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The Impact of the Intensity of Short-Video Usage on the Anxiety Levels of College Students: The Mediating Effect of Sleep Quality on the Experience of Reality Nihilism

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Abstract. In recent years, short-video platforms have become very popular and are now used by many college students to learn and have fun. Research on the effects of short-video use on the mental health of college students has received considerable attention, but how different levels of short-video use affect anxiety is not well known. The extent to which college students use short videos and the level of their anxiety will be examined in this paper; at the same time, it will be determined whether sleep quality and real-life emptiness are related to this phenomenon. According to the research results, the degree of short-video use is positively associated with anxiety; however, it is found that people's immersion in and dependence on short videos have a greater impact on anxiety than the duration of use itself. At the same time, sleep quality and a sense of reality-nothingness are also related; among them, the intermediary effect of reality-nothingness is relatively stronger. Based on the above, it is proposed that college students should reasonably manage their use of short videos, enhance their own mental health and media literacy education in college, optimise content recommendation mechanisms, and work together to promote the mental health development of college students.

Keywords: Short Videos, College Students, Anxiety, Sleep Quality, Sense of Reality and Emptiness

1. Introduction

With the continuous development of the Internet, short-video platforms have gradually become popular in China and are now a very popular means for people to obtain information and be entertained [1]. They have moved beyond traditional media and are gradually being used by many college students every day. Research shows that college students have now become a large number of users of short-video platforms, and problems in their mental health, such as social media addiction and anxiety, are closely related to the degree of dependence. The more dependent a person is, the higher the probability of psychological risk [2]. Short videos have become very popular and popular because of their brevity, speed and attractiveness. The platform will also continuously push content according to the browsing interests of users, and many people who initially only wanted to pass the time and relax for a few minutes will unintentionally watch for two or more hours.

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Secondly, the college stage is a period of high pressure; many students have just become young adults, are very uncertain about the future, and also have to face problems such as their studies, interpersonal relationships, and living alone away from their parents. Multiple reasons are responsible for the rise in psychological pressure and anxiety among college students, and recent research has shown that poor sleep quality is also correlated with anxiety and depression in college students; therefore, sleep problems may be one of the reasons for poor mental health [3]. Therefore, in their free time, some students watch videos to relax and clear their minds, but over time, this way may actually bring new psychological problems. Especially when spending too much time in the world of short videos, it is easy to lose touch with real life and even develop a psychological desire to escape reality.

Recently, more and more research has been conducted on short videos and mental health. Most research has been conducted on how people's mental health changes as a result of short-video use. It has been found that watching short videos is harmful to the mental health of young people, and reasons such as staying up late and excessive time spent on the Internet are among them [4]. Research on the joint mechanism of sleep quality and the sense of reality nihilism is still in its early stages. Therefore, this paper will further investigate the mediating effects of sleep quality and the sense of reality nihilism.

2. Method

2.1. Theoretical foundations

The Uses and Gratifications Theory is a relatively young but important theory in the field of communication, put forward by Katz, Blumler and Gurevitch. According to this theory, the audience does not passively receive media information; rather, they are active and selective, using media flexibly according to their own needs to meet all sorts of requirements, such as obtaining information, entertainment, socializing, self-expression, etc. The basic feature of media use behaviour is that people consciously select it to satisfy their psychological needs.

Leon Festinger, an American social psychologist, first put forward the theory of social comparison in 1954. According to this theory, people judge their own capabilities, ideas and positions in society by comparing themselves with others; thereby, they can be aware of themselves better. Social comparison is mainly divided into upward and downward types. Upward comparison is to compare oneself with someone who is doing well or has a good situation, and downward comparison is to compare oneself with people who are relatively less fortunate. With the development of social media and short-video platforms, people have been exposed to many filtered and idealised pictures of their own lives, thus increasing their sense of inferiority in social comparisons. When people feel that there is a large distance between them and others, they may be in a bad mood and feel inferior or anxious.

