

Study on the Relationship between Online Social Support and Online Interpersonal Trust of Urban Left-Behind Children with Internet Addiction

Ying Ge, Mengnan Wu

Key Laboratory of Emotion and Mental Health in Chongqing, School of Education, Chongqing University of Arts and Sciences, Chongqing, China

Email: gy8620@163.com

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Abstract

This study intends to explore the status quo and relationship between online social support and online interpersonal trust of urban left-behind children with internet addiction. First, 217 urban left-behind children with internet addiction were selected from 3264 urban left-behind Chinese children using *the Adolescent Pathological Internet Use Scale* (APIUS), and then *the Adolescent Online Social Support Questionnaire* and *the Adolescent Online Interpersonal Trust Questionnaire* were used to collect data respectively. The results show that: 1) Compared with normal urban left-behind children, urban left-behind children with internet addiction have higher online social support and online interpersonal trust. 2) Among the urban left-behind children with internet addiction, the emotional support, instrumental support and emotional trust factors of girls are higher than those of boys. The total score and instrumental trust factor of online interpersonal trust of middle school girls and primary school boys are higher than those of middle school boys. 3) The regression effect of online social support on online interpersonal trust is significant, and the former can positively predict and affect the latter.

Keywords

Urban Left-Behind Children, Internet Addiction, Online Social Support, Online Interpersonal Trust

1. Introduction

Internet addiction is the negative result of the internet era. According to the 49th

China Statistical Report on Internet Development, teenagers account for 17.6% of China's 1.032 billion netizens (CNNIC, 2022). In the light of the other literature, the internet addiction rate of Chinese teenagers is 10% (Bian, Liu, Li et al., 2016). According to the *Core Information and Interpretation of Chinese Youth Health Education (2018 Version)*, internet addiction refers to the out-of-control behavior of the impulse to use the internet without the effect of addictive substances, which is manifested as obvious damage to academic, occupational and social functions after excessive use of the internet. Among them, duration is an important criterion for the diagnosis of internet addiction disorder. Generally, the relevant behaviors need to last at least 12 months before being diagnosed (CHEC, 2018).

Left-behind children are a special group of people whose parents have moved from the underdeveloped western region to the economically developed eastern region to work and left their children in their places of origin after China's reform and opening up. This concept only referred to rural children at first. Now the proportion of urban left-behind children is gradually increasing, accounting for 41.1% of the total left-behind children and 21.3% of the total urban children (Lyu, Liu, Li et al., 2018). It refers to minors under the age of 18 whose parents (one parent or both parents) have gone away from their home to work or study for more than half a year, who can only be cared for by nannies, raised by grandparents, guarded by other relatives or non-relatives, and live in cities and towns for a long time (Zhou, Chen, & Deng, 2012). If children in this group are not properly guided in the use of the internet, they will easily indulge in the internet and various deviations will occur. Based on the previous research, their internet addiction rate is 10.8%, a relatively high level (Ge, Su, & Zhang, 2015).

Internet addiction interacts with many social and psychological factors. Online social support refers to the spiritual and material support and assistance that individuals get from their communication partners in the internet environment. In addition to parents, relatives and friends in real life, the givers also include friends and strangers on the internet (Ding & Shen, 2005; Liang & Wei, 2008). There are two different results in the research on the relationship between internet use and social support at home and abroad: Internet use will reduce social contact and individuals' sense of social support; Network-based activities can increase individuals' sense of social support. Some research holds that the social support of internet addicts is poor, and excessive use of the internet will lead individuals to be separated from real society and away from real social support (Zhao, Ge, & Ge, 2011; Chen & Guo, 2012; Zhou, 2014a). The other research considers that online social support is the extension of real social support, and the internet provides a large number of opportunities for individuals to interact, which increases social ties, connects individuals' reality with their imaginary reality, and helps to develop and maintain the emotions among individuals. Many internet addicts, especially internet masters, can gain satisfaction and sup-

port that they can't experience in real life when interacting with strangers online (Li & You, 2008; Ding, Xiao, & Zhang, 2013; Wang & Wang, 2013; Li, Cui, & Xu, 2022).

