



Statistical Analysis of the Data Processing Model of Sensation Seeking and Adolescent Mobile Addiction – The Mediation of Parent-Child Communication Problems and Peer Fear and Inferiority

Ting Wu¹ and Yuqing Zhang²(✉)

¹ Key Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Sciences, Beijing 100101, China

wt15313788950@163.com

² China Department of Psychology, University of Chinese Academy of Sciences, Beijing 101300, China

zhangyq@psych.ac.cn

Abstract. At present, teenagers play an important role in the use of smartphones, and their behavior problems have always been the focus of social attention. Studying the mechanism of teenagers' smartphone addiction has practical significance to reduce the use of problematic mobile phones. In this study, 312 junior and senior high school students were surveyed with the questionnaire method, and the data were analyzed by descriptive statistics and correlation analysis using Spss 26.0 to understand the basic characteristics of the variables; Secondly, this study uses the difference test function of spss to explore the differences between gender in various variables; Thirdly, this study uses Mplus7 to conduct structural equation model analysis on the data, and uses the method of intermediary model test to investigate the impact of feeling seeking, parent-child communication problems and peer fear and inferiority on mobile phone addiction. The results show that: (1) Sensory seeking can positively predict teenagers' mobile phone addiction; (2) Sensation-seeking can indirectly predict teenagers' mobile phone addiction through parent-child communication problems; (3) Feel-seeking can not predict teenagers' mobile phone addiction through peer fear and inferiority; (4) Peer fear and inferiority can positively predict teenagers' mobile phone addiction; (5) Parent-child communication problems can positively predict peer fear and inferiority. To investigate the status and characteristics of teenagers' mobile phone addiction, and explore the relationship between teenagers' feeling seeking, parent-child communication problems, peer fear and inferiority complex, and smartphone addiction at the same time, which will help to find out the potential influencing factors in time and help teenagers better prevent or reduce the generation of smartphone addiction to a certain extent.

Keywords: Sensation Seeking · Teenagers · Describe Statistical Analysis · Correlation Analysis · Difference Inspection · Intermediary Model Test · Parent-child Communication Problems · Peer Fear and Inferiority · Cell Phone Addiction

1 Question Raised

With the popularity of multi-function mobile phones in recent years, mobile phones have played an irreplaceable part in students' lives. As an essential channel for message acquisition and a terminal platform for leisure and entertainment, while bringing convenience to students' lives, the disadvantages of mobile phones have also been highlighted, especially the problem of students' mobile phone addiction in recent years, which has aroused widespread concern in society [1]. Some Chinese studies have shown that young people, an important audience of smartphones, use their smartphones very frequently. Birdwell (2011) conducted a survey on the addiction of British teenagers to mobile phones. The results show that 36% of British teenagers said they could not leave their mobile phones at all, could not control their using cell phones, and excessive using cell phones had brought some negative effects on their studies and life, Such as inattention in class, low learning efficiency and poor sleep quality [2, 3]. Middle school students are at a very important stage in their lives - puberty. They have insufficient self-control, lack the dialectical analysis ability to accept new things, and have limited ability to suppress impulses and resist temptations. They are prone to indulge in it, leading to smartphone addiction, which has a serious negative impact on physical and mental development and learning life. At present, various problems caused by smartphone addiction have brought many troubles to schools and families, and also aroused great concern from all walks of life [4]. Although many primary and secondary schools have explicitly prohibited students from carrying mobile phones onto the campus and actively supervised the use of young people's mobile phones, the detection rate of using cell phones problems and even cell phone overuse among young people is still high. The 39th China Internet Development Survey shows that as of December 2016, the number of middle school students is the largest group among Internet users, up to 25.0% of the total Internet users [25]. 11.5% of minor network users surf the internet above 2 h online on weekdays and 12.2% exceed 5 h online on holidays [5]. In the face of the tide of network information, without effective supervision, it is inevitable to cause tragedy. Middle school students are easily attracted by external temptations due to the critical stage of puberty development. To comprehend the mechanism of cell phone addiction, this study uses quantitative research methods to explore the key factors affecting their addiction.

