

Sociological Analysis of Family Factors in Adolescent Internet Addiction

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Abstract: *Objective:* To explore the relationship between family factors and adolescents' Internet addiction, and to propose corresponding measures to solve the problem. *Methods:* 141 adolescents were surveyed online using Young's Internet addiction questionnaire, APGAR family function analysis and other questionnaires. *Results:* 68 adolescents (48%) had internet addiction. The findings showed that inharmonious relationships with parents, lack of parental companionship, lack of equal communication with parents, inappropriate parental education, and family dysfunction were risk factors for adolescents' Internet addiction. *Conclusion:* Internet addiction is an important problem affecting children's lifelong development, in which family factors play a key role.

Keywords: Adolescents; Internet addiction; Family factors; Parents; Family functioning

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1. Introduction

With the development of information technology in recent years, the types and number of electronic devices have increased dramatically, and the Internet has begun to widely cover the world, which led to adolescent Internet addiction becoming one of the more prominent educational problems^[1]. As of December 2021, China's adolescent Internet users accounted for 13.3% of the total users, and the prevalence rate of adolescent Internet addiction is about 10%–18%, which is higher than the world level^[2–4]. It is generally believed that the phenomenon of adolescent Internet addiction is more common in China. In August 2021, the State Press and Publication Administration issued the Notice on Further Strict Management of Effectively Preventing Minors from Becoming Addicted to Online Games in an attempt to improve the situation of adolescent Internet misuse.

David Ray Griffin pointed out in "The Postmodern Spirit" that the individual with its body, natural environment, family, culture, and so on, are all constitutive things of personal identity^[5]. Internet addiction is caused by a combination of many factors, and family factors are one of the very major factors. This paper intends to study the relationship between family factors and adolescents' Internet addiction and propose corresponding solutions.

2. Family environmental factors and adolescent Internet addiction

Parents play a crucial role in the development of their children's behaviour. Liu pointed out that family education has the characteristics of fundamentality, universality, permanence, and permeability, and the parents' outlook on life, worldview, and morality are all transmitted to their children in their daily lives by osmosis ^[6]. Some scholars believe that parenting style plays a role in shaping personality, regulating behaviours and transferring emotions to children's personality growth ^[7].

Many studies have found that adolescent Internet addiction is closely related to family environmental factors. Wang et al. showed that parents' warm and understanding parenting style reduces adolescents' Internet addiction. Good communication between parents and children, harmonious parent-child relationship and supportive parenting style can effectively prevent adolescents' tendency to Internet addiction, while adolescents who lack love and a sense of belonging in the family are more likely to go to the Internet to vent their emotions and look for spiritual dependence, which may lead to Internet addiction ^[8]. It has been shown that parenting style and family environment have a great influence on adolescents' Internet addiction ^[9]. Some scholars have pointed out that adolescents with family functioning problems are more likely to become addicted to the Internet. Liu et al. pointed out that adolescents with democratic and enlightened parenting styles are less likely to become addicted to the Internet, and the group with Internet addiction has lower family functioning scores ^[10].

Adolescents with Internet addiction have cognitive process disorders, affective process disorders, volitional behavioural disorders, and personality disorders in mental health ^[11]. At the physiological level, symptoms such as neurological dysfunction and immune deficiency may occur. These harms are reflected in life, mainly manifested in fatigue, memory loss, anxiety and depression, decline in academic performance, social adaptation disorders, increased behavioural transgressions, and physical and mental health damage ^[12-13]. Therefore, solving the problem of adolescent Internet addiction has become a top priority.

3. Objects and methods

3.1. Subjects

The research subjects are junior high school students and college students of school age. To ensure the validity of this study, the average age of the questionnaire-issuing subjects was dispersed from 14 to 21 years old, with an average age of 15.67 years old, and the gender ratio of men and women was basically the same. The current place of residence of the students was mainly in Hangzhou and Taizhou, but there were also some in Xi'an, Wenzhou, Jinhua, Tianjin, Ningbo, the United States and other places. The total number of people in this survey is 141.

