# Digital Age Challenge: University Students' Excessive Use of TikTok

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## Abstract

TikTok's users have grown tremendously, reaching people all over the world. The current research in the aspect of TikTok mainly analyses the different perspective of users' usage and behavior, the research on excessive use of TikTok is relatively scarce. As the undergraduates use TikTok for learning and self-realisation, they also fall into cyber-addiction due to excessive use, which leads to symptoms such as impulse control disorders, physical health and mental health problems. In view of these arising problems, this study intends to explore further, focusing on the current level of excessive use, the influence of age and gender differences in undergraduates' excessive use of TikTok. This study employed survey research design by using a structured questionnaire. 606 undergraduates from two universities were selected by using stratified sampling technique. The findings on time management, life intrusion and social media anxiety showed that undergraduates have high excessive use of TikTok. Consequently, it was showed that there is no significant difference between male and female undergraduate students in terms of their excessive use of TikTok, and male students do not perform significantly differently from female students in terms of their excessive use of TikTok. Excessive use of TikTok was significantly different in terms of the excessive use of TikTok by undergraduates' age. Different age groups differ in their daily time use and time management. Future research can expand the age range of the subjects to analyse the situation of excessive TikTok use and its impact on individual and group psychology among wider age groups of people. Besides, the formation of excessive use of TikTok can also be examined from multiple perspectives in both social and individual dimensions.

Keywords: influence, age, gender, excessive use, TikTok

## 1. Introduction

Due to the continuous progress in technology and society, along with the increasing popularity of mobile Internet, the short video industry is rapidly growing. Since its launch in the fall of 2016, TikTok has quickly become the go-to platform for creating short videos, thanks to its unique blend of social networking, music, and creativity. Recently, TikTok has expanded to more than 1 billion active users per month (TikTok Team, 2021), connecting with individuals globally. Short videos offer more diverse and visually impactful content compared to traditional media, utilizing concise and brief content to cater to the audience's fragmented time. The transformation of the connected environment is leading to significant changes in how humans communicate and think, ushering in an unprecedented era of influence unlike any before in history.

Short TikTok videos aim to enhance the appeal of user-generated content, strive to increase ongoing user engagement and satisfaction, and deliver content tailored to users' video preferences effectively. Nonetheless, the absence of well-defined standards for reviewing video content results in varying quality of short videos and the presence of both vulgar and bizarre content. Consequently, modern university students utilize TikTok for education and personal growth, but they can become addicted to it through overuse, misuse, and abuse, resulting in addiction symptoms like relationship issues, impulse control difficulties, time management struggles, and harm to their well-being. Zhao (2021) stated that the addiction to TikTok is becoming increasingly common in current times. Despite the abundance of research on social media addiction, there is currently a lack of studies focusing on TikTok addiction behavior (Qin et al., 2022). Examining excessive TikTok addiction behavior is important due to the rapid growth in the number of users and the level of usage of TikTok. In addition, TikTok's sophisticated algorithm exacerbates the issue of addiction compared to other social media networks (Smith & Short, 2022). Furthermore, the addiction to TikTok significantly impacts the youth when they are exposed to various short video contents.

Many recent studies focus on exploring various motivations and behaviors related to TikTok usage (Klug et al., 2021; Omar & Dequan, 2020). Additionally, most of the research delves into analyzing the content on TikTok (Chen et al., 2021), while there is limited research on excessive TikTok use and related factors. Furthermore, there is a lack of research that specifically addresses the issue of excessive TikTok use, including solutions and depth of theoretical exploration. Starting with the existing gap in literature, this study focuses on examining the extent of overuse of TikTok and emphasizes a demographic analysis to fill the research void in the academic realm regarding this aspect of TikTok. This study specifically focuses on investigating how much undergraduates are engaging in excessive use of TikTok, as well as the impact of age and gender on this behavior. The research questions of this study are outlined below.

RQ1: What is the current level of excessive use of TikTok by undergraduates in terms of time management, life intrusion, social media anxiety?