2 Review of Previous Studies

2.1 Connection Between Sensation Seeking and Cell Phone Overuse in Adolescents

Cell phone overuse refers to an unconscious state of addiction caused by the frequent and improper using cell phones, with strong psychological and physiological symptoms [6]. The study found that mobile phone addiction accounts for a high proportion of teenagers; cell phone addiction will cause a series of physical, psychological, and social problems [9, 10]. There are many reasons for the formation of cell phone overuse, mainly personal reasons and external reasons. Feeling seeking is a long-term and stable personality trait of individuals, which affects many individual behaviors in daily life. High sensation seekers often pursue stimulation, novelty, and adventure, which may

induce risky behavior, aggressive behavior, internet addiction, etc. [38]. As a new type of addiction behavior similar to Internet addiction, mobile phone addiction may also be affected by sensation seeking. Bianchi and others investigated the effects of individual psychological elements on cell phone overuse and found that feeling seeking can predict individual cell phone use behavior and cell phone overuse [6, 30]. Related studies also confirmed that feeling-seeking can predict internet addiction in adolescents. In addition, recent empirical research supports the view that feeling-seeking may cause cell phone addiction. For instance, Wang Xiaoyun et al. (2014) confirmed the correlation between feeling seeking and cell phone overuse among university students. Wang et al. (2018) found in the sample of domestic secondary school students that feeling seeking is positively related to teenagers' intelligent phone addiction. Equally, research by Csibi et al. (2018) also shows that feeling-seeking can positively predict cell phone overuse [7]. According to these theories and empirical research, this study proposes hypothesis 1: Sensation seeking has a positive predictive effect on cell phone addiction.

2.2 The Mediating Role of Parent-Child Communication Problems in Sensation-Seeking and Mobile Phone Addiction

Based on the ecosystem theory put forward by Brownfin Brenner, in the process of social interaction, family and friends are the key factors affecting the individual development of students. The research also points out that the quality of parent-child and peer relations will have a significant influence on the behavior of teenagers [8]. Specifically, the parent-child relationship includes positive and negative relationships. A negative parent-child relationship means that the connection between teenagers and their parents is not harmonious, which is manifested in parent-child problematic communication and other behaviors (specifically, the "generation gap" caused by the misunderstanding between parents and children) [23]. In the era of a virtual network, face-to-face communication is less and less. Some parents are addicted to mobile phones and ignore communication with their children. The parent-child relationship is more and more delicate. Eriksson believes that people will experience trust and suspicion before they are two years old, and this contradiction must be solved within the past two years, otherwise, children will lack a sense of trust in later life, which may even affect interpersonal relationships [11]. Family system theory believes that family upbringing behavior plays a necessary part in the process of children's socialization. It has been shown that positive parental rearing patterns make children have more stable emotions, and lower levels of anxiety and depression, which makes them less prone to mobile phone addiction, while negative parental rearing patterns make offspring have more serious anxiety and pressure, lower psychological resilience, and self-esteem, which add the danger of children's cell phone overuse [12, 13, 34]. Although the parent-child relationship and parental rearing style are two different concepts, from the contents of the parent-child relationship diagnostic scale and parental rearing style scale, several major factors of the two are consistent, including refusal, overindulgence, over domination, overprotection, and other factors. Therefore, exploring the related research of parental rearing style and Internet addiction disorder can bring us useful inspiration to analyze the possible connection between

parent-child connection and Internet addiction disorder [14]. The parent-child communication problem is also a manifestation of a parent-child relationship, so we can infer that parent-child communication problems can predict teenagers' cell phone addiction.

In addition, we infer that parent-child communication problems may be related to sensation seeking. Feeling seeking is an individual's desire to engage in an activity to obtain a changing, novel, complex and strong feeling experience and be willing to take possible physical, social, economic, and legal risks [39]. Although previous studies mainly discussed the relationship between family-rearing styles and sensation-seeking, they found that sensation-seeking was significantly related to family-rearing styles. Specifically, disinhibition-seeking negatively predicted authoritative parenting styles. For example, Chen Lina and Zhang Ming found that the authoritarian and authoritarian parenting model will increase the possibility of middle school students' disinhibition of feeling seeking [15, 40]. De-inhibition is a dimension of feeling seeking. The increase in de-inhibition levels will lead to teenagers' inability to control their emotions well and make some improper behaviors, such as communication with parents prone to conflict and other problems. To sum up, we can see that there is a close relationship between feeling-seeking and parent-child communication problems. Based on the connection between parenting communication problems and cell phone overuse, and the relationship between parent-child communication problems and sensation seeking, this study proposed research hypothesis 2: sensation seeking and parent-child communication problems have a predictive influence on adolescent cell phone overuse behavior, and parent-child communication problems have an intermediary influence between sensation seeking and cell phone overuse.