3.2. Research method

This study adopts the questionnaire survey method, in March 2024 through the Questionnaire Star application using WeChat, QQ and other software for questionnaire distribution and filling out and data recovery. After the recovery of all questionnaires, the questionnaires were checked to eliminate wrongly filled questionnaires or those with omissions. A total of 141 questionnaires were filled out, and 141 valid questionnaires were finally obtained, with an effective recovery rate of 100%.

3.3. Research tools

3.3.1. General information questionnaire

The previous studies were referred to designed the current questionnaire, including the basic information of the respondents such as gender, age, whether they are an only child, family type, and so on ^[8].

3.3.2. Internet addiction test (IAT)

This survey used the Internet addiction scale developed by Kimberly Young of the University of Pittsburgh to determine the respondents' Internet addiction^[14]. The questionnaire has 20 questions, in which each question has 5 options, very inconsistent with 1 point, relatively inconsistent with 2 points, cannot be determined for 3 points, relatively consistent with 4 points, and very consistent with 5 points. The total score of 0–40 was judged as no internet addiction, 40–60 was judged as mild internet addiction, 60–80 was judged as moderate internet addiction and 80–100 was judged as severe internet addiction. The internal consistency Cronbach's alpha coefficient for this scale was 0.963.

3.3.3. Family factors questionnaire

Family environment questionnaire: The self-designed questionnaires were made referring to previous studies, including the objective family environment (parents' bad hobbies), the family subjective environment (the relationship between children and parents, the degree of parental accompaniment, the degree of parental care, and so on)^[8,15].

Parental education literacy questionnaire: The self-designed questionnaires were made referring to previous studies, including parental education style (the degree of strict parental discipline, the degree of open parental upbringing, and the degree of parental teaching by word and example), and the degree of parental control (the degree of parental control over children's behaviours, and the degree of parental control over children's Internet access, and so on)^[16-17]. The internal consistency Cronbach's alpha coefficient for this scale was 0.738.

The APGAR family functioning questionnaire, designed by Dr Smilkstein of the University of Washington, Seattle, USA, was used to rate the family functioning of the respondents. The questionnaire was divided into five questions, each of which corresponded to the five dimensions of appropriate adaptation (A), partnership (P), growth (G), affection (A), and resolve (R). Each question has three options, of which 2 points are awarded for often, 1 point for sometimes, and 0 points for seldom. In the end, the respondent's total score on the five questions was used to determine whether or not his or her family functioned well. A total score of 7–10 indicates good family functioning, 4–6 indicates moderate family dysfunction and 0–3 indicates severe family dysfunction. The internal consistency Cronbach's alpha coefficient for this scale was 0.862.

3.3.4. Statistical methods

The data were exported using the Questionnaire Star application and coded in Excel. After the data were sorted out, SPSS 26.0 was used for statistical analysis. The χ^2 test was used to compare the differences between the groups of count data, the mean difference test was used to analyse the factors affecting Internet addiction, the Pearson correlation was used to correlate the scores of the dimensions of academic pressure, family environment, parenting style, family function and Internet addiction, and the multivariate linear regression model was used to analyse the influencing factors of adolescents' Internet addiction.

4. Results

4.1. General information

4.1.1. Background information

Among the 141 subjects, there were 68 cases of Internet addiction, accounting for 48.2%, including 43 cases of mild Internet addiction, accounting for 30.5%; 19 cases of moderate Internet addiction, accounting for 13.5%; and 6 cases of severe Internet addiction, accounting for 4.3%. The differences in the detection rates of Internet addiction among students of different ages, parents' behavioural habits and academic pressure were statistically

significant (P value < 0.05) as shown in **Table 1**.

