaire is flawed and shouldn't be used for subsequent data analysis (Li, 2024). The calculation of the alpha coefficient is based on evaluating the consistency among questions by analyzing the ratio of the number of questions and the variance of each question relative to the total variance (Coombs, 1950). Variance represents the extent of variation within a dataset, whereas total variance is the aggregate of all variances. The α coefficient rapidly emerged as the main dependability measure in disciplines like psychology and education, owing to its scientific rigor and calculative simplicity (Price, 2025). Data indicates that in 2003, 82% of social science research used this type of indicator (Huang, 2017).

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This study employed Cronbach's α coefficient to evaluate the reliability of three scales: the TikTok usage intensity scale for measuring the frequency of users' TikTok engagement, the INCOM social comparison scale to evaluate individuals' propensity to compare themselves with others, and the LSAS social anxiety scale for quantifying anxiety levels in social contexts. The criteria for evaluating reliability are as follows: $\alpha > 0.7$ indicates the questionnaire is trustworthy, reflecting good inter-item consistency; $\alpha > 0.8$ signifies the questionnaire is extremely reliable, demonstrating great inter-item consistency. If $\alpha < 0.6$, the questionnaire may necessitate revision or elimination of unnecessary data (Tavakol, 2011). The α coefficients for all three scales exceed 0.85, surpassing the acceptable threshold of 0.7 and the excellent standard of 0.8, hence showing great internal consistency for these scales (Tavakol, 2011). This shows that all items in the scales accurately assess the construct of social anxiety, and participants' responses are consistent, hence enhancing the accuracy and reliability of the gathered data for future research (Price, 2025). The increased reliability of these scales instills confidence that they accurately assess the intended variables, ensuring that the study's conclusions remain unaffected by measuring instrument deficiencies (Coombs, 1950).

Following the reliability test, Pearson's correlation analysis was employed to investigate the relationship among TikTok usage intensity, social comparison tendencies, and social anxiety. Correlation analysis is a statistical technique employed to assess the existence and strength of the relationship between two variables (Cohen, 2009). It computes the correlation coefficient to ascertain the linear relationship between variables. This study will employ the Pearson correlation coefficient, the most prevalent standardized tool in statistics for examining the linear relationship and strength between two continuous variables. This coefficient was introduced by Karl Pearson in 1895. The objective is to determine the link by computing the ratio of the covariance of the variables to their averages. The formula for this coefficient is $r = \text{cov}(X,Y)/(\sigma_X \sigma_Y)$, and its value is constrained to the interval [-1, +1]. The correlation coefficient ranges from -1 to 1, effectively quantifying the extent of the linear relationship between the two variables (Cohen, 2009). A positive coefficient signifies a positive correlation between the two variables, indicating that an increase in one variable corresponds with an increase in the other (e.g., increased TikTok usage time results in heightened social anxiety) (Li, 2021). A negative coefficient signifies a negative connection, indicating that an increase in one variable corresponds with a decrease in the other (e.g., an increase in TikTok usage time results in a decrease in social anxiety) (Li, 2021). A value of 0 shows the absence of a linear link between the two variables, indicating that TikTok usage time does not influence the assessment of social anxiety. In empirical research, the absolute value of the coefficient derived from data analysis directly signifies the correlation's strength: 0.1–0.3 means a weak correlation, 0.3–0.5 means a moderate correlation, and 0.5 or above means a strong correlation, suggesting a forceful correlation between TikTok usage duration and social anxiety (Cohen, 2009).

It is important to underscore that while this method was employed in the study, the coefficient just signifies a statistical correlation between the two variables and does not establish the direction of causality between them (Wang, 2024). For instance, when a positive association is identified between the duration of social media usage and social anxiety, there may be several explanations, including anxiety induced by TikTok engagement or pre-existing anxiety driving greater social media consumption. Furthermore, the limited sample size of the study may have influenced the acquisition of normative data results (Keles, 2020). The concerns of causal uncertainty necessitate alternate methodologies, such as integrating interviews or augmenting the data sample size in subsequent research for enhanced analysis.

