

# Psychological phenomenon analysis of short video users' anxiety, Addiction and Subjective well-being

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<https://doi.org/10.5392/IJoC.2022.18.1.027>

Manuscript Received 18 October 2021; Received 25 March 2022; Accepted 26 March 2022

**Abstract:** *Short videos are becoming more popular in mobile Internet age. Not only people's media consumption patterns have been changed by the rise of this new media form, but also it has posed challenges to public psychological well-being. For many netizens, their entertainment needs have been met by watching short videos. However, many side effects, such as addiction and anxiety, reduce users' subjective well-being instead of satisfying the entertainment motivation after watching short videos. Therefore, it has become a significant research problem in short videos to figure out how to get audiences to watch short videos on a regular basis while avoiding side effects like anxiety and addiction and improving audiences' subjective well-being. Based on the theory of Internet addiction, this study analyzed short video users using the 2x2x2 research method and explored the relationship between the length of use, addiction, anxiety, and subjective well-being of short video users. The results showed that short video users with different usage lengths showed significant differences in addiction, anxiety, subjective well-being, and online social support; innovative different short video users showed significant differences in addiction and anxiety, as well as a triadic relational interaction of short video users' anxiety under the interaction with self-efficacy and online social support. This study contributes to the advancement of internet addiction theory research and application, assisting short video users in avoiding addiction and anxiety, and improving the subjective well-being of short video users, thereby promoting the growth of the short video industry.*

**Keywords:** Anxiety; Addiction; Subjective Well Being; Short video

## 1. Introduction

New media not only serves as an emerging force driving online consumption, production, and engagement but also poses media challenges for society as a whole. As short video applications such as Tik Tok and Kwai become more and more increasing popular in China, the number of people addicted to short videos is also increasing. According to the 47th Statistical Report on the Development of China's Internet by China Internet Network Information Center (CNNIC), as of December 2020, As of March 2020, China has 927 million online video users (including short video users), which accounts for 93.7 percent of China's overall Internet users; among them, 873 million were short video users (accounting for 88.3 percent of China's total Internet users [1]).

The fragmentation and mobility of short video content make it easier for users to become addicted. At this stage, watching short videos has become an essential way of leisure and entertainment for people, and many people are addicted to watching short videos on cell phones, which has a negative impact on their academic performance, social lives, and professional endeavors, as well as their physical and emotional well-being. At the same time, people's anxiety increases in the face of social survival pressure. In order to better enhance people's subjective well-being and reduce their anxiety, it is necessary to conduct statistical analysis on the short video using a population with different short video viewing hours and different education levels to understand the relationship between the variables. The purpose of this study is to explore the problems of anxiety, addiction, and reduced subjective well-being that short videos bring to users, to analyze the viewing behavior of different

user groups of short videos, and to propose measures to solve the problems so that viewers can develop the habit of watching short videos in moderation and promote the healthy development of short video scholarship and industry.

The findings of this study provide the following contributions. First, this study explains that short video users with different lengths of use have significant differences in addiction based on internet addiction theory, contributing to the extension of internet addiction theory, broadening the scope of application of internet addiction theory, and enriching related research. Second, our study finds that innovative short video users have differences in addiction and anxiety, which implies that short video platforms need to consider the characteristics of different users when pushing short videos to avoid the degradation of user experience. Third, this study finds that short video users' anxiety shows a triadic relational interaction under the interaction of self-efficacy and online social support, contributing to future academic research on the anxiety characteristics of short video users. Fourth, our study provides practical suggestions for the development of short videos, which is conducive to promoting the healthy development of short videos.

## 2. Literature review and research hypothesis

Psychologist Young (1996) was the first to investigate the negative effects of the Internet on users and introduced the concept of Internet Addiction [2]. The short video application completes "personalized recommendation" through big data analysis, helping users push the content they are interested in to immerse users in it, making it easy for them to become addicted to short videos. Once this habitual stimulation is interrupted, it will be harmful to the viewers' mental health due to the degree of addiction. Internet addiction is the psychological side of overuse behavior, a network use disorder, and excessive network use will lead to network addiction [3]. Network overuse is a problematic network use behavior that involves spending too much time on the network, losing control, or even compulsive use [4]. As users invest a lot of time and energy on the Internet, it causes them to neglect their regular school life and work, affects their normal interpersonal relationships, and even their physical and mental health. Internet addiction is characterized by compulsive use of the Internet, an inability to control time and behavior, and an increased dependence on Internet use due to the satisfaction it brings. Weinstein (2010) found that personality traits, parental and family factors, alcohol consumption, and social anxiety predicted Internet addiction or overuse [5]. Khang (2013) examined the effects of three factors, self-esteem, self-efficacy, and self-control, on media users' traffic experiences and addiction levels, and found that self-efficacy had the greatest impact on Internet addiction [6].