2.3 The Intermediary Role of Peer Fear and Inferiority in the Relationship Between Sensation Seeking and Cell Phone Overuse

According to the development situation theory, individual development is the outcome of the joint influence of family, peers, and other elements [16]. Therefore, students will spend most of their time living and studying on campus, which is more affected by various aspects of the campus environment [17]. The teacher-student relationship and peer relationship on campus have an important impact on student's physical and mental development [22]. Zhang Ming and other researchers found that pupils with poor companion relationships are more probably to have mobile phone addiction [18]. Individuals with poor peer attachment have difficulties in establishing intimate and face-to-face relationships, which may lead individuals to turn to the Internet world, establish interpersonal relationships and seek interpersonal support through compensatory use of the Internet, thus increasing their risk of cell phone addiction [37, 38]. Research on adolescents also found that positive peer relationship has a significant negative predictive effect on problematic mobile phone use [19]. In addition, feeling seeking, as a characteristic level of individuals, has been proved by some studies that the level of feeling seeking is relatively high, and adolescents are easy to make bad companions [20]. This is because students with a high sense-seeking level are eager to pursue new and strong feelings and experiences, and are more likely to be affected by bad peer behaviors, resulting in some negative behaviors, such as cell phone addiction [20]. On the contrary, students with low sense-seeking levels are not easily affected by external stimuli. Even if there are

bad peer behaviors in the class (such as addiction to mobile games), their own behavior is rarely affected [20]. To sum up, we infer that the worse the peer relationship is, the higher the fear and inferiority of the peer in the communication process. Therefore, this study proposes research hypothesis 3: peer fear and inferiority can predict adolescents' mobile phone addiction, and peer fear and inferiority play a partial intermediary role in feeling seeking and mobile phone addiction.

2.4 The Link Between Parent-Child Connection Problems and Peer Fear and Inferiority

Finally, on the connection between parent-child communication and companion fear and inferiority, peer fear and inferiority is the subjective feeling of fear and inferiority generated by individuals in the process of peer interaction, which belongs to social self-consciousness [32]. Some studies have shown that parents' psychological control over teenagers will hinder the realization of teenagers' independence, thus generating more resistance psychology, and on the contrary, increasing the risk of their communication with bad peers, so they are prone to fear and inferiority complex in communication. In addition, the quality of the parent-child connection, such as problems in parent-child interaction, will also directly affect young people's friends [20]. The basic idea of the indirect effect model is that one kind of interpersonal relationship can indirectly affect the problem behavior of individuals through another kind of interpersonal relationship [31]. A friendly relationship is established and developed based on the parent-child relationship. If there are problems in parent-child communication, it will indirectly affect the relationship with peers. According to the attachment theory, the "internal working model" of self and others is formed in the process of establishing attachment with parents at the early stage of an individual, which will guide the establishment of the relationship between the individual and others (as partners) in the future [31]. In addition, empirical research on parent-child connection and companion communication also shows that parent-child conflict can positively predict peer conflict, that is, individuals who are prone to conflict with their parents are also prone to conflict in the process of peer interaction [23]. The worse the peer relationship, the higher the sense of fear and inferiority in the communication process. To sum up, we propose research hypothesis 4: parent-child communication problems can positively predict peer fear and inferiority.

3 Research Methods

3.1 Research Objects

A school in Beijing distributed questionnaires to students in junior high schools and senior high schools through the way of questionnaire stars. All the students surveyed obtained the informed consent of their parents, allowing students to withdraw in case of special circumstances during the filling process. 312 available questionnaires were received after sorting out, and the effective percent recovery was 100%. Among them, 137 boys (43.91%), and 175 girls (56.09%), 2 did not fill in age information, 1 did not fill in age information, 6 did not fill in class information clearly, and 2 did not fill in class information. 63 (20.2%) in grade 7, 71 (22.8%) in grade 8, 43 (13.8%) in grade 9, 53 (17%) in grade 10, 65 (20.8%) in grade 11, and 7 (2.2%) in grade 12 (see Table 1).