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4 Findings and Discussion

By investigating the question of 'How does the use of TikTok influence social anxiety among first-year university students in China through social comparison?', the first step is to conduct reliability testing of the questionnaire mentioned in the research methodology.

Table 1. Reliability testing of the questionnaire

Scales	Number of questions in the questionnaire	Number of samples in the study	Obtained Cronbach's α
Overall questionnaire	18	18	0.912
Social Comparison Tendency Scale	11	18	0.865
Social Anxiety Scale	7	18	0.885

Reliability analysis basically evaluates the rationality of the questionnaire design, its dependability, and its capacity to yield satisfactory outcomes for subsequent data analysis. The primary approach employed is Cronbach's α coefficient, obtained by dividing the number of questionnaire items and the variance of each item's data by the total variance of the dataset. This analysis is the main quantitative research method employed in statistics to assess the viability of a series of surveys (Nesi, 2015). A Cronbach's α coefficient of 0.7 signifies acceptable questionnaire design, whereas a value surpassing 0.8 reflects greater inter-item reliability. If the Cronbach's α coefficient is below 0.6, it indicates that the questionnaire requires modification and is unsuitable for further data analysis (Cohen, 2009). The methodology section has said a comprehensive explanation of reliability analysis and the origins of the Cronbach's α coefficient, while the discussion section emphasizes the interpretation of the data acquired.

The table shows that the total Cronbach's α coefficient derived from the reliability analysis of the questionnaire is 0.912. The social comparison tendency scale contains 11 items, exhibiting a Cronbach's α reliability coefficient of 0.865, while the social anxiety scale consists of 7 items, with a Cronbach's α coefficient of 0.885. The coefficients of these scales are all $\alpha > 0.8$, indicating that the design of this questionnaire and its two scales exhibit strong reliability (Cohen, 2009). Consequently, this questionnaire possesses adequate reliability for research purposes and can be used for subsequent data analysis, thereby enhancing the trustworthiness of the ensuing results analysis. However, depending exclusively on Cronbach's α coefficient for assessing the validity of a questionnaire presents numerous difficulties (Wu, 2024). For instance, when a questionnaire employs a great deal of negative statements (e.g., 'I am perpetually concerned about being observed while speaking in public'), participants may uniformly select 'agree' due to a negative response style, resulting in an inflated α value (0.88) that hides the actual anxiety level and response bias. Consequently, the reliability of this questionnaire needs to be evaluated using a multi-faceted way (Li, 2021).

Table 2. Descriptive statistics

Variables		Number of samples	Percentage of whole
Gender	male	7	38.90%
	female	11	61.10%
Age	20	6	33.30%
	21	7	38.90%

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Variables		Number of samples	Percentage of whole
TikTok Usage Type	22	5	27.80%
	less than 30mins	5	27.80%
	30mins-1hour	4	22.20%
	1-2 hours	2	11.10%
	2-3 hours	3	16.70%
	more than 3 hours	4	22.20%

This table provides a descriptive statistical analysis of the data obtained from the questionnaire. The data shows there are 11 females in the sample, representing 61.1%, nearly double the number of men. This finding suggests that the questionnaire was disseminated through methods predominantly targeting females, perhaps rendering the study's conclusions biased towards a female perspective. The limited sample size may create bias in future studies on social anxiety. The ages of the respondents predominantly fall between 20 and 22 years, suggesting a narrow age range within the sample. Concerning daily TikTok usage time, there exists considerable variability: over 50% of participants engage with TikTok for no more than one hour daily, while nearly 40% use it for over two hours daily, and 22.2% exceed three hours daily. This signifies considerable individual variability in TikTok use. The survey participants display significant disparities in self-control, indicating that some individuals can adeptly regulate their social media use, whereas others might find it difficult to resist the tempting appeal of short-video applications. At the same time, there may be users with different psychological needs. For instance, regular users might use the app primarily for fun and leisure, whereas those who engage with the app more extensively may exhibit greater dependence on the emotional support it offers, such as mitigating loneliness or idealizing a particular lifestyle (Wang, 2024).