At present, domestic and foreign research on viewers' Internet addiction has made more research results, developed the Internet addiction test scale, studied the influence of factors such as self-efficacy, anxiety, and online social support on Internet addiction, and studied the relationship between personal and family environment and Internet addiction. However, in the full-media environment, short videos have been embedded in various mobile applications, and viewers are very easily drawn to short videos while using mobile applications and then easily addicted to them. Due to the tremendous stress of modern life, which has caused the alienation of interpersonal relationships and led to an increase in the need for social support, people have started to use online socialization as a substitute for social activities in real life. Excessive use of online services with social attributes, such as short videos, is an essential cause of Internet addiction [7]. While short videos bring convenience to people's lives and entertainment, they also lead to short poisoning videos. Therefore, it is necessary to study the characteristics of people who watch short videos. Based on this, the following hypotheses are proposed:

**H1: Different short video users watch short videos for different lengths of time, and there are differences in the addiction characteristics of different groups.**

The University of Salford surveyed 298 social media users, which showed that 50% of participants said social media made their lives worse, and 66% said they had difficulty relaxing or sleeping and experienced symptoms of anxiety after using social media [8]. User anxiety in social media comes not only from the external characteristics of social media platforms, such as system characteristics and information characteristics, but also from the personality traits and social interaction factors of users [9]. When it comes to user-generated content, social media sites encourage the sharing of personal information. On the other side, social media platforms allow users to build new social contacts or preserve old ones by exposing personal information. Personal information privacy leakage, on the other hand, is becoming more and more prevalent as social media users

share more information. A correlation between anxiety and short video consumers' personal characteristics must be studied.

Subjective well-being emphasizes people's perceptions and experiences of their state of life and is a subjective assessment of the quality of their lives [10]. Subjective well-being has two dimensions: one is life satisfaction, which is the individual's cognitive evaluation of the overall quality of life; the second is an emotional experience, which is the positive and negative emotional experience that the individual experiences in life [11]. Research on short videos and subjective well-being has focused on the effect of watching short videos on subjective well-being and the mechanism, but there are differences in whether short video viewing can improve subjective well-being. According to some studies suggest that short video viewing can lead to a greater sense of online social support, which in turn enhances the subjective well-being of individuals [12]. The intensity of self-representation in short videos significantly increases subjective well-being, and specifically, in all dimensions of subjective well-being, the intensity of self-representation significantly increases positive affect. Short video viewing can also effectively enhance self-evaluation, and thus subjective well-being: for example, by liking and commenting on social networking sites, more positive feedback can be obtained, and thus subjective well-being can be enhanced [13]. However, it has also been suggested that short video viewing tends to induce self-referential attributions and thus reduces individuals' evaluation of their self-worth, triggering negative emotions and negative perceptions of self, which leads to a decrease in subjective well-being: for example, individuals who are overly concerned about their appearance are more concerned about the gap between their body shape and social standards, and individuals show more anxiety [14]. From the existing research literature, the effect of short video viewing on subjective well-being has failed to achieve a consistent effect. Therefore, it is necessary to investigate whether there are differences in well-being between different short videos using groups in terms of their attributes.

Individuals' social and psychological needs induce their craving for social media, especially when their needs are not met in offline situations, and individuals become more eager to seek satisfaction from social media. Once satisfied, this behavior can rapidly intensify and eventually spiral out of control, creating an addiction to social media [15]. Content-based mobile social products generate user anxiety related to the amount of time they spend on continuous use [16]. Primack et al. found that prolonged use of social media and switching use between multiple platforms increased users' anxiety and depressive states and decreased their subjective well-being. However, there is less research on the relationship between attributes of short video users and anxiety and subjective well-being, so it is necessary to study different groups of short video users' attributes.