Table 1. Demographic information

	gender		year					
number	M (n=137)	F (n=175)	7(n=63)	8(n=71)	9(n=43)	10(n=53)	11(n=65)	12(n=7)
ratio	43.91%	56.09%	20.2%	22.8%	13.8%	17%	0.8%	2.2%

3.2 Research Tools

3.2.1 Sensation Seeking

The sense-seeking scale suitable for Chinese adolescents developed by Zhang Ming (2003) was adopted [4]. The scale has a total of 30 questions, which is composed of two dimensions: excitement and adventure seeking and disinhibition. It is widely used in China, is suitable for young people, and has good reliability and validity. The scale clones Bach α The coefficient is 0.86. In this study, when the scale is used for measurement, the clonal Bach of the scale α The coefficient is 0.929.

3.2.2 Parent-Child Connection Problems

The parent-child relationship gauge used in this study is a revised edition of the parent-child relationship scale compiled by Barnes and Olson in 1985 by Amber Shin (2004) and others [33]. There are 20 questions in the questionnaire, and the scoring method is a 5-point scoring method from “very disagree” (1 point) to “very agree” (5 points). In this study, 10 questions are used to measure the problem degree of parent-child communication, such as “Sometimes I am afraid to ask my parents”. Cronbach’s of the parent-child problem subscale α The coefficient is 0.865.

3.2.3 Fear of Inferiority Among Peers

The scale used in this study is the peer relationship scale compiled by Zou Hong (1998), which mainly examines the subjective feelings of individuals about their own peer relationships, including the peer acceptance subscale and the peer fear inferiority subscale [21, 32]. There are 30 questions in the questionnaire, which are scored with 4 points (1 = completely unqualified, 2 = not very qualified, 3 = relatively qualified, 4 = completely qualified). There are 10 items in the peer fear inferiority scale, all of which adopt positive scoring. The higher the total mark of 10 items, the higher the sensation of fear and inferiority in the process of peer interaction, and the worse the peer relationship. In this study, the dimension of peer fear and inferiority is used for research. Cronbach’s subscale α The coefficient is 0.794.

3.2.4 Cell Phone Addiction

This research adopts the Mobile Phone Addiction Index (MPAI) [2], which is compiled by Liang Yongchi, and revised by Huanghai. There are 17 questions in total and four dimensions: uncontrollability (individuals can’t control the use of mobile phones), withdrawal (individuals can’t adapt to leaving mobile phones), escape (individuals use

mobile phones to escape the real world), and inefficiency (individuals use mobile phones to lead to low learning and work efficiency). Using 5-point scoring, subjects were defined as mobile phone addicts if they had 5 positive answers to 8 screening questions. In this study α The coefficient is 0.914, in which the dimension is out of control α Coefficient is 0.837, abstinence α The coefficient is 0.828. The Escape α Coefficient is 0.847, low efficiency α The coefficient is 0.896, and the scale has good reliability.

3.3 Software Application and Data Processing

SPASS26 was used to conduct descriptive analysis, analysis of correlation, difference test, and other statistical analysis on the data, and Mplus7 was used to conduct structural equation model analysis on the data, to detect the mediation part of parent-child communication problems and peer inferiority fears in feeling seeking and mobile phone addiction.

Specifically, this study first used descriptive statistics analysis and correlation analysis to present characteristics between specific variables. Secondly, this study used analysis of variance to explore whether gender is significantly different between the variables. The t-test is a test used to compare the difference between two sample means, which uses the t-distribution theory to infer the probability of the occurrence of the difference and thus determine whether the difference between the two means is significant. In the case of unknown overall variance, the comparison of the two means is carried out with the t-test, and the t-statistic is calculated based on the original hypothesis according to a fixed formula. t-statistic in the t-test must obey the t-distribution; the formula for the t-statistic (before the one-sample t-test, after the independent sample t-test) P-value is used to reject the probability of the original hypothesis HO, compared with the significance level.