Table 1. Distribution of background variables in the study population

Variant name	Numbers	Percentage	Presence of internet addiction				χ^2	P value
			No		Yes			
			Numbers	Percentage (%)	Numbers	Percentage (%)		
Sex							0.139	0.709
Female	79	56.0	42	57.5	37	54.4		
Male	62	44.0	31	42.5	31	45.6		
Age							6.840	0.009
14 or below	70	49.6	44	60.3	26	38.2		
14 years old or above	71	50.4	29	39.7	42	61.8		
Whether it is an only child							1.028	0.311
No	93	66.0	51	69.9	42	61.8		
Yes	48	34.0	22	30.1	26	38.2		
Family Type							0.233	0.629
Other	40	28.4	22	30.1	18	26.5		
Nuclear Family	101	71.6	51	69.9	50	73.5		

Note: This table excludes non-respondents; $n = 141$

4.1.2. Mean difference analysis of Internet addiction

Mean difference analysis showed that the differences in the Internet addiction scores of adolescents in the relationship between parents, the relationship between children and parents, the degree of parental companionship, the degree of parental care, the degree of strict parental discipline, family functioning, family closeness, and family realism were all statistically significant (all P values < 0.05), as shown in **Table 2**.

Table 2. Distribution of variables in the study population

Variable Name	Number of questions	Score range	Mean	Standard deviation	Presence of internet addiction				t value	P value
					No		Yes			
					Mean	Standard deviation	Mean	Standard deviation		
Parents' bad habits	1	1–5	1.87	1.194	1.58	0.985	2.19	1.319	-3.214	0.002
Teenage academic stress	1	1–5	3.43	0.936	3.26	1.028	3.62	0.792	-2.300	0.023
Relationship between parents	1	1–5	4.21	1.054	4.38	0.981	4.03	1.106	2.015	0.046
Relationship between children and parents	1	1–5	4.40	0.893	4.55	0.765	4.24	0.994	2.082	0.039
Parental companionship	1	1–5	4.24	1.006	4.42	1.026	4.04	0.953	2.277	0.024
Level of parental care	1	1–5	4.50	0.789	4.64	0.734	4.35	0.824	2.208	0.029
Degree of parental control over children's behaviour	1	1–5	3.51	1.073	3.45	1.202	3.57	0.919	-0.677	0.500

Table 1 (Continued)

Variable Name	Number of questions	Score range	Mean	Standard deviation	Presence of internet addiction				<i>t</i> value	<i>P</i> value
					No		Yes			
					Mean	Standard deviation	Mean	Standard deviation		
The extent to which parents communicate with their children on an equal footing	1	1–5	3.40	1.213	3.58	1.301	3.22	1.091	1.759	0.081
Parents' trust in their children	1	1–5	3.42	1.160	3.60	1.210	3.22	1.077	1.975	0.050
Parents' attitudes towards their children's Internet access	1	1–5	2.53	1.025	2.51	1.069	2.56	0.983	-0.300	0.765
Strictness of parental discipline	1	1–5	3.54	0.770	3.75	0.662	3.31	0.815	3.566	<0.001
The extent of parental parenting	1	0–1	0.80	0.400	0.82	0.385	0.78	0.418	0.629	0.531
The extent to which parents teach by example	1	0–1	0.56	0.498	0.59	0.495	0.53	0.503	0.709	0.480
Family functions	5	1–15	6.99	2.577	7.45	2.328	6.49	2.751	2.258	0.026
Family adaptability	1	1–3	1.42	0.634	1.47	0.625	1.37	0.644	0.917	0.361
Family co-operation	1	1–3	1.35	0.665	1.44	0.623	1.25	0.699	1.691	0.093
Family growth	1	1–3	1.41	0.633	1.51	0.604	1.31	0.652	1.787	0.063
Family intimacy	1	1–3	1.26	0.704	1.40	0.661	1.12	0.723	2.398	0.018
Family reality	1	1–3	1.55	0.567	1.64	0.510	1.44	0.608	2.136	0.035

Note: This table excludes non-respondents, $n = 141$

4.2. Pearson correlation analysis of factors affecting adolescent Internet addiction

The results showed that the correlations between adolescent Internet addiction and study pressure, the relationship between parents, the relationship between children and parents, the degree of parental accompaniment, the degree of parental interference in their children's choices, the degree of parental strictness in disciplining, and family functioning were all statistically significant (r values of 0.189, -0.219, -0.244, -0.184, -0.247, -0.245, -0.266, all P values < 0.05), as shown in **Table 3**.