Therefore, we will use Pearson's correlation analysis to examine our research hypothesis, which argues that an increase in the average duration of TikTok usage will result in heightened social comparison tendencies, thereby leading to an escalation in social anxiety (Kafle, 2019). The methodology section explains that Pearson correlation analysis investigates the relationship between two variables: whether an increase in TikTok usage is associated with either an increase or decrease in social anxiety, or if there is no correlation at all. The Pearson correlation coefficient, introduced by Karl Pearson in 1895, quantifies the extent of linear correlation between two variables, ranging from -1 to 1 (Coombs, 1950). The calculation of the ratio of covariance to the standard deviation of the variables, when the coefficient r equals 0, signifies the absence of a direct relationship between the two variables. A value ranging from 0.1 to 0.3 indicates a poor association between the two variables. A coefficient over 0.5 indicates a robust positive correlation between the two variables, meaning an increase in one measure corresponds to a proportionate increase in the other (Bland, 1997). In fact, a negative calculated value signifies that an increase in one variable results in a reduction in the other. Initially, we analyze the Pearson association between the mean duration of TikTok usage and tendencies toward social comparison.

Table 3. Pearson correlation analysis test

Variable	Average Daily TikTok usage time
Frequently comparing oneself to others on TikTok.	0.514

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Table 3.2 Pearson correlation analysis test

Variable	Frequently comparing oneself to others on TikTok.
Feeling uncomfortable or anxious in crowded social settings	0.223

The Pearson correlation analysis in the initial table reveals a Pearson correlation coefficient of 0.514 between average daily TikTok usage time and the inclination for social comparison. The value exceeding 0.5 signifies a positive association between the two variables, indicating that as daily TikTok usage time increases, university students are increasingly inclined to engage in social comparison on TikTok. This evidence corroborates our initial hypothesis 1: The frequency of TikTok usage is considerably positively associated with social comparison tendencies among university students. Frequent TikTok usage results in heightened exposure to an extensive array of information regarding others. During this process, it is unavoidable to subconsciously compare oneself with the others and objects encountered. Individuals who often utilize TikTok are more prone to observe indications that 'others are leading superior lifestyles' (in terms of accomplishments, aesthetics, or lifestyle), thus prompting comparison reflections. This mechanism is corroborated by more studies: Li (2025) signifies that extended engagement with social media is strongly correlated with a heightened tendency for upward social comparison. Consequently, from this limited sample, we can ascertain that, within the examined cohort, an increase in average daily TikTok usage subjectively enhances the propensity of university students to evaluate themselves through social comparison.

Given the limited sample size, this study then examined the relationship between frequent self-comparison on TikTok and feelings of anxiety in social situations. The Pearson correlation coefficient reported in the second SPSS table was 0.223. A coefficient between 0.1 and 0.3 generally indicates a weak positive association between two variables (Tavakol, 2011). In this study, the result suggests that more frequent self-comparison on TikTok may be associated with slightly higher levels of social anxiety, although the strength of this relationship is limited and should be interpreted with caution. The finding offers some support for the second hypothesis, namely that social comparison tendencies are positively related to levels of social anxiety among university students, but the effect in this sample was not statistically significant (Tavakol, 2011). One possible explanation is that individuals who engage in frequent social comparison may be more likely to develop negative self-evaluations and become more sensitive to the judgments of others. For example, students who repeatedly perceive themselves as inferior to their peers may experience lower confidence in social interactions, greater concern about being criticised, and consequently stronger feelings of tension or anxiety. From the perspective of social comparison theory, frequent upward comparison with others who appear more successful or attractive may weaken self-esteem, which may in turn be related to anxiety and other negative emotions (Festinger, 1954). At the same time, individuals with a stronger tendency to compare themselves with others may become increasingly preoccupied with external evaluation, which can create additional psychological pressure in social situations (Appel, 2016). Overall, the findings suggest that social comparison may be one factor associated with social anxiety among college students. However, given the small and limited sample in this study, this relationship should be interpreted cautiously, and further research with a larger sample is needed to examine it more fully.