Based on this, the following hypotheses are proposed in this study:

**H2: There are differences in the anxiety characteristics of short video users according to their viewing duration.**

**H3: Differences in subjective well-being of short video users according to their viewing time.**

Few papers investigate the interactions between short video addiction, anxiety, subjective well-being, and short video users' attributes. Therefore, it is necessary to study the interaction effects of variables that produce effects on addiction, anxiety, and subjective well-being. Based on the above analysis, the three factors of self-efficacy, consumer innovation, and online social support are selected in terms of consumer attributes, and the population of short video users is divided according to different usage times and education. Then the addiction, anxiety, and subjective well-being of different short video users are explored, using Internet addiction theory as a framework. Based on this, the following hypotheses are proposed:

**H4: The effect of interaction between consumer innovation, self-efficacy, and online social support affects addiction.**

**H5: The interaction effect between consumer innovation, self-efficacy, and online social support affects subjective well-being.**

**H6: The interaction effect between consumer innovation, self-efficacy, and online social support affects anxiety.**

### 3. Research methods

At present, short video users are most short video users are between the ages of 20 and 24, and the age of the user population overlaps highly with the age of the college student population. Therefore, the subjects of

this study were mainly college students. This study used the revised version of the Chinese Internet Addiction Scale (CIAS-R), revised by Taiwanese scholar Shu-Huei Chen. This scale was developed by Professor Shu-Huei Chen in Taiwan in 1999 with a sample of college students and based on the diagnostic criteria of various addiction symptoms. There are four dimensions to the scale: compulsive symptoms, tolerance symptoms, interpersonal health problems, and time management problems. To ensure the reliability and validity of the scale, this study adjusted and modified the scale items according to the cell phone short video usage scenarios of short video users based on the reference of mature scales at home and abroad.

The State Anxiety Inventory Scale (SAI) was proposed by Cruise, Case, & Bolton (1985) and revised by Wang, Xiangdong, Wang, Xilin, and Ma, Hong (1999) to make it more understandable. For example, physiological state: nervousness, shortness of breath, etc.; emotional state: fear, dread, anxiety, etc.; cognitive state: excessive worry about danger, fear of losing control and causing life-threatening; behavioral state: avoidance, trembling. According to short videos, the anxiety scale in terms of emotional states was mainly used. The subjective well-being scale was selected from the scale made by Diener, which divided the subjective well-being scale into two dimensions: affective and cognitive. Emotion refers to the emotional experience felt by the individual in real life; cognition refers to the individual's cognitive assessment of the quality of life, e.g., life satisfaction. A 5-point Likert scale was used (1=Strongly disagree, 2=General agreement, 3=agreement, 4=very agreement, 5=Completely agree).

### 3.1 Statistical Processing

Data for this study were input into a computer using SPSS 25.0 software for descriptive statistics and mean computation. The data was analyzed using Pearson correlation analysis and multiple regression analysis. Differences between groups of data were compared using ANOVA and chi-square test.  $p < 0.05$  was considered a statistically significant difference.

### 3.2 Survey statistics

The questionnaire was released on the questionnaire star platform, and the research was conducted by self-distribution and commissioning a research company to distribute the questionnaire to short video users nationwide. The questionnaire was distributed from March 1 to 20, 2021, and 309 questionnaires were collected. The questionnaires were screened to eliminate those with short response time and regularity, and finally, 269 valid questionnaires were obtained, with an efficiency rate of 87.06%. The sample's descriptive statistics are shown in Table 1, the maximum age of watching short videos is 18~24 years old. Regarding the respondents watching short videos on cell phones, those with a duration of half an hour to one hour were the most numerous, up to 40.15%.

**Table 1.** Sample characteristics

		Frequency	The percentage(%)
Gender	Male	66	24.54
	Female	203	75.46
Age	Under the age of 18	5	1.86
	At the age of 18 to 24	224	83.27
	25 to 30	26	9.67
	31-35 years old	7	2.6
	More than 35 years old	7	2.6
Education level	Under the high school	2	0.74
	College	24	8.92
	Undergraduate course	208	77.32
	Master	22	8.18
Usage time	Doctor	13	4.83
	Within half an hour	67	24.91
	Half an hour to an hour	108	40.15
	An hour to two hours	55	20.45
	More than two hours	39	14.5
Total		269	100

### 4. Research results

In this study, the empirical data were analyzed with the help of SPSS, and the reliability validity of the scale was tested using consistency reliability, convergent validity, and discriminant validity.