Table 3. Pearson's correlation analysis of academic stress, family environment, parenting style, family functioning and internet addiction

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Total score of internet addiction	1													
2. Study pressure	0.189*	1												
3. Relationship between parents	-0.219**	0.018	1											
4. Children's relationship with parents	-0.244**	0.087	0.554***	1										
5. Parents' companionship degree	-0.184*	-0.143	0.295***	0.274**	1									
6. Degree of parental concern	-0.14	-0.201*	0.411***	0.292***	0.583***	1								
7. The degree of parental control over children's behaviour	0.036	0.175*	-0.034	-0.131	-0.009	-0.019	1							
8. The degree of equal communication between parents and children	-0.157	0.025	0.239**	0.273**	0.124	0.226**	-0.187*	1						
9. Parents' interference in their children's choices	-0.247**	-0.139	0.260**	0.280**	0.084	0.260**	-0.202*	0.519***	1					
10. Parents' attitude towards their children's Internet access	0.004	0.118	0.007	0.087	0.041	-0.024	-0.106	0.096	0.148	1				
11. Strictness of parental discipline	-0.245**	0.032	0.236**	0.195*	0.246**	0.220**	0.321***	-0.113	-0.054	-0.158	1			
12. Parents' openness in parenting	-0.086	-0.036	0.355***	0.362***	0.315***	0.341***	-0.028	0.269**	0.257**	0.207*	-0.021	1		
13. The degree of parents' teaching by example	-0.017	-0.148	0.167*	0.138	0.264**	0.243**	-0.162	0.138	0.206*	0.124	-0.159	0.165	1	
14. Family functions	-0.226**	-0.078	0.466***	0.564***	0.318***	0.484***	-0.219**	0.367***	0.516***	0.176*	0.047	0.420***	0.182*	1

Note: * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

4.3. Multiple linear regression analyses of factors affecting adolescent Internet addiction

The scores of the Internet addiction questionnaire were used as the dependent variable, with gender (female = 0, male = 1); age (under 14 years old = 0, over 14 years old = 1); whether the child is an only child (no = 0, yes = 1); high pressure of study (no = 0, yes = 1); the relationship between the child and the parents (very amicable = 5, more amicable = 4, average = 3, occasional quarrels = 2, always quarrelsome = 1); the parental interference in the choice of the child (often = 5, sometimes = 4, usually = 3, occasionally = 2, rarely = 1); and the degree of parental discipline strictness (very strict = 5, more strict = 4, usually = 3, not too strict = 2, and no discipline = 1) as the independent variables and a multiple linear regression model was established.

Multiple linear regression analyses showed that adolescent Internet addiction was correlated with age, study pressure, the relationship between children and parents, the degree of parental interference in children's choices, and the strictness of parental discipline. Adolescents in the higher age group are more likely to develop Internet addiction than those in the lower age group, adolescents with high study pressure are more likely to develop Internet addiction than those with low study pressure, adolescents with poorer relationships with their parents are more likely to develop Internet addiction than those with better relationships with their parents, adolescents with more parental interference are more likely to develop Internet addiction than those with less parental interference, adolescents with strict parental discipline are more likely to develop Internet addiction than those with lenient parental discipline, and adolescents with strict parental discipline are more likely to develop Internet addiction than those with lenient parental discipline, as shown in **Table 4**.

Table 4. Multiple linear regression analyses of adolescents' Internet addiction scores for each variable of the study population

Variable Name	β	The lower limit of 95% CI	The upper limit of 95% CI	<i>P</i> value
Background variables				
Sex (F = 0, M = 1)	0.667	4.069	8.208	0.506
Age (14 or below = 0, 14 or above = 1)	3.147	3.528	15.469	0.002
Only child or not (No = 0, Yes = 1)	0.430	4.859	7.559	0.668
High pressure of study (No = 0, Yes = 1)	2.666	3.538	23.875	0.009
Family factors				
Relationship between children and parents	-2.092	-7.199	-0.202	0.038
The extent of parental interference in children's choices	-2.475	-6.097	-0.681	0.015
Parenting style				
Strictness of parental discipline	-2.178	-8.214	-0.395	0.031