Taken together, the findings from Hypothesis 1 and Hypothesis 2 suggest that social comparison may help

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explain the relationship between TikTok usage and social anxiety. Although the direct relationship between the amount of TikTok use and overall social anxiety was not statistically significant, greater daily TikTok use may still be indirectly associated with anxiety through increased social comparison tendencies. In other words, frequent use of TikTok does not necessarily correspond to higher social anxiety on its own, but it may contribute to anxiety when it encourages users to compare themselves more often with others on the platform.

Further support for this interpretation can be found in the open-ended responses included at the end of the questionnaire. Several participants reported comparing themselves with the “ideal personas” or “successful experiences” presented by their peers on TikTok (Suls, 2012).

‘When I see peers on TikTok studying at prestigious universities or securing internships at large companies, I feel I'm not trying hard enough, leading to self-doubt and pressure... I wonder why others are so outstanding while I'm just ordinary...’ This defines the potential influence of upward social comparison on mental health within social media, as articulated by social comparison theory (Carpenter, 2023). When individuals regularly encounter meticulously managed representations of achievement on social media, they inadvertently utilize them as standards for self-assessment. This continuous upward comparing process may first cultivate a self-deprecating perspective at the cognitive level. A substantial disparity between an individual's authentic personality and the idealized representations encountered on social media can lead to adverse self-assessments, resulting in heightened feelings of inadequacy and diminished self-esteem (Keles, 2020). The cognitive bias referred to as the 'contrast effect' significantly contributes to social anxiety disorder.

Meanwhile, certain individuals articulated concerns over the judgments of others. They stated that regularly observing others' spectacular lives on TikTok led them to contemplate whether they would be evaluated by the same stringent criteria in real-life social contexts (Li, 2024). Because I posted a video that went viral for no apparent reason and received many likes... I suddenly started worrying that I would look bad in real life without beauty filters and always worry about saying the wrong thing in front of others...’ This corresponds with Goffman's (1959) self-presentation theory, which posits that selective self-presentation on platforms like TikTok, through the use of beauty filters or careful content editing, constructs a digital representation of an 'idealized self.' When an online image unexpectedly attracts attention, such as a viral video, it frequently results in 'image maintenance anxiety'—users inadvertently apply the evaluative criteria they encounter online to their offline interactions, fearing that their unaltered real-life self-presentation will not satisfy others' expectations (Min, 2024). This inconsistent worldview frequently arises from three cognitive biases: firstly, an imbalance between online and offline self-perceptions; secondly, the overgeneralization of others' evaluation standards; and thirdly, the amplification of perfectionist tendencies by social media (Will, 1981). This psychological condition appears behaviorally as "enhanced social monitoring," characterized by persons overly analyzing their performance in real-life encounters, interpreting neutral feedback adversely, and engaging in protective avoidance behaviors. The negative cycle of ‘expectation-evaluation-avoidance’ corresponds with the cognitive-behavioral framework of social anxiety (Zaman, 2025), indicating that social media use may indirectly affect real-world social adaptation by modifying self-perception and social expectations. This hypothesis suggests that the social comparison atmosphere fostered by TikTok could worsen users' apprehension regarding negative assessments.

Even so, while Pearson's correlation analysis determined that 'an increase in daily TikTok usage may result

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in a corresponding rise in social anxiety,' this conclusion is derived from a limited sample and may be applicable only to particular demographics. Some students in the open-ended questionnaire said that decreasing TikTok usage might reduce feelings of emptiness and anxiety; however, it would also decrease a source of information. I believe that TikTok is replete with knowledge, and diminishing my usage of the platform could potentially yield beneficial results for me. However, I would forfeit a means of acquiring information or inspiration for my advancement... Thus, using TikTok has dual aspects. For many individuals, it may serve as a valuable information channel; nevertheless, it can also result in addiction and excessive usage. Additionally, anxiety can be both a source of psychological discomfort and a catalyst for learning and self-improvement.