Roy Baumeister and others from the field of social psychology proposed the theory of self-loss. The theory is that people have a limited amount of self-control resources, and as they use these psychological resources for various reasons such as self-control, attention regulation and will control, the resources are gradually depleted; therefore, self-control weakens.

2.2. Research design

Based on the test of the research hypothesis, a questionnaire survey was used to find out how often college students watch short videos and what kinds of anxiety they experience. Among them, the

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independent variable is the frequency of short video consumption, the dependent variable is anxiety among college students, and the mediating variables are sleep quality and reality emptiness. Therefore, this paper will be carried out by a survey using a five-point Likert scale.

Intensity is taken as the independent variable, and relevant scales for the intensity of short video use and existing research on this topic are employed. Metrics such as "average daily short video usage time" and "I often spend a long time watching short videos without realizing it" are used in the questions to explore how much college students are dependent on and immersed in short videos. A 5-point Likert scale is used for the questions, and a high score means it is often used.

Variable anxiety is measured by the General Anxiety Scale (GAD-7), which has good reliability and validity and is frequently used in anxiety assessment studies [5]. Generally speaking, the symptoms covered by this scale are tension, worry, irritability and difficulty relaxing, etc., and it consists of 7 items graded from 0 to 3. A higher total score indicates that the level of anxiety is higher.

The general level of sleep quality for people with intermediate variables over a certain time will mainly show changes in the amount of sleep and recovery. It is not only the duration of sleep but also other indicators such as how quickly one falls asleep, the continuity of sleep, the depth of sleep, and one's mental state upon waking. Sleep quality was mainly evaluated in this paper by the Pittsburgh Sleep Quality Index (PSQI), and it has been frequently used for research on sleep quality [6]. The Chinese version of the PSQI has shown good reliability and validity, and it will be observed how people sleep, assess their sleep quality, and have any issues during the day [7]. A high score indicates poor sleep quality.

Reality emptiness refers to a person's psychological state of emptiness, confusion and a lack of purpose in life; they are not interested in daily life, find it difficult to understand what gives life value, and have no goal or direction for the future. Based on the revised Subjective Emptiness Scale (SES Chinese edition), this paper will investigate people's degrees of emptiness and meaninglessness. This scale can be used to measure a person's sense of emptiness and lack of purpose in life. For example, the topic is "I often feel empty inside" or "I feel that life lacks meaning"; the higher the score, the more pronounced the sense of emptiness in life.

Full-time undergraduates aged 18 to 25 are the subjects of this paper, and 160 questionnaires will be distributed. Delete the invalid questionnaires and get, a total of 151 valid ones with an efficiency rate of 94.4 percent.

3. Results

Based on the analysis of 151 valid questionnaires, descriptive statistics, correlation analysis of variables, differences in motivation, and mediation effects of short video use on sleep quality and the sense of reality are presented in this chapter.

3.1. Reliability and validity test

First, before carrying out other statistics, it will check if the questionnaire is reliable and valid. According to the results, the Cronbach's α coefficients of the four subscales are between 0.736 and 0.855, and that of the total scale is 0.870; both are higher than the recommended value of 0.70, so there is good internal consistency and stability. Based on the results of the validity test, the KMO value is 0.842, and the Bartlett's sphericity test is at a significant level ($p<0.001$), so the sample data are suitable for factor analysis. Further exploratory factor analysis shows that there are 4 common factors, and the cumulative variance interpretation rate is 66.39%; thus, the scale has good

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structural validity. At the same time, the results of the Harman single-factor test show that the proportion of first-factor variance is 37.50%, which is below the critical standard of 40%, and there is no significant common method bias. In short, the scale employed in this study has good reliability and validity, and can be used for the next step of data analysis.

3.2. Related analysis

To study the connection between the use of short videos and anxiety among college students, this paper will use Pearson correlation to examine how different levels of use, length of use, etc., are associated with anxiety.