Note: This table does not include non-respondents, $n = 141$

5. Discussion

5.1. Adolescent Internet use

This survey shows that the phenomenon of adolescent Internet addiction is serious, as Internet addicts are as high as 48%, much higher than similar studies in the past in China^[18]. For example, in the article "Study on the correlation between adolescent lifestyle and network addiction", the survey results show that the rate of internet addiction is 11.20%. The reasons for this are analysed as follows. Firstly, the rapid development of the Internet and electronic devices in recent years has led to an increasing rate of Internet use among adolescents, and the

rate of Internet addiction among adolescents has increased year by year. Secondly, most of the respondents in this study are located in economically developed areas, and their families have good economic conditions and are well-equipped with electronic devices at home. In addition, the sampling range of this study is small, which makes the survey results biased.

5.2. Influence of family environment on adolescents' Internet addiction

5.2.1. Relationship between adolescents and parents

The results of this survey show that the worse the relationship with parents and the lower the level of care by parents, the higher the rate of Internet addiction among adolescents, which is consistent with other related studies. The study by Deng et al. pointed out that the family environment index as well as parent-child attachment of non-internet addicts were significantly higher than those of internet addicts^[19]. Ning et al. showed that the more emotion and warmth parents give to their children, the easier it is for the children to obtain a sense of satisfaction and security, enhance their sense of self-worth, and strengthen their self-esteem experience^[20]. Yu et al. pointed out that children who have a good relationship with their parents have higher self-control and are equally able to control themselves when surfing the Internet^[9]. On the contrary, if the relationship between parents and children is poor, adolescents in their formative years will lack a certain emotional identity, and to alleviate such negative emotions, children tend to look for lost satisfaction in the illusory world of the Internet, letting the wealth of information in the Internet occupy their minds to paralyze themselves and alleviate their inner anxiety and loneliness and other negative emotions.

5.2.2. Parents' attitudes towards Internet addiction

It has been found that parents of Internet addicts have a more negative attitude towards their children's Internet use than parents of non-Internet addicts, which is consistent with the results of other studies. Some scholars point out that the more rules and restrictions children are subjected to when using the Internet, the more likely they are to become addicted to the Internet. Some domestic studies have also found that parents' warm and understanding parenting style can effectively reduce the risk of adolescent Internet addiction, while parents' rejection and denial of their children will increase the likelihood of adolescent Internet addiction^[15].

5.3. Influence of parenting on adolescent Internet addiction

5.3.1. Parenting methods and adolescent Internet addiction

Research shows that the proportion of parents in the non-internet addiction group who teach their children both by word and example is higher than that in the internet addiction group, as parents teaching their children by word and example can effectively inhibit adolescents' internet addiction. Parents "teaching by words" to their children can alleviate the negative impact of Internet use on children by instilling in them a reasonable time, content, and way of surfing the Internet, as well as telling them how to find the right peers^[22-23]. Parents "teaching by example" can also be used to lead children to form proper Internet habits.

5.3.2. Influence of parenting style on adolescents' Internet addiction

The results of this survey show that parents in the non-internet addiction group are more open-minded. Some foreign studies have shown that parents play an important role in the process of children's growth, as the child's first teacher, so if the parents' parenting style is educational, the rate of children's Internet addiction will be relatively low^[24].

5.4. Influence of family functioning on adolescents' internet addiction

The questionnaire showed that the family functioning score of the Internet addiction group was lower than that of the non-Internet addiction group. It indicates that adolescents with poorer family functioning are more prone to Internet addiction, which is consistent with the results of other studies ^[21,8,25]. The survey data showed that the non-internet addiction group had higher scores than the internet addiction group in their families in the five aspects of adaptation (A), partnership (P), growth (G), affection (A), and resolve (R), which is consistent with the results of the study conducted by Liu et al. ^[26]. The family is not only a place for adolescents to stay, but also a place to provide psychological support and help ^[21]. If parents neglect to care for and communicate with their children, this will inevitably lead to adolescents becoming addicted to the virtual world of the Internet over time, and using the Internet as a paradise to find spiritual solace ^[26]. Healthy families allow adolescents to feel more warmth, reduce loneliness, and engage in positive self-perceptions, thus reducing the likelihood of adolescents seeking support through the Internet and adolescents' addiction to the Internet ^[10,26].