RQ2: Is there a significant difference in undergraduates' excessive use of TikTok between male and female?

RQ3: Is there a significant difference in undergraduates' excessive use of TikTok among different age groups?

## 2. Literature Review

The literature review section describes in detail TikTok, excessive use of social media (TikTok) and lastly, TikTok and demographics.

### 2.1 TikTok

The TikTok APP has been popular all over the world since its launch in 2016. The number of users keeps growing and the content keeps enriching, and the research on the TikTok short video is also increasing. TikTok is a social media platform that enables individuals to share creatively compelling, captivating, and entertaining videos anytime and anywhere (Shao, 2018). The TikTok platform content has become diversified as facing the stiff competition in the short video industry. TikTok is a mobile application that amalgamates the salient features of online social media, facilitating the dissemination of creative, captivating, entertaining, and whimsical videos across global social media platforms.

TikTok has been leveraged to produce concise educational videos spanning 15 to 60 seconds, designed to be both enjoyable and intellectually stimulating (Hayes et al., 2020). Users can publish their own original music works on the platform and can also select the music on the platform to shoot videos to discover and record life and quickly shoot and produce, which transmits information. It is a mobile terminal information product with significant online social function, with rich and diverse contents, strong online and offline instant interaction, no difficult operation skills and low threshold of use. Nowadays, TikTok enables the users to record their own favored videos, create any music or spoken-word clips and allow users to edit their footage with various effects (Daniar et al., 2022).

### 2.2 Excessive Use of Social Media (TikTok)

In 1998, Professor Kimberly Young of the University of Pittsburgh refined Ivan Goldberg's concept of Internet addiction, coining the term "pathological Internet use." Subsequently, this condition was reconceptualized in academic circles as "problematic Internet use," broadening the understanding of excessive Internet behaviors (Young, 1998). Overuse of social networks generally refers to the core concept of Internet addiction, which is put forward as a psychological profile of overuse of Internet behavior, due to the inappropriate use of the Internet, which leads to obvious physical, psychological and social adverse effects on individuals. The scholars agree that the concept of definition: Internet overuse is spending too much time and energy on the Internet (Whang et al., 2003), lose self-control, and even forced to use, lead to ignore the normal study life and work (Chou, 2001), influence the normal relationships, or even a problematic Internet use behavior of physical and mental health (Baturay & Toker, 2019; Kumar & Mondal, 2018).

Wang (2022) pointed out that digital addiction and digital dementia are the primary consequences of excessive TikTok usage. Additionally, Zhao (2021) found that TikTok addiction is now prevalent, which is linked to the optimization of the TikTok algorithm that encourages users to keep using the app. TikTok employs a personalized algorithm recommendation system that takes into account a user's basic information, interaction history, past browsing and clicking habits, as well as their interests, preferences, and influence. The video that the users are interested in is recommended to them based on how often they watch similar content.

Luo & Li (2019) stated that users find pleasure in the spiritual ecstasy of becoming hooked on misinformation on TikTok. As a result, this led to users becoming addicted to the Internet and experiencing a decrease in their ability to think and learn. Nichita et al. (2021) discovered that 60% of adolescents utilized TikTok application for educational reasons, however, Liang (2021) pointed out that excessive TikTok usage can disrupt users' academic performance by altering their study plans.

### 2.3 TikTok and Demographics

Onion Think Tank (2018) highlighted that young user under the age of 24 accounted for about 77% of TikTok short

videos users. Furthermore, Sharabati et al. (2022) reported that young users are attracted to the trends on the use of digital technologies and adoption of digital technologies. Thus, the consumption of TikTok has become widespread and, therefore, follows a social trend among young users. Being trendy is very important to the young users and affects their satisfaction as this could lead them to better belonging for specific groups.

Chen (2017) found that TikTok's short videos can quickly become popular among college students mainly due to the main needs of college students and provides an opportunity and platform for university value education to further understand and influence college students. The TikTok platform fulfills college students' cultural consumption desires, addresses their self-actualization needs, and offers a platform to share their thoughts.