As shown in Table 1, the intensity of short video use is positively correlated with anxiety ($r = 0.309$, $p < 0.01$), and thus it can be concluded that college students with more anxiety tend to use short videos more frequently. At the same time, the length of time people spend watching short videos is positively correlated with anxiety ($r=0.227$, $p<0.01$); that is to say, the longer they watch, the higher their anxiety level.

By comparing the correlation coefficients, it can be seen that the correlation between usage intensity and anxiety is higher than that between usage duration; thus, people who are more involved in and depend on short videos are likely to experience more anxiety.

Table 1. Pearson correlation matrix for major variables (N=151)

variables	anxiety
usageintensity	0.309**
duration of use	0.227**

Note: ** indicates p<0.01 (double tail).

3.3. Difference analysis

To examine whether there are differences in anxiety levels among college students motivated by different short video usage, this study employed a one-way analysis of variance.

The variance homogeneity test meets the requirements (Levene = 0.539, $p > 0.05$), satisfying the prerequisites for one-factor variance analysis. Further analysis revealed that the overall differences in anxiety among different user motivation groups did not reach a statistically significant level ($F=1.517$, $p=0.223$).

Based on the mean distribution, college students motivated by entertainment and relaxation have the highest average anxiety ($M=8.183$), followed by the social interaction group ($M=8.154$), and the information acquisition group has the lowest ($M=7.048$). Although the mean difference in entertainment and relaxation between the two groups was as large as 0.087 and thus met the edge significance criteria, it did not reach the standard of statistical significance.

Therefore, it can be concluded that the various motives for using short videos are not significantly associated with different levels of anxiety in college students. Based on the general trend, it is expected that short-video users whose main reason for watching is entertainment will have higher levels of anxiety; however, this needs to be confirmed by increasing the size of the sample.

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3.4. Intermediate effect test

In order to investigate further why there is an increase in anxiety with the frequent use of short videos, Model 4 of the Hayes PROCESS plugin was employed in this study to examine the independent mediation effects of sleep quality and real-world emptiness. Bootstrapping 5,000 times to obtain the indirect effect and it is considered significant if its 95% confidence interval does not contain 0.

3.4.1. The mediating effect of sleep quality

As shown in Table 2, the intensity of short-video use is positively associated with sleep quality ($a=0.245$, $p<0.01$); that is to say, the higher the intensity of use, the worse the quality of sleep. Sleep quality can also be positively correlated with anxiety ($b=0.497$, $p<0.01$), which means that when one has poor sleep quality, anxiety tends to increase.

After adding sleep quality, the direct effect of short video use intensity on anxiety is no longer statistically significant ($c'=0.087$, $p=0.104$), but the indirect effect is 0.122; with a Bootstrap 95% confidence interval of [0.062, 0.195], it can be seen that sleep quality may act as a mediator. The indirect effect is 58.4% of the total effect, so it can be concluded that sleep quality acts as a middle link connecting the extent of short video use to anxiety. This is consistent with previous studies that have shown that the more addictive people are to short videos, the poorer their sleep quality is, which in turn harms the mental health of college students [8, 9].

Table 2. Mediating effects of sleep quality

Effects/Paths	Coefficient	SE	t	Bootstrap 95%CI
a: Usage intensity → sleep quality	0.245	0.044	5.62	—
b: Sleep quality → anxiety	0.497	0.090	5.49	—
c: Total Effect (Intensity → Anxiety)	0.208	0.053	3.96	—
c′: Direct effects	0.087	0.053	1.64	—
a×b: Indirect effects	0.122	—	—	[0.062, 0.195]

Note: Paths a, b, and c were all significant at the $p<0.01$ level; direct effect c′ was not significant ($p=0.104$); indirect effect intermediaries accounted for 58.4%.