4.1 TikTok usage and social comparison tendencies

The study found that the research sample was frequently involved in psychological comparisons of their performance on the platform with that of others. Vogel et al. (2014) discovered that within a Facebook environment, increased frequency of social media usage correlates with a heightened propensity for social comparison, subsequently affecting self-evaluation. This tendency is similarly apparent among university students using TikTok in our survey. Wang et al. (2017) discovered via a social survey of Chinese university students that increased social media usage correlates with a heightened tendency for upward social comparison behavior. Furthermore, TikTok's platform features facilitate an ongoing flood of fragmented information regarding the lives of others, resembling an infinite scroll of varied videos, which offers enough content for user comparison. TikTok's algorithmic suggestions and extensive visibility make it practically impossible for viewers to avoid exposure to diverse "role models" or "benchmarks." As Muller (2005) noted, in a social media context, users inevitably encounter others' idealized representations, which frequently encourages unconscious comparative behavior. The findings of this study confirm the relevance of social comparison theory within the context of short-video media, namely among college students who frequently use TikTok, indicating a heightened propensity for participating in ongoing social comparison processes (Misirlis, 2020). These comparisons entail evaluating the appearance, accomplishments, and social lives of others and contrasting them with one's own circumstances. When an individual achieves in a particular field, others may experience feelings of inferiority (Chen, 2021).

The qualitative findings of this study clearly identified the nature of comparisons made by college students on TikTok, including comparisons of academic and career advancement among classmates, as well as comparisons of physical appearance and quality of life (Hayes, 2015). These illustrate upward social comparison, as individuals assess themselves against those they regard as superior. Upward comparisons frequently result in unfavorable self-assessments due to the perception of the comparison subjects as superior. Thukral (2020) discovered in a research of female college students that TikTok usage has an indirect correlation with body dissatisfaction, mediated by upward appearance comparisons and body monitoring, indicating that regular TikTok involvement decreases women's pleasure with their appearance. This discovery strongly corresponds with the phenomenon stated by our survey respondents, who indicated a reduced feeling of attractiveness following exposure to aesthetically pleasing users on TikTok (Vannucci, 2017). Likewise, certain studies indicate that observing the exceptional accomplishments of others on social media may cause sentiments of envy and discontent among users, prompting them to doubt their capabilities. The immersive use of TikTok clearly reinforces users' propensity for different types of social comparison. Such behavior also signifies that social

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comparison functions as a crucial intermediary variable in the influence of short videos on the psychological well-being of university students.

4.2 Social comparison tendencies and social anxiety

At the same time, as stated by social comparison theory, an individual who consistently evaluates themselves against others and regularly perceives themselves as inferior may have diminished self-esteem and self-worth, hence increasing their propensity for anxiety or tension in social contexts (Rytwinski, 2009). Participants in the questionnaire exhibiting a strong inclination towards social comparison also articulated sentiments such as, 'Am I not as good as others?' This behavior illustrates a cognitive trait of social anxiety—an excessive concern with the opinions of others and a profound fear of rejection (Liu, 2025). In psychology, social anxiety frequently originates from an intense anxiety of unfavorable review, and continual upward comparison worsens this concern. When students consistently perceive themselves as inferior to others, they readily conclude that they will be judged negatively or humiliated in social contexts, which intensifies their anxiety responses in such situations. Wu (2024) conducted a study on high school students, showing a substantial positive link between social comparison tendencies and social anxiety; adolescents who frequently compare themselves to others demonstrate elevated levels of social anxiety. This finding is also applicable to university students. Jiang and Li (2021) discovered via a questionnaire survey of Singaporean youth that upward social comparison on Instagram strongly predicted heightened social anxiety, with a portion of this effect mediated by diminished self-esteem. When individuals perceive themselves as inferior due to social media comparisons, their self-esteem decreases, resulting in heightened anxiety in real-life relationships. This pattern represents a 'chain reaction': social comparison results in lower self-assessment, subsequently leading to heightened social anxiety (Zhu, 2025).