Additionally, Ma (2024) revealed that younger TikTok influencers are more popular than older TikTok influencers. Compared to older influencers, younger influencers tend to have greater content diversity, better technological skills to generate videos with more captivating effects and presentation style, and higher compatibility with TikTok's user demographics.

## 3. Methodology

This study employed a cross-sectional survey design, using a questionnaire to investigate the university students' excessive use of TikTok. In this layout, the respondents were given a questionnaire to outline the existing extent of excessive use of TikTok and any potential variations between genders and age groups. The respondents for this study were chosen from two universities in Xuchang City, Henan Province, China using stratified sampling method. Krejcie and Morgan's table (1970) for calculating sample size was used to calculate the study's sample size. Approximately 48000 undergraduate students are currently enrolled in the two higher education institutions combined. Krejcie & Morgan (1970) state that a minimum sample size of 381 was necessary for a population of 48000. With reference to the Krejcie and Morgan's sample size, 606 questionnaires were collected for further analysis in this study. In order to get a sample that was representative, the stratified sampling technique was utilized, where strata were chosen from the sample in the same ratio as they were found in the population. In the original context of the two institutions, the proportion of males to females was 6:7, resulting in 281 male students and 325 female students in total. Using a table of random numbers, the researcher then selected proportional samples from each stratum to ensure a uniform representation of the different groups.

In this study, the structured questionnaire consisted of two sections. Section 1 included two items investigating the undergraduates' demographic profiles namely gender and age. Gender variations were widely acknowledged in research across diverse fields and were viewed as a significant factor impacting research variables. Subsequently, age was an important demographic statistic in research. Thus, this study intended to investigate the influence of different age groups on the excessive use of TikTok. Section 2 focused on items related to excessive use of TikTok. Excessive use of TikTok included three dimensions namely time management, life intrusion, and social media anxiety. The brief explanation of dimensions of excessive use of TikTok is shown in Table 1. Specifically, time management consisted of 4 items; life intrusion comprised 5 items whereas social media anxiety comprised 3 items. The questionnaire items were adapted and cited from Caplan & High (2006), Lemmens et al. (2009), Ragu-Nathan et al. (2008), Tarafdar et al. (2007), Campisi et al. (2012). All items were measured on a 5-point Likert scale, and respondents were asked to rate on a scale ranging from 1 for "strongly disagree" to 5 for "strongly agree". In this study, we referred to Allen & Seaman (2007) for interpreting the mean values of the Likert 5-point scale in response to the excessive use of TikTok.

Table 1. The Brief Explanation of Dimensions of Excessive Use of TikTok

| Dimension | Brief explanation | Number of items | Source |
|---|---|---|---|
| Time Management (TM) | Difficulties and challenges faced by individuals in managing, planning and utilizing their time effectively can have several adverse effects in various aspects of an individual's life and career. | 4 | Caplan & High, (2006); Lemmens et al., (2009) |
| Life Intrusion (LI) | Strong motivation to go online or use social networks, and that intrusion has been made into everyday life including study and work. | 5 | Ragu-Nathan et al., (2008); Tarafdar et al., (2007) |
| Social Media Anxiety (SMA) | Triggered by negative interpersonal experiences such as feelings of nervousness and fear in social media interaction situations, and an irrational fear of scrutiny or evaluation by others | 3 | Campisi et al., (2012) |

In order to determine the minimum and maximum length of the scale, the formula proposed by Allen & Seaman (2007) was used where the maximum value of 5 is subtracted from the minimum value of 1 to get 4, which is then divided by 5, since 5 is the maximum value of the scale (4/5 = 0.80). Based on this formula, the scale was classified into five levels, i.e., 1-1.80 for "very low", 1.81-2.60 for "low", 2.61-3.40 for "medium", 3.41-4.20 for "high", and 4.21-5 for "very high". The questionnaire was put online via the corresponding link. It was then distributed through mobile phone or computer desktop. After the data collection, using IBM SPSS version 25 software, the mean score and standard deviation were calculated for each item to analyse the excessive use of TikTok.