#### 4.1 Reliability analysis

To verify whether the questions have trustworthy internal consistency (internal consistency), and to determine the reliability by Cronbach's  $\alpha$  and composite reliability. In this study, the reliability of the item scale variables was determined by measuring Cronbach's  $\alpha$ . Analyzing the reliability according to the criteria showed that the reliability could be determined as not problematic when the Cronbach's  $\alpha$  was above 0.6, and the reliability was relatively high when it was above 0.8. The reliability analysis results of the measured variables are shown in Table 2.

**Table 2.** Exploratory factor analysis

Factors	Item	Factor loading						KMO
		1	2	3	4	5	6	
Online social support	Online social support3	.900						0.91
	Online social support2	.854						
	Online social support1	.853						
	Online social support4	.822						
Short video addiction	Addiction2		.902					0.906
	Addiction4		.833					
	Addiction3		.827					
	Addiction1		.811					
Consumer innovation	Consumer innovation3			.872				0.866
	Consumer innovation2			.855				
	Consumer innovation1			.779				
	Consumer innovation4			.726				
Self-efficacy	Self-efficacy3				.886			0.842
	Self-efficacy2				.804			
	Self-efficacy4				.795			
	Self-efficacy1				.677			
Subjective well-being	Subjective well-being2					.838		0.816
	Subjective well-being3					.706		
	Subjective well-being5					.678		
	Subjective well-being1					.650		
	Subjective well-being6					.537		
	Subjective well-being3						.818	
anxiety	Subjective well-being3						.811	

Subjective well-being4					.797
Subjective well-being5					.785
KMO	.851	Bartlett	Sig		.000

*Note: P<0.005\*, P<0.01\*\*, P<0.001\*\*\**

#### 4.2 Descriptive statistics of variables and group variables

In order to test the hypothesis of this study, the independent variables were divided into high and low group groups, and the sample groups were more appropriately divided based on the mean value. Therefore, the groups were divided according to the mean value of the sample. Specifically, the mean value of self-efficacy was 3.6896, the mean value of online social support was 2.6413, and the mean value of consumer innovation was 3.7277. This study hypothesized that self-efficacy (high vs. low), online social support (high vs. low), and consumer innovation (high vs. low), would be designed as 2x2x2. As shown in Table 3.

**Table 3.** Characteristics of independent variables

Frequency Table			
High and low group		Explanation of variable values	N
Low&high Self-efficacy	1.00	Low Self-efficacy	139
	2.00	High Self-efficacy	130
Low&high online social support	1.00	Low online social support	130
	2.00	High online social support	139
Low&high consumer innovation	1.00	Low consumer innovation	115
	2.00	High consumer innovation	154

Based on the theory of Internet addiction, this study investigated users' behavior of watching short videos and the differences among different groups of users. 269 valid questionnaires were collected through the WENJAUNXING online platform, and ANOVA was used to conduct the study. The results showed statistical differences in self-efficacy, short video addiction, anxiety, subjective well-being, and online social support among users with different duration of short video use.

**Table 4.** ANOVA analysis

Descriptive statistics								
	Time(minute)	N	M	SD	SE	F	P	Post-analysis
Addiction	<30(a)	67	1.7612	0.98707	0.12059	27.358	***	Scheffe
	30-60(b)	108	2.2407	0.93161	0.08964			Verification
	60-120(c)	55	2.5045	0.91729	0.12369			n
	>120(d)	39	3.4744	1.02565	0.16424			d>c, b, a
Anxiety	<30(a)	67	2.9751	0.89200	0.10898	4.337	.005**	Scheffe
	30-60(b)	108	3.1883	0.90490	0.08707			Verification
	60-120(c)	55	3.0061	0.92628	0.12490			n
	>120(d)	39	3.5812	0.87766	0.14054			d>a, c
Subjective well-being	<30(a)	67	2.4239	0.86866	0.10612	2.893	0.036*	LSD
	30-60(b)	108	2.4870	0.82814	0.07969			Verification
	60-120(c)	55	2.5673	0.86218	0.11626			n

	>120(d)	39	2.9026	0.90014	0.14414			d> b, a
online	<30(a)	67	2.3358	1.19385	0.14585			Scheffe
social	30-60(b)	108	2.6065	0.94362	0.09080	5.631	0.001*	Verificatio
support	60-120(c)	55	2.6909	0.98126	0.13231		*	n
	>120(d)	39	3.1923	1.10837	.17748			d>a,b

*P*<0.005\*, *P*<0.01\*\*, *P*<0.001\*\*\*

4.3 Interaction of low self-efficacy and online social support variables in groups with high consumer innovation

The findings suggest that short-form video innovation by consumers has an impact on addictive behavior and anxiety. When self-efficacy and online social support interact, there are disparities in anxiety among those who watch short videos.