Likewise, social comparison may influence social anxiety via cognitive and attentional biases. Individuals who consistently compare themselves to others tend to focus more on their external perceptions and exhibit heightened sensitivity to external input (Lee, 2022). These behaviors may result in an undue preoccupation with personal deficiencies or errors in social contexts. The open-ended responses of the questionnaire indicated that some students, influenced by the frequent observation of others' "perfect presentations," strive for perfection in social contexts (Aparicio, 2019). When individuals see an inability to attain their ideal self-image, they experience anxiety and tension. For instance, “I'm always worried about saying the wrong thing or doing something poorly and being mocked by which suggests that a comparative mindset limits their ability to relax in social contexts, constantly imposing demands for perfection upon themselves. This psychological weight surely exacerbates anxiety. Li et al. (2025) conducted a study that effectively showed how social media comparisons directly induce social anxiety: participants were exposed to images mainly depicting individuals, and the findings indicated that viewing images of people markedly heightened participants' online social anxiety levels in contrast to viewing landscape images. This phenomenon was attributed to participants making more upward social comparisons (Caplan, 2006). The experiment indicated that men demonstrated greater upward comparisons and increased social anxiety when observing others' photographs in contrast to women, suggesting that individual variations in social comparison tendencies also affect anxiety levels.

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4.3 TikTok usage and social anxiety

The Pearson quantitative analysis conducted in this study indicates a weak link between the intensity of TikTok usage and social anxiety. This conclusion appears to contradict other preceding investigations and results. Auf (2011) posited that excessive social media usage exacerbates anxiety and depression in adolescents. The study's data indicates that the frequency of TikTok usage, measured by average daily usage time, did not significantly influence overall social anxiety levels among university students. This may be partially attributable to the restricted sample size and significant individual heterogeneity (Hayes, 2015). The correlation coefficient between usage duration and overall anxiety levels, derived from 18 survey replies, was approximately 0.22. This indicates significant individual diversity within the research sample, with certain individuals exhibiting high degrees of addiction while others remain relatively disengaged. (Hu, 2024) Moreover, considering that the sample had twice as many females as males, although this study did not explicitly investigate gender differences, the gender imbalance may have influenced the results of the data analysis. The sample size was limited, consisting of only 18 students, and so cannot represent the entire student population.

This study showed a small connection between the duration of TikTok usage and anxiety levels, possibly due to significant diversity across the sample population. While some regular TikTok users exhibited heightened anxiety levels, another group of frequent users seemed to gain psychological satisfaction from social interactions (such as receiving likes or comments), thereby alleviating their distress (Jain,2025). The divergent reactions of these two user groups counterbalanced each other, resulting in the overall correlation being 'neutralized.' This discovery requires additional extensive research, suggesting that simply analyzing TikTok usage length is inadequate for evaluating social anxiety. It is crucial to distinguish between distinct usage patterns and the resultant emotional experiences (e.g., stress versus satisfaction) to fully understand the impact of social media on mental health. Among TikTok users, while certain frequent participants may encounter heightened anxiety, others exhibit minimal concern and may derive psychological satisfaction from social media, thereby attenuating the overall correlation (Kafle, 2019). This signifies the need to assess the impacts of differing usage patterns. Recent studies have begun to distinguish between the specific effects of 'passive use' and 'active use' on mental health. Passive social media use refers to the consumption of others' content without any personal input, whereas active use encompasses engaged actions such as publishing, commenting, and private messaging (Wang, 2024). Therefore, further research on social anxiety may be undertaken in the future.

4.4 Advantages and disadvantages

The findings of this study may offer significant insights for mental health awareness and therapy among university students. The study showed that frequent use of TikTok could result in psychological risks, notably social anxiety arising from social comparison. This is a reminder to educators and counselors to consider university students' social media usage and the associated cognitive tendencies while treating social anxiety (Twenge, 2018). Counselors might inquire about students' everyday engagement with platforms such as TikTok and their emotional responses post-usage. Students who experience feelings of inferiority or anxiety after using their phones should be guided by counselors to understand that these emotions stem from social comparison(Yang, 2023). Schools can organize specialized lectures or workshops on the effects of social media, educate students on proper usage durations, and impart coping mechanisms, including media literacy educa-

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tion and reasonable cognitive training (Muller,2005). Research shows that enhancing users' comprehension of social media content presentation—specifically, acknowledging that most information is managed and mostly showcases others' ideal moments—can foster 'psychological shielding' and mitigate harmful comparisons. Secondly, students who rarely engage with others and passively observe TikTok should actively spread good information or join real-life interest groups to receive authentic social feedback and escape passive comparison (Zaman, 2020). This study addresses issues that offer constructive recommendations for educational institutions and society concerning developing challenges among college students, specifically emphasizing the need to prioritize mental health concerns potentially arising from social media (Liu, 2025).