With reference to Table 2, the standardized factor loading values on the twelve items range from 0.726 to 0.828, all significantly exceeding the minimum requirement of 0.5 and retained. All of them show strong statistical significance under the condition of P < 0.001, demonstrating extremely strong convergence. Consequently, the combined reliability of the latent variables for the three dimensions namely time management, life intrusion, and social media anxiety range from 0.824 to 0.858, which is significantly larger than 0.600, showing high internal consistency. This indicates that the scale has high reliability and stability and can be used for the next stage of the study. Further, the average variance extracted from the latent variables range from 0.549 to 0.611, meeting the standard value of greater than 0.5, indicating that the measurement model has good convergent validity.

Table 2. Confirmatory Factor Analysis of Excessive Use of TikTok (N=606)

| Dimension | Items | Standardized Factor Loading Estimates | P | CR | AVE |
|---|---|---|---|---|---|
| Time Management | TM1 | 0.769 | | 0.856 | 0.598 |
| | TM2 | 0.778 | *** | | |
| | TM3 | 0.769 | *** | | |
| | TM4 | 0.776 | *** | | |
| Life Intrusion | LI1 | 0.726 | | 0.858 | 0.549 |
| | LI2 | 0.754 | *** | | |
| | LI3 | 0.763 | *** | | |
| | LI4 | 0.727 | *** | | |
| | LI5 | 0.733 | *** | | |
| Social media anxiety | SMA1 | 0.828 | | 0.824 | 0.611 |
| | SMA2 | 0.761 | *** | | |
| | SMA3 | 0.753 | *** | | |

*Notes.* *** indicates at confidence level (double-tested) P < 0.001.

Table 3. Discriminant Validity Test of Excessive Use of TikTok (N=606)

| Items | TM | LI | SMA |
|---|---|---|---|
| TM | 0.773 | | |
| LI | 0.516 | 0.741 | |
| SMA | 0.527 | 0.540 | 0.782 |

*Notes.* The diagonal line is the square root of AVE, and the rest are correlation coefficients between variables. LI, Life Intrusion; TM, Time Management; SMA, Social Media Anxiety.

As shown in Table 3, the discriminant validity of each construct in this study is greater than the correlation coefficients of each construct, so the discriminant validity basically meets the requirements. In addition, most of the correlations between the three constructs are between 0.516 and 0.540, which basically meets the requirements. It indicates that the excessive use of TikTok has a good discriminant validity.

As for the data analysis, descriptive statistics such as frequency, percentage and standard deviation were reported. Apart from that, to examine whether gender influences excessive use of TikTok, the researcher conducted an independent samples t-test. Consequently, a one-way ANOVA was analysed on the different age groups of undergraduate to explore the influence of age on the excessive use of TikTok. The LSD was then used to analyse the multiple significant comparisons between age groups.

## 4. Results

### 4.1 Demographic Profiles of the Respondents

Table 4 shows the distribution profiles of the respondents in this quantitative study. The findings from 606 undergraduates are analysed and the descriptive statistics of the personal factors including gender and age are illustrated. There were 281 male students out of a sample of 606, representing 46.3 percent; here were 325 female students with a percentage of 53.6 %.

Table 4. Distribution of Respondents' Profiles (N=606)

|        |                          | Frequency | Percent | Cumulative Percent |
|--------|--------------------------|-----------|---------|--------------------|
| Gender | Male                     | 281       | 46.4    | 46.4               |
|        | Female                   | 325       | 53.6    | 100                |
|        | 17 years old and under   | 33        | 5.5     | 5.5                |
|        | 18-19 years old          | 159       | 26.2    | 31.7               |
| Age    | 20-21 years old          | 239       | 39.4    | 71.1               |
|        | 22-23 years old          | 161       | 26.6    | 97.7               |
|        | 24 years old and above   | 14        | 2.3     | 100                |

In terms of age, the results showed that only 33 students were 17 years old, 159 were the group of 18-19 years old, 239 were the group of 20-21 years old, 161 were the group of 22-23 years old, and there were only 14 students who were over 24 years old, which shows that the majority of the students were between 18 and 23 years old, this represents 78.4 per cent of the total sample size. The distribution of age groups is basically in line with the current age groups of undergraduates, which further verifies the authenticity of the questionnaire and ensures the validity of the sample.