First, in terms of addiction to short videos, higher self-efficacy was associated with higher addiction among the group with high consumer innovation. Second, in terms of subjective well-being, the lower the self-efficacy, the lower the subjective well-being in the group with high consumer innovation. In terms of anxiety, a triadic relational interaction was presented.

The more anxious a person is, the less self-efficacy they have, and the more online social support they have. On the other hand, in the group with high consumer innovation, short video users with high self-efficacy and high online social support are more likely to be anxious. This shows that online social support is a core factor in regulating self-efficacy for those with low consumer innovation.

Research hypothesis 4 is that "the interaction effects between consumer innovation, self-efficacy, and online social support influence short video addiction." To test this hypothesis, ANOVA analysis was conducted, and the effects of each independent variable on the dependent variables and the interactions between the variables were analyzed. The results showed that the level of addiction of short video users differed under the interaction between consumer innovation and self-efficacy. In the group with higher consumer innovation, short video users with high self-efficacy were prone to addiction. Online social support (*F*=23.434, *p*<0.000) and consumer innovation (*F*=4.205, *p*<0.041) emerged as the main effects on addiction. The interaction between consumer innovation and self-efficacy on addiction outcome values were outcome values at the *p*<0.05 level (*F*=7.419, *p*=.007). Specifically, short video users were more likely to experience addiction in the group with lower self-efficacy than those with higher consumer innovation during short video viewing.

**Table 5.** Self-efficacy, online social support, consumer innovation, and short video addiction analysis results

Test of Between-subjects Effects					
Dependent variable : Short video addiction					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	52.976a	7	7.568	7.461	.000
Intercept	1073.716	1	1073.716	1058.569	.000
Low&high Self-efficacy	.659	1	.659	.650	.421
Low&high online social support	23.769	1	23.769	23.434	.000
Low&high consumer innovation	4.266	1	4.266	4.205	.041
Low&high Self-efficacy*Low&high online social support	.803	1	.803	.792	.374
Low&high online social support*Low&high consumer innovation	7.526	1	7.526	7.419	.007
Low&high online social support*Low&high consumer innovation	.091	1	.091	.090	.765
Low&high Self-efficacy*	.371	1	.371	.366	.546

Low&high online social support\*Low&high consumer innovation

Error	264.735	261	1.014
Total	1808.438	269	
Corrected Total	317.711	268	

a. R Squared = .167 (Adjusted R Squared = .144)

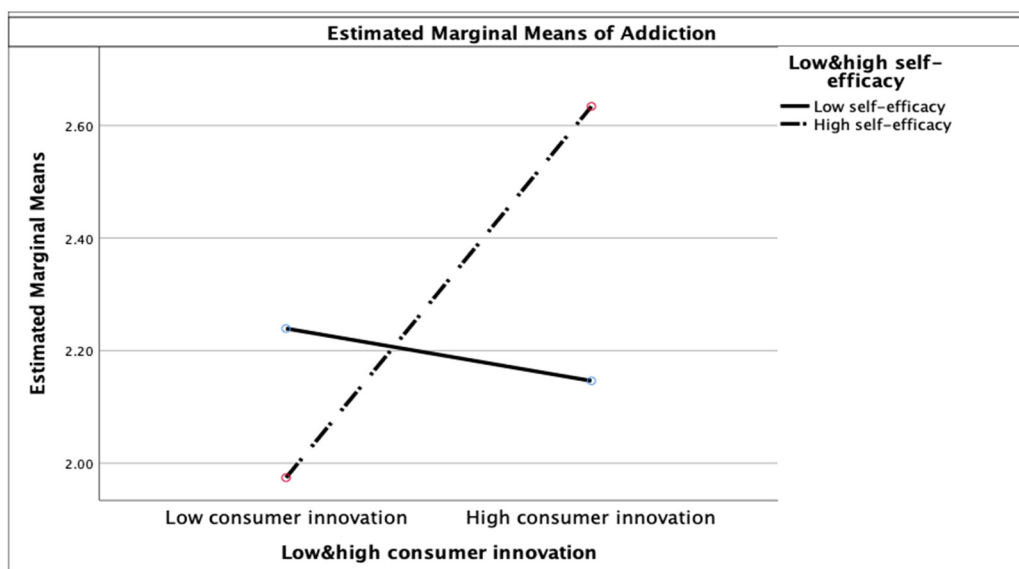


Figure 1. Low&high Self-efficacy\*Low&high consumer innovation interaction effect