$$t = \frac{\bar{X} - \mu}{\frac{\sigma_x}{\sqrt{n-1}}} \quad t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1+n_2-2} \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Again, this study explores the relationship between sensation seeking, parent-child problems, peer fear, and cell phone addiction by testing a mediating model. Specifically, to consider the effect of independent variable X on dependent variable Y, if X affects Y by influencing variable M, then M is said to be a mediating variable, which can analyze the process and mechanism of influence between variables. Specifically, it means that:

- (1) $Y = cX + e1$: Regression of X on Y;
- (2) $M = aX + e2$: Regression of X on M;
- (3) $Y = c'X + bM + e3$: Regression of X, M on Y.

c: total effect: the magnitude of the effect of the independent variable on the dependent variable before the inclusion of mediating variables.

c': direct effect: the magnitude of the effect of the independent variable on the dependent variable after the inclusion of the mediating variable.

a*b: Indirect effect: a is the magnitude of the effect of the independent variable on the mediating variable, and b is the magnitude of the effect of the mediating variable on the dependent variable.

Relationship: $c = c' + ab$.

The proportion of the intermediary effect to the total effect, i.e., $ab/(c' + ab)$.

The proportion of intermediary effects to direct effects, i.e., ab/c .

This study explored the relationship between sensation seeking, parent-child problems, peer fear, and cell phone addiction by testing a mediation model.

4 Research Results

4.1 Common Method Deviation Control and Detection

In this study, feeling seeking, parent-child communication problems, peer fear, self-abasement, and cell phone addiction were all provided by one subject. Although corresponding control measures were taken, such as anonymous testing, ensuring the absolute confidentiality of information, reverse scoring of some items, and emphasizing that the answers were correct and wrong, due to the homogeneity of the subjects' sources, the uniformity of the environmental measurement and the uniformity of the project context may cause artificial covariances between independent variables and dependent variables [24]. In this study, 25 eigenvalue factors are greater than 1, and the variation explained by the first factor is 18.909%, with critical criteria less than 40%. Therefore, there is no severe common approach deviation in this paper.

4.2 Descriptive Analysis

To exclude the potential impact of gender and grade variables, this study conducted a correlation analysis on sensation seeking, parent-child communication problems, peer inferiority fears, and teenagers' cell phone overuse based on controlling gender and grade. The outcomes showed that sensation seeking, parent-child communication problems, and cell phone addiction were significantly correlated, and the absolute value of the related coefficient is between 0.143 and 0.303; Parent-child communication problems were correlated with peer inferiority and fear, and the absolute value of the related coefficient was 0.263; Peer fear and self-abasement were correlated with cell phone addiction, and the absolute value of the correlation coefficient was 0.361; But the correlation between feeling seeking and peer fear and inferiority is not significant (as shown in Table 2).

4.3 Gender Difference Test of Feeling Seeking, Mobile Phone Addiction, Peer Fear and Inferiority, and Parent-Child Communication Problems

The results indicated that there was no significant difference between the genders of adolescents in feeling seeking, parent-child communication problems, cell phone addiction, and peer fear and inferiority (see Table 3).

Table 2. Descriptive statistics and correlation analysis (n = 312)

Variables	1	2	3	4
1 peer fear and inferiority	—			
2 mobile phone addiction	0.361	—		
3 parent-child communication problems	0.263	0.283	—	
4 sensation seeking	0.007	0.303	0.143	—

Table 3. Gender difference test Male (n = 137) Female (n = 175)

Variables	M±SD (M)	M±SD (F)	t	p	Cohen's d
peer fear and inferiority	2.49±0.62	2.55±0.50	-0.854	0.394	0.096
mobile phone addiction	2.61±0.89	2.67±0.87	-0.615	0.539	0.070
parent-child communication problems	3.37±0.80	3.30±0.85	0.795	0.427	0.091
sensation seeking	1.67±0.41	1.65±0.42	0.439	0.661	0.050

4.4 Mediating Role of Parent-Child Communication Problems, Peer Fear and Inferiority in Feeling Seeking and Teenagers' Mobile Phone Addiction

According to the model constructed by the research hypothesis, the structural equation analysis was conducted to test the mediating effect by taking sensation seeking as the predictive variable, adolescent mobile phone addiction as the outcome variable, and parent-child communication problems, peer fear and inferiority as the intermediary variable [35]. The Bootstrap method was adopted in this research. The samples were repeated 1000 times, and the significance was tested according to whether the 95% confidence interval contained 0 [36] (see Table 4).