### 4.2 Current Level of Excessive Use of TikTok

Based on the data observed in Table 5, it is found that respondents generally have encountered problems of excessive use of TikTok. Excessive use of TikTok is made up of three dimensions, namely time management, life intrusion and social media anxiety. Specifically, the mean score of the respondents' excessive use of TikTok was as high as 3.61, and the mean scores of all three measured dimensions significantly exceeded 3.54, which means that the respondents generally showed a high tendency of excessive use of TikTok and related problems. Further analysis of the data showed that the dimension of social media anxiety had the highest score, (M=3.70, SD=0.7133). In contrast, the time management dimension scored at a moderate level, (M=3.58, SD=0.7622). Finally, the dimension of life intrusion had the lowest score (M=3.54, SD=0.7931). These results show a clear strain in social media anxiety exhibited by the respondents, while there seems to be some room for improvement in the ability to deal with time management and life intrusion. In general, the findings on the time management, life intrusion and social media anxiety showed that undergraduates have high excessive use of TikTok.

Table 5. Descriptive Statistics of Excessive Use of TikTok (N=606)

| Variables and its dimension | N of Items | Mean | Std. Deviation |
|-----------------------------|------------|------|----------------|
| Excessive use of TikTok (EUT) | 12 | 3.61 | 0.6008 |
| Time Management (TM) | 4 | 3.58 | 0.7622 |
| Life Intrusion (LI) | 5 | 3.54 | 0.7931 |
| Social Media Anxiety (SMA) | 3 | 3.70 | 0.7133 |

*Note.* Likert scale of 1-5 is used in this instrument

### 4.3 Inferential Analysis of Gender

In this study, gender was categorized into two groups: male (N=281) and female (N=325) undergraduates. The results of the Independent Samples Tests are shown in Table 6. This analysis aims to explore gender differences across undergraduates' excessive use of TikTok, providing insights into potential disparities.

Table 6. Independent Samples Test for Gender

|     |        |     |        | Levene's Test for Equality of Variances | | t-test for Equality of Means | |
|-----|--------|-----|--------|-------|-------|-------|-------|
|     | Gender | N   | Mean   | F     | P     | t     | P     |
| EUT | Male   | 281 | 3.6417 | 0.268 | 0.605 | 1.298 | 0.195 |
|     | Female | 325 | 3.5782 |       |       | 1.300 | 0.194 |

Notes: EUT, Excessive Use of TikTok

Statistical findings indicated that Levene's significance was greater than 0.05 for 95% confidence intervals related to the excessive use of TikTok. Additional examinations found that the excessive use of TikTok did not show any significant variations, with a level of significance exceeding 0.05. This suggests that the excessive use of TikTok is similar in both male and female undergraduate students.

### 4.4 Inferential Analysis of Age

In Table 7, most undergraduates were in the age group of 20-21 years old (N=239), with the second highest being 22-23 years old (N=161) and 18-19 years old (N=159). The highest average was seen in the 20-21 age group at 4.1183, with 17 and under at 3.7083, 18-19 at 3.6150, 24 and above at 3.5807, and 22-23 at 3.5175.

Table 7. Descriptive Statistics of Age (N=606)

| Age Group | N | Mean |
|---|---|---|
| 17 years old and under | 33 | 3.7083 |
| 18-19 years old | 159 | 3.6150 |
| 20-21 years old | 239 | 4.1183 |
| 22-23 years old | 161 | 3.5175 |
| 24 years old and above | 14 | 3.5807 |

The results of the one-way ANOVA are shown in Table 8. Statistical results showed that Levene's significance was p > 0.05 for confidence intervals of 95%, indicating that excessive use of TikTok has equal variances across the different groups. Subsequently, there was a significant difference in the age groups of undergraduate students when it came to excessive TikTok usage (p = 0.017), thus necessitating the need for conducting multiple comparison analyses across age groups displaying a significant variation.