Consumer innovation, self-efficacy, and online social support interacted to improve subjective well-being, according to research hypothesis 5. After doing an ANOVA study and looking at the differences in dependent variables as well as their interactions, this hypothesis was tested. The analysis of the interaction between the variables of subjective well-being showed that the interaction effects of consumer innovation and self-efficacy showed differences in subjective well-being. The subjective well-being of short video users with high self-efficacy was higher in the group with higher consumer innovation. The interaction of consumer innovation, self-efficacy, and social support all had an effect on subjective well-being. Among them consumer innovation ( $F=4.155, p=0.043$ ), self-efficacy ( $F=23.351, p=0.000$ ), and social support ( $F=4.461, p=0.036$ ). Therefore, with the interaction of consumer innovation and self-efficacy ( $F=14.978, p=0.000$ ), short video users are more likely to have subjective well-being.

Table 6. Results of the analysis of self-efficacy, social support, and consumer innovation in subjective well-being

Test of Between-subjects Effects					
Dependent variable : subjective happiness					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	35.867a	7	5.124	8.124	.000
Intercept	1256.979	1	1256.979	1993.088	.000
Low&high Self-efficacy	2.621	1	2.621	4.155	.043
Low&high online social support	14.727	1	14.727	23.351	.000
Low&high consumer innovation	2.813	1	2.813	4.461	.036
Low&high Self-efficacy*	.039	1	.039	.062	.803
Low&high online social support					



Low&high Self- efficacy*Low&high consumer innovation	9.446	1	9.446	14.978	.000
Low&high online social support*Low&high consumer innovation	.262	1	.262	.416	.519
Low&high Self-efficacy* Low&high online social support*Low&high consumer innovation	.675	1	.675	1.071	.302
Error	164.605	261	.631		
Total	1946.840	269			
Corrected Total	200.471	268			

a. R Squared= .179 (Adjusted R Squared= .157)

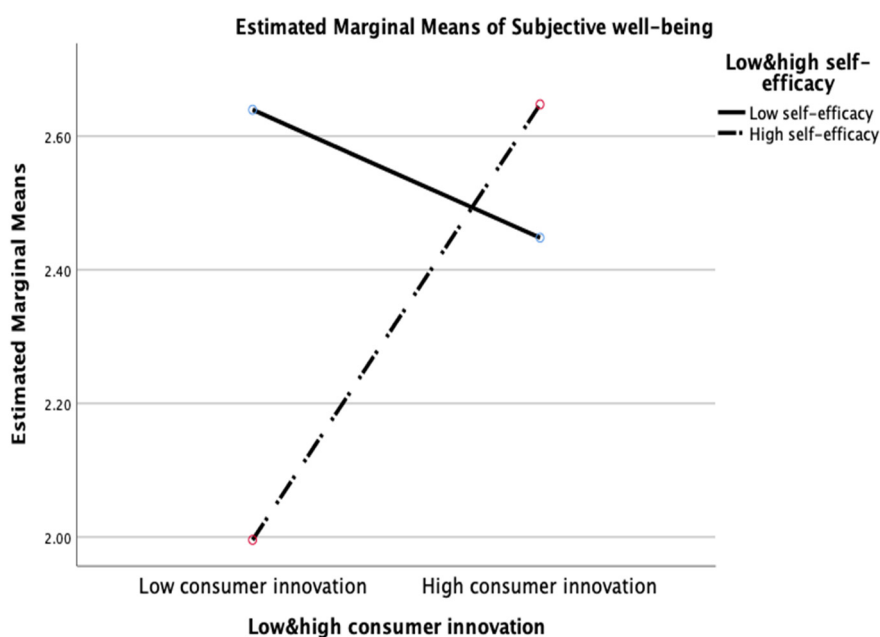


Figure 2. Low&high online social support\*Low&high consumer innovation interaction effect

Hypothesis 6 was that "the interactive effects of consumer innovation, self-efficacy, and social support affect anxiety." In order to test this hypothesis, ANOVA analysis was conducted, and the differences between independent variables in terms of dependent variables and interactions between variables were analyzed. The results showed that: There was a ternary interaction between consumer innovation, self-efficacy, and social support on the anxiety of short video users. According to the figure below, in the group with a relatively low level of consumer innovation, the more anxious the group with low self-efficacy and high social support. On the other hand, short video users with high self-efficacy and high social support are more likely to be anxious in the higher consumer innovation clusters.