With sensation seeking as the predictive variable, the structural equation model fits well. The results show that sensation seeking can positively predict teenagers' cell phone overuse, and can straight predict teenagers' cell phone overuse by parent-child

Table 4. Path analysis of the mediation model between sensation seeking and adolescent mobile phone addiction

Effect	path	Confidence intervals	Effect value
Direct effect	Sensation seeking → phone addiction	[0.169,0.361]	0.278
	Parent-child issues → low self-esteem in peers	[0.385,0.120]	0.268
Indirect effect	Sensation seeking→parent-child issues→ phone addiction	[0.006,0.129]	0.02

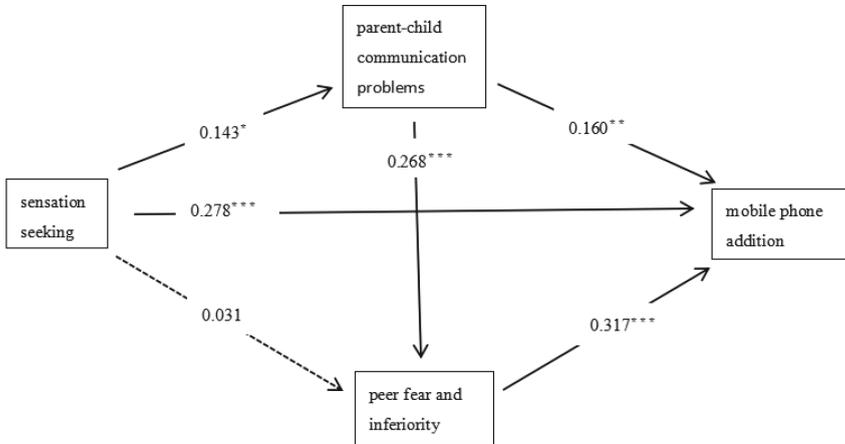


Fig. 1. Mediation model of sensation seeking and mobile phone addiction

communication problems. In addition, it was found that peer fear and inferiority can positively predict adolescents’ mobile phone overuse, and parent-child communication problems can positively forecast peer fear and inferiority. However, feeling seeking did not predict peer fear and inferiority. The intermediary effects are shown in Table 3, and the path coefficients are shown in Fig. 1. In a word, the higher the level of feeling seeking of teenagers, the more parent-child communication problems they will bring, and the more likely they will lead to cell phone addiction. At the same time, problems in parent-child communication will also lead to peer fear and inferiority, which will lead to cell phone addiction among teenagers.

5 Discussion

5.1 The Effect of Sensation Seeking on Teenagers’ Cell Phone Overuse

The results of this research indicate that sensation seeking can positively predict adolescents’ cell phone overuse, and it is explained that there is a relevant difference in the overall level of sensation seeking between adolescents with and without cell phone overuse. This is consistent with former study conclusions [7]. That is to say, teenagers tend to have a higher level of sensation-seeking with cell phone overuse. The structural model also shows that sensation-seeking has a direct positive predictive influence on the degree of cell phone overuse, indicating that adolescents with a higher level of sensation-seeking have a higher tendency to become addicted to mobile phones [2]. The high sense-seeking trait often causes individuals to pursue novel stimuli and preferences, and seek new feelings and experiences through thought, senses, and unusual behavior. The mobile phone provides rich information, intelligence, and entertainment functions, as well as convenience, novelty, and virtuality, which meet people’s pursuit of new feelings and experiences, which may be the reason why high-feeling-seeking individuals frequently use mobile phones until they get into the habit of mobile phones [3]. This is identical to the results of several studies, which verify hypothesis 1.