3.4.2. The mediating effect of reality and emptiness

As shown in Table 3, the intensity of use is positively associated with reality nihilism ($a=0.210$, $p<0.01$), and at the same time, there is a higher level of anxiety ($b=0.630$, $p<0.01$). After adding reality nihilism, the direct effect is no longer significant ($c'=0.076$, $p=0.087$); the indirect effect is 0.132, Bootstrap 95% CI [0.052, 0.215], and there is no intermediary effect. The transmission of reality nihilism is more pronounced than that in the sleep quality pathway.

Based on the results of the two mediating analyses, it can be determined that the level of use of short videos does not directly impact anxiety among college students but rather reduces sleep quality and increases their sense of emptiness indirectly. Compared with the pathway of sleep quality, the transmission effect of reality nihilism is stronger, and this is in line with recent studies on how a lack of meaning affects the mental health of young people. It is a relatively important way that short videos can cause anxiety.

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Table 3. Mediating effects of reality and nothingness

Effects/Paths	Coefficient	SE	t	Bootstrap 95%CI
a: Usage intensity → sense of reality and nothingness	0.210	0.051	4.13	—
b: Reality emptiness → anxiety	0.630	0.068	9.33	—
c: Total Effect (Intensity → Anxiety)	0.208	0.053	3.96	—
c′: Direct effects	0.076	0.044	1.72	—
a×b: indirect effects	0.132	—	—	[0.052, 0.215]

Note: Paths a, b, and c are all significant at the $p<0.01$ level; direct effect c′ is not significant ($p=0.087$); indirect effect intermediates account for 63.4%.

4. Discussion

Based on this study, there is a positive correlation between the extent of short video consumption and anxiety among college students, and sleep quality is a mediator in the relationship between reality and emptiness. Based on the above study, the following recommendations are put forward:

Control how long people view short videos from the source. Research has shown that what is truly related to anxiety is not the length of time one has been using it, but rather the extent to which one has developed an addiction. Therefore, colleges and students should focus on whether they have lost control and become addicted, guiding students to change from passive recreational use to active learning through methods such as duration reminders and concentrated time management [10].

Grasp the two key links between sleep quality and meaning. Intensification mainly increases anxiety by disrupting sleep and heightening the sense of reality; thus, both should be addressed in the intervention, that is, sleep health education and reduced screen time. To help students rebuild a sense of purpose and interest, career planning, club activities, and connections with reality can be promoted.

Targeted Intervention for the High-Risk Group. Based on the supplementary analysis, it can be seen that the positive effect of usage intensity on anxiety is more pronounced in the lower grades and for students who use it frequently (more than 2 hours a day). It is recommended that college mental health education focus on students in the lower grades and serious short videos as the main objects of intervention, with prior prevention and targeted follow-up.

5. Conclusion

The number of times college students watch short videos may affect their anxiety, and this phenomenon can be moderated by sleep quality and the sense of reality. Based on the empirical analysis of 151 valid questionnaire responses, it was found that most college students are in a state of anxiety, and the amount of short video consumption among them is relatively high. Based on the analysis, it has been determined that there is a positive correlation between the frequency of short-video use and anxiety; specifically, individual dependence on and deep immersion in short videos are more strongly associated with anxiety than the length of time they are used. This shows that short videos are not only part of people's daily lives but may also be one of the reasons affecting the mental health of college students.

Further analysis showed that the quality of sleep and the sense of reality are both mediators in the relationship between the amount of short video use and anxiety. As an index of a person's condition in terms of sleep, sleep quality generally falls when their mental health is in a declining state.

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According to the study, the application of short videos has adversely affected the mental health of college students; at the same time, it has revealed some underlying reasons for this problem and provides a theoretical foundation to help improve mental health education and manage students' use of short videos in higher education.

The results of this study are in line with previous domestic research on the relationship between sleep quality and anxiety among college students, and thus it can be concluded that improving sleep quality can help reduce the anxiety of college students.

In the future, more longitudinal studies or experiments can be conducted on a larger number of people to determine whether short video use is the cause of anxiety. At the same time, social support, self-control and psychological resilience can also be added to extend the theoretical explanation of how short video use affects the mental health of college students.

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