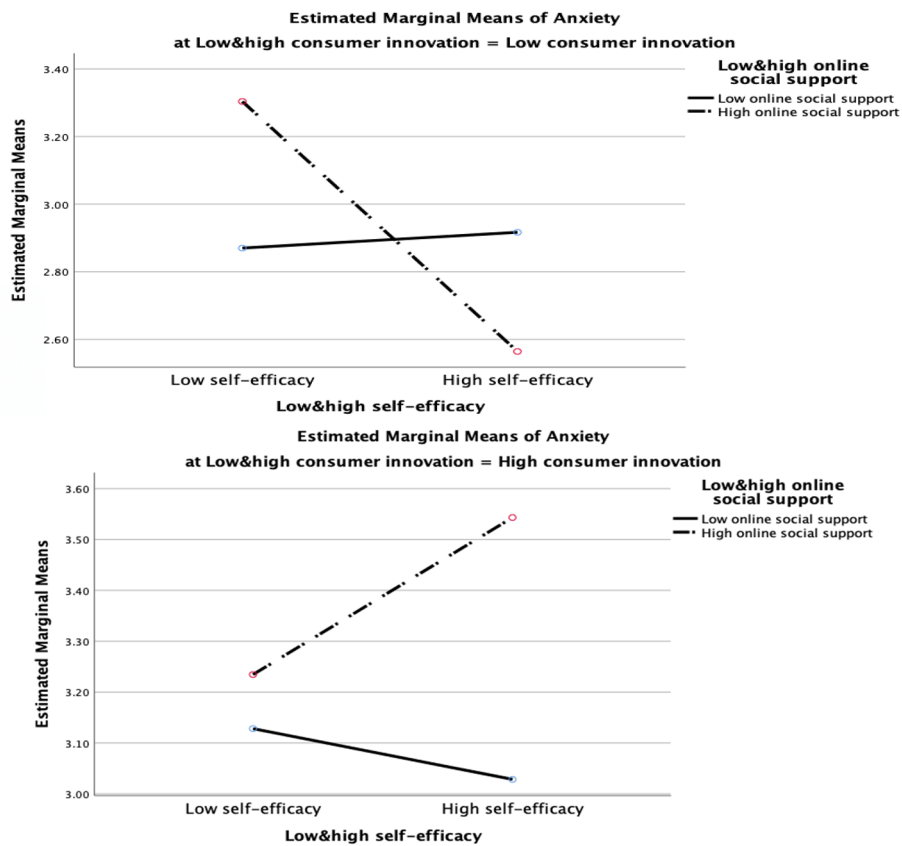
Table 7. Results of the analysis of self-efficacy, social support, and consumer innovation on anxiety

Test of Between-subjects Effects					
Dependent variable: anxiety					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	18.857a	7	2.694	3.389	.002
Intercept	2006.464	1	2006.464	2524.192	.000
Low&high Self-efficacy	.778	1	.778	.978	.324

Low&high online social support	1.637	1	1.637	2.060	.152
Low&high consumer innovation	5.437	1	5.437	6.840	.009
Low&high Self-efficacy*					
Low&high online social support	.474	1	.474	.596	.441
Low&high Self-efficacy*Low&high consumer innovation	2.698	1	2.698	3.394	.067
Low&high online social support*Low&high consumer innovation	.968	1	.968	1.217	.271
Low&high Self-efficacy*Low&high online social support*Low&high consumer innovation	4.738	1	4.738	5.960	.015
Error	207.467	261	.795		
Total	2903.778	269			
Corrected Total	226.324	268			

a.  $R^2 = .083$  ( $R^2_{adj} = .059$ )

**Low&high self-efficacy \* Low&high online social support \* Low&high consumer innovation**



**Figure 3.** Low&high Self-efficacy\*Low&high online social support\*Low&high consumer innovation interaction effect

## 5. Conclusions and implications

In the study, no significant difference was found between boys and girls in terms of short-form video addiction, which is consistent with previous research findings [18]. As the short video space grows, guys are just as likely to become addicted to short videos as girls. Men enjoy the content of short videos just as much as women do, and short videos are more in line with people's current aesthetic tastes.