5.2 The Mediating Role of Parent-Child Communication Problems Between Sensation Seeking and Teenagers' Mobile Phone Addiction

This research found that the parent-child communication problems of middle school students act as an intermediary role between feeling seeking and cell phone addiction through mediation tests, which is identical to past research conclusions [12, 13, 15]. Parents' hostile conflict can directly affect teenagers' mobile phone addiction. The Hostile conflict between parents and corporal punishment of children will lead to poor quality of parent-child communication. Children cannot effectively communicate with their parents in the process of feeling-seeking trait development, which is unfavorable for parents to guide children to obtain feeling-seeking experience through positive and socially acceptable behavior; They will use the Internet more to meet the stimulating experience [28], so this study verified that parent-child communication problems can indirectly predict teenagers' mobile phone addiction, which also verified hypothesis 2 of this study.

5.3 The Effect of Parent-Child Communication Problems on Peer Fear and Inferiority

In the study on the connection between parent-child relationship and peer interaction, adolescent parent-child conflict is positively related to peer conflict, that is, the adolescent interpersonal communication mode is consistent, and individuals who are prone to conflict with their parents are also prone to conflict in the process of communication with peers [25]. This is identical to past research conclusions [23]. That is, parent-child communication problems positively predict peer fear and inferiority [26]. This also shows that parents should communicate positively, provide positive interaction and support for children, enhance children's confidence in communication, and thus reduce fear of peer interaction. This study validates research hypothesis 4.

5.4 The Role of Peer Fear and Inferiority in Feeling Seeking and Teenagers Cell Phone Addiction

This research indicates that peer fear and inferiority do not act as an intermediary role in feeling seeking and adolescents' cell phone addiction, which is inconsistent with the previous research results that the level of feeling seeking is high and adolescents are prone to associate with bad peers. In the follow-up research, we need to further verify the results and explore the specific reasons for these situations [28]. But peer fear and inferiority can directly predict teenagers' cell phone addiction. This research finding constructively verified the existing research that bad peer relationship is an important risk predictor of adolescent online game addiction, that is, the more peer conflicts, the stronger the fear and inferiority complex felt, and the greater the risk of adolescent online game addiction. When teenagers are rejected by other peer groups, they will lack intimate partnerships and easily have fear and an inferiority complex. The Internet provides a broader and more diverse space, which makes them more likely to escape from the real-life environment through online virtual space, thus increasing the risk of excessive Internet use [29]. This also fully verified that peer fear and inferiority can positively predict teenagers' cell phone addiction.

5.5 Research Significance and Limitations

This research has important application value in real life. The issue of teenagers' cell phone addiction is a major international mental health problem. In April 2020, the 45th Statistical Report on the Development of Internet in China released by the China Internet Network Information Center (CNNIC) indicated that as of April 2020, the number of Internet users in China had reached 854 million, and the number of Internet users aged 10–19 years accounted for 19.3%, reaching 174 million. Adolescence is a critical period of life development. If a large amount of time is taken up on the Internet in this period, it will seriously hinder the physical and mental well-being development and academic performance of adolescents [27]. Through the conclusions of this study, we can reduce the mobile phone addiction behavior of adolescents by establishing good parent-child relationships and peer relationships. This study also has some shortcomings. Firstly, this research only selected junior and senior high school students from a certain school in Beijing as the research object, and the conclusions obtained are one-sided, which may be different from the overall level of junior and senior high school students across the country; Secondly, this study is a cross-sectional study, which lasts for a short time and cannot effectively speculate on the continuity of adolescents' psychological development; Finally, this study uses the self-reported questionnaire of students to conduct quantitative research. Although there is no serious common bias method found through testing, if data can be collected from different indicators or multiple information sources, the conclusions will be more rigorous and scientific. Therefore, longitudinal research can be carried out in the subsequent research, and the sample can be further expanded to test junior and senior high school students in different regions and schools at different levels. Such samples will be more representative and comprehensive, making the research results more reliable and persuasive.

6 Conclusion

This study studied the connection between feelings sought and adolescents' cell phone addiction through questionnaires, and drew the following conclusions:

sensation seeking can directly predict adolescents' mobile phone addiction;
Feeling seeking can indirectly predict teenagers' mobile phone addiction through parent-child communication problems;
Parent-child communication problems can positively predict peer fear and inferiority;
Peer fear and inferiority can positively predict teenagers' cell phone addiction;
Feeling seeking did not predict peer fear and inferiority, so feeling seeking could not predict teenagers' cell phone addiction through peer fear and inferiority.

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