6. Exploring measures to reduce the rate of Internet addiction among adolescents from the family perspective

6.1. Exploring measures to reduce adolescent Internet addiction from family factors

A large number of studies have shown that the family has an inescapable influence on the formation process of adolescent Internet addiction. A 2008 study by the China Youth Research Centre on the use of the Internet by adolescents found that four groups of adolescents are prone to becoming victims of Internet addiction. First, adolescents who live in indifferent family environments with a lack of warm upbringing; second, adolescents who adopt immature coping styles, such as fantasies and withdrawal; third, adolescents with high levels of social anxiety and low social efficacy; and fourth, adolescents with a low level of self-identity ^[27]. Most of the family influences come from parents, and many researchers have consistently suggested that family members, especially parents, should create a warm and caring family environment for their children, and actively communicate with their children ^[27-29]. Some scholars have suggested that parents should be authoritative, but not authoritarian, i.e., they should strictly and reasonably restrict their children's behaviours to train their children's self-discipline instead of aimlessly making their children absolutely obedient ^[30]. In the process of restricting the child, parents can consciously let the child free to develop more healthy and beneficial hobbies to enrich the child's leisure life ^[29]. Sun pointed out that teenagers are not yet mature in mind, there is a lot of distress in the heart which is difficult to vent so they choose to retreat into the network world of fantasy, so for the second type of adolescents, parents need to pay attention to the development of the child's puberty, and communicate with the child, timely understanding of the child's learning and life in the network, and to understand the child's life ^[27]. Therefore, parents should pay attention to their children's adolescent development, communicate with them more often, understand their difficulties and confusions in study and life, and actively cooperate with the school to guide their children to arrange their daily life reasonably, to encourage them to develop a lifestyle that combines work and rest with good Internet habits. Meanwhile, adolescence is a key period for the formation of self-identity, but there are many Type 4 adolescents with a low degree of self-identity, therefore, parents need to be good at discovering their children's strengths and motivating them, to help their children build up sufficient self-confidence. For the third group of socially anxious adolescents, parents should be patient and encourage their children to go out of the house, make more friends, and develop social skills. In addition, parents should also improve their own media literacy. In this age of information technology, parents should stock up on more knowledge related to the Internet, help their children improve their ability to use the Internet effectively and identify bad websites, to prevent their children from using the Internet incorrectly.

6.2. Application of family structural therapy in adolescent Internet addiction

The structural therapy model intends to reorganize the family structure, change the rules of how family members treat each other, and change the rigid or blurred boundaries of the family to achieve maximum boundary clarity. Liu et al. mainly divided family structural therapy into four steps^[28]. Firstly, it is necessary to switch the centre of attention, changing the centre from the problem of Internet addiction and the adolescent who has become addicted to the Internet to the whole family, to probe into the structural nature of the family. Secondly, it is necessary to probe into the structural nature of the family to explore the words and actions in the family that contribute to Internet addiction and make that family member aware of them in a subtle way. Thirdly, to explore the past of the child's parents in a focused way, so that he or she understands the impact of the words and actions in the past on the present. Finally, based on the relevant situation in the family, analyse countermeasures to address Internet addiction with family members to help the child grow up healthily.

7. Research conclusion and prospect

As an important problem affecting children's lifelong development, family factors play a key role in Internet addiction. Firstly, parents should adopt a bright and enlightened education to give their children a certain warmth and create a good family atmosphere for their children, so that they will no longer seek security through the Internet. Secondly, parents should actively guide their children to use the Internet correctly and stay away from Internet addiction by combining words and teaching by example. Finally, parents should pay attention to their children's living conditions and intervene promptly if they find that their children have physical or mental problems, to ensure the children will grow up correctly.

Disclosure statement

The author declares no conflict of interest.

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