The study found statistically significant differences in short video addiction, anxiety, subjective well-being, and online social support across different groups among 269 people who used short videos at varying lengths. The findings show that different groups of short video users have different duration of continuous viewing, as well as there are significant differences in addiction characteristics, anxiety, and subjective well-being of short video users. Short videos accurately push users' exciting content based on big data algorithms, so users can always watch the videos they are interested in. Short video platforms constantly give users a high intensity of video pleasure, which gives short video users a feeling of higher subjective well-being.

However, a long time of short video viewing will stimulate the user's brain, and when the brain adapts to this viewing stimulus, it will want to feel this stimulus repeatedly, which will make the user increase the length of short video viewing thus creating short video addiction. Once addicted to short video viewing, people sacrifice their sleep time, study time, and social time, causing harm to their bodies and interrupting with their work, study, and health. Although short video users are aware of their addiction to short videos and consciously stop watching short videos or even uninstall the application, suddenly stopping short video viewing can cause anxiety and depression. This is consistent with the findings of Yang Y et al. [19].

Watching short videos indulged in for a long time will make people gradually adapt to the online life and form the habit of online life. The richness of short video content also allows viewers to trust online information to a certain extent. Therefore, people who use short video applications more frequently are also willing to seek support through the Internet when encountering difficulties. Based on the theory of Internet addiction, this study investigated the interactive effects of consumer innovation, self-efficacy, and social support on anxiety, addiction, and well-being of short video users by comparing the use of short videos with the interaction of different variables. Differences in consumer innovation of short videos exist in addiction and anxiety, as well as in the interaction with self-efficacy and online social support, which have an impact on the anxiety of short video users. First, in terms of addiction to short video users, the higher the self-efficacy, the higher the addiction in the group with high consumer innovation. Secondly, regarding subjective well-being, the lower the self-efficacy, the lower the subjective well-being in the group with high consumer innovation. A triadic interaction was presented in the group with lower consumer innovation in terms of anxiety: the lower self-efficacy and high social support, the more anxiety-prone.

On the other hand, short video users with high self-efficacy and high social support were more anxious in the higher consumer innovation clusters. This shows that social support is a core factor in moderating the negative effects of self-efficacy for those with low consumer innovation. Internet addiction shows a growing trend, and short video users with a high frequency of short video APP usage and long usage time have a high tendency of Internet addiction. Internet addiction has become a severe mental problem with the continuous updating of smartphones.

Although there are many short video users in other age groups, compared to mature short video users, college students in this age group often have not formed mature values and therefore are more susceptible to interference from other factors, which can easily lead to short video addiction. Schools and parents will manage younger short video users. Therefore, the harm caused by short video addiction among college students will be even more significant. Short video addiction have a negative impact on the psychological health of college students and reduce the subjective sense of well-being. College students are an essential reserve of future talents of the country, which is of great significance to the development of the country and the nation. If we ignore the phenomenon of college students' addiction to using short videos, it will cause severe problems to society. Therefore, the education department must take corresponding measures to reduce short video addiction among college students. Schools and society should pay attention to the mental health of college students and offer relevant courses to reduce the probability of psychological addiction among college students. In addition, schools and society should provide early psychiatric assistance to college students who have already showed signs of short video addiction. From the perspective of short video producers and industry practitioners, they should balance social and economic benefits, provide high-quality creative content, control people's time of use appropriately and reasonably, and improve the anti-addiction system. It is in everyone's best interest to work together as a society to curb the spread of Internet addiction and improve the happiness of short video users.

The short-video can only grow healthily if the phenomena of short-video addiction is reduced, which will have a positive impact on both economic and social growth.

## 6. Limitations and future research

Although this article adds to our understanding of how short video apps affect user engagement, there are significant gaps in our understanding. First, limited by the scope of the survey, the primary respondents of this study are college students. Although there are also respondents from other occupations, the sample size is relatively small, so the follow-up study needs to examine more groups. Second, this study mainly focuses on the personal attributes of short video user applications, and future research can identify other critical influencing factors based on this study through other research methodologies like as rooting studies or interview surveys.

**Conflicts of Interest:** The authors declare no conflict of interest.

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