In fact, there are certain limitations to this study. The study sampled only 18 college students from first-tier cities in China, resulting in a limited sample size that lacks statistical power. This indicates that certain relationships lack significance; however, this does not imply their absence in actuality. The sample mainly comprises students from first-tier cities, potentially failing to reflect the circumstances of other areas or diverse categories of university students (Li, 2025). Students in first-tier cities may exhibit particular characteristics regarding TikTok usage rates and behaviors, such as a greater variety of entertainment options and heightened signals for comparison (Kafle, 2019). Future research should include a larger and more varied group of participants, including students from different city levels (like second- and third-tier cities) and different types of universities, as well as people who don't use TikTok, to make the findings more applicable to a wider audience. Additionally, cross-cultural samples must be incorporated in comparisons to ascertain whether the mechanisms described in this study are present or vary among university students in different countries (Gilbert, 2000). Moreover, all data in this study were self-reported by participants, an approach that, although convenient, is susceptible to considerable social desirability bias. Due to the perception of extensive social media engagement as a negative habit, respondents may underreport their actual TikTok usage duration. In evaluating their anxiety levels, individuals may actively minimize negative emotions due to societal stigma surrounding mental health concerns (Fox, 2015). Systemic biases may result in an overall underestimation of usage time statistics, while concurrently, true anxiety levels may be largely obscured (Hu, 2024). Therefore, this study likely diminishes or partially hides the genuine correlation between TikTok usage and anxiety.

Moreover, the sample may demonstrate biases regarding gender and personality characteristics. The sample comprised a greater percentage of females (61%), and prior research has indicated a more pronounced correlation between female social media usage and body image worry(Carpenter, 2023). Conversely, males might focus on alternative comparison areas (e.g., finances, competencies), and this study did not perform a comprehensive review of gender disparities. As the sample included a higher number of boys, the outcomes could have varied marginally. Moreover, students from prestigious universities in first-tier cities may possess elevated social standing and wider perspectives. Their reference points and perspectives on TikTok may diverge from those of typical students (Appel, 2016). For instance, our respondents often cited comparisons of academic achievement stemming from fierce competition in a prestigious setting, whereas students from conventional colleges may prioritize similarities pertaining to entertainment and leisure. These considerations constrain the generalizability of our conclusions (Huang, 2017). Additional validation of this research approach across diverse groups is necessary to confirm the insights' widespread applicability. The open-ended component of the questionnaire may have imposed word constraints, or respondents may have chosen for length due to unwillingness to type extensively (Mann, 2020). Future study on this topic could use online

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interviews or in-person discussions to facilitate more profound conversations with students and obtain more extensive information.

5 Conclusion

This study, using social comparison theory as a framework, explored the chain relationship between TikTok usage intensity, social comparison tendencies, and social anxiety among 18- to 22-year-old college students in China's first-tier cities. The research showed the mediation effect of social comparison tendencies between TikTok usage and social anxiety, indicating that short video platforms may indirectly influence college students' mental health by provoking upward social comparison. This study also has limitations, including a small sample size (18 participants), an imbalanced gender distribution (61% female), and a sample predominantly consisting of college students in first-tier cities, which restricts the generalizability of the findings. The influence of TikTok usage on social anxiety is complex and may alter according on usage habits (active or passive) and individual variations.

Overall, This study provides empirical information regarding the influence of social media on the mental health of college students and has effects for mental health education in higher education institutions. Applying media literacy education is advisable for supporting students in cultivating a realistic viewpoint on social media information, reducing negative social comparisons, and mitigating potential social anxiety concerns.

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