Online interpersonal trust is a kind of expectation and sense of security that individuals in real society can fulfill their entrusted obligations and responsibilities with the help of various digital symbolic information in online interpersonal interaction (Huang, 2008a; Zhao, Sun, Zhou et al., 2013). Its biggest feature is the high risk caused by anonymity. There is a significant positive correlation between online interpersonal trust and real interpersonal trust, showing a high consistency (Chen & Cui, 2012). At the same time, network-based interpersonal communication forms an unprecedented huge network group, which is helpful to establish new interpersonal relationships. Individuals who avoid social contact can make up for some needs of real communication through the internet and gain certain network trust (Wang, 2008; Jia, 2009). However, the negative influence of the internet on individuals cannot be ignored. Network-based communication is always a virtual interpersonal relationship and cannot replace real interpersonal communication (Li, 2010; Wu, 2013).

In the research on the relationship between online social support and online interpersonal trust, the existing research shows that there is a positive correlation and influence between the two (Ding & Shen, 2005; Chi & Gong, 2011; Sun, Zhao, Zhou et al., 2015; Zhong, 2020), but there is no research involving urban left-behind children with internet addiction yet. In terms of the performance of different gender in online social support, the research results are different: that is, some research shows that males perform better than females (Liang & Wei, 2008; Zhong, 2020), while there is also research revealing that women are advantageous than men (Jing & Li, 2012; Liu & Li, 2016), but there is also research showing that men and women rival each other (Tao & Cheng, 2018). In addition, research also shows that netizens with longer net ages gain more online social support than those with shorter net ages (Chi & Gong, 2011). There are also different conclusions on online interpersonal trust: Some research shows that the trust level of men in the internet environment is significantly higher than that of women (Chi & Gong, 2011; Wei & Mao, 2015), while some research shows that there is no gender-related difference in terms of online interpersonal trust (Sun, Zhao, Zhou et al., 2015; Jiang, Liu, Wang et al., 2017; Zhong, 2020). Net ages have a negative impact on online interpersonal trust and staying in the internet environment for a long time will reduce individuals' online interpersonal trust (Yu, 2010; Sun, Zhao, Zhou et al., 2015).

Based on the above review of existing research results, this study intends to explore the status quo and relationship between online social support and online interpersonal trust of urban left-behind children with internet addiction. It is assumed that online social support and online interpersonal trust of urban left-behind children with internet addiction have their own characteristics, and online social support can predict online interpersonal trust.

2. Methods

2.1. Participants

Using the method combining convenience sampling, purposive sampling and clue sampling, the researchers selected 2285 urban left-behind children from the 3264 primary and secondary school students in 2 middle schools and 1 primary school in Chongqing, 3 middle schools in Zhengzhou and 1 primary school in Shangqiu, Henan Province, and 1 middle school and 2 primary schools in Wuhan, Hubei Province (grade 5 and 6 students for the primary school group; grade 1 and 2 students for the middle school group). The selection criteria were that the registered permanent residences of the students are in towns; one or both parents of the students have gone to other places for work for over half a year; the students are under 18 years old; the students are raised by people other than their own parents. *The Adolescent Pathological Internet Use Scale* (APIUS) was applied to screen the urban left-behind children with internet addiction. Among them, there were 2068 urban left-behind children in the normal group, none in the marginal group, and 217 urban left-behind children with internet addiction. The addiction detection rate was 9.50% (as shown in **Table 1**). All the participants volunteered for the study. As these students were all minors, before the investigation, the investigators signed the *Informed Consent Form to Parents* with the surrogate parents of the participants and signed the *Safety Agreement* with the school of the participants.

2.2. Research Tools

1) *Adolescent Pathological Internet Use Scale*

The Adolescent Pathological Internet Use Scale (APIUS), developed by **Lei & Yang (2007)**, is currently a suitable measurement tool for internet addiction among adolescents in China. It comprises 38 items with six dimensions, namely, salience (internet use has become the center of users' thinking and behavior activities), mood alteration (users can change their negative mood by using the internet), social comfort (users think that online communication is more comfortable and safe, and they rely on internet-based social channels), tolerance (internet users increasingly spend time online to get satisfaction), withdrawal symptoms (although there is a desire to reduce surfing time, users can't control themselves, and they have a compulsive obsession with the internet), and negative outcomes (internet