Table 8. ANOVA for Age

| | | Sum of Squares | df | Mean Square | Levene Statistic | Levene Sig. | F | P |
|---|---|---|---|---|---|---|---|---|
| EUT | Between Groups | 5.557 | 6 | 0.926 | 1.383 | 0.219 | 2.607 | 0.017 |
| | Within Groups | 212.836 | 599 | 0.355 | | | | |
| | Total | 218.393 | 605 | | | | | |

Notes: EUT, Excessive Use of TikTok

Table 9. Multiple Comparisons for Age on Excessive Use of TikTok

| Dependent Variable | (I) Residence | (J) Residence | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Excessive Use of TikTok | 20-21 years old | 17 years old and under | 0.40992 | 0.159 |
| | | 18-19 years old | .50328* | 0.003 |
| | | 22-23 years old | .60072* | 0.000 |
| | | 24 years old and above | .53760* | 0.006 |

* The mean difference is significant at the 0.05 level.

The LSD was used to analyse the multiple comparisons, and the specific statistical results are shown in Table 9. With reference to Table 9, in terms of excessive TikTok usage, the age group of 20-21 years differed significantly from those under 17, 18-19, 22-23, and 24+ years old. The data indicated that respondents aged 20-21 were more likely to excessively use TikTok compared to other age groups such as those under 17, 18-19, 22-23, and 24 and above.

## 5. Conclusion and Discussion

TikTok, as the hottest short-video application nowadays, brings users knowledge and entertainment while its highly sensory stimulating video content and immersive interaction design also make undergraduate students easy to get addicted to it. Hence, this study result illustrates that undergraduates frequently engage in TikTok and eventually show excessive use behaviour. Students eventually spend too much time and energy on TikTok, triggering a series of negative consequences. such as wasted time, sleep deprivation, lack of concentration, social isolation, social media anxiety, decreased performance in study or work, and mental health problems. This result is supported by Enez et al. (2016) who reported that both social anxiety and loneliness affect excessive use behaviours, which further affects the users' lives.

As far as gender is concerned, there is no significant difference between male and female undergraduate students in terms of their excessive use of TikTok, and male students do not perform significantly differently from female students

in terms of their excessive use of TikTok. Jaramillo-Dent et al. (2022) proposed that users can choose to participate in different areas of content creation based on their personal interests, making TikTok more diverse and freer from gender stereotypes the content on TikTok covers a wide range of areas, including not only areas of interest that are traditionally defined by male and female gender roles, but also a lot of unisex and transgender content. This diversity makes it easier for users to find content that matches their interests, thus reducing the influence of gender on usage behavior. A comprehensive analysis of the relevant literature and examination of the data in this research revealed that excessive use of TikTok did not show a significant difference between genders.

This study discovered that there was a significant difference in the excessive use of TikTok among undergraduate students aged 20-21 compared to those under 17, 18-19, 22-23, and 24+ years old. There is a significant difference in TikTok usage based on age, as those aged 20-21 are more likely to use TikTok excessively compared to those under 17, 18-19, 22-23, and 24+ years old. Different age groups allocate and organize their daily time differently, with discrepancies in excessive TikTok usage playing a role.

Changchun & Rui (2022) found that in a study of 4172 national large samples, the length of time spent on social media is connected to age; older age groups tend to use social media for a longer time compared to younger age groups. This prolonged use may eventually contribute to feelings of loneliness and impact quality of life, possibly stemming from differences in social media behaviors between the two age groups. According to Li (2022), the majority of TikTok users, 85%, are under 24 years old; TikTok possesses social features that help users reach self-fulfillment and sustain lasting emotions.

Future studies could broaden the age range of participants to investigate the effects of excessive TikTok usage on the psychology of individuals and groups across a wider spectrum of ages. Additionally, future studies could analyze the development of overuse of TikTok from various angles within social and individual contexts to establish a comprehensive theory on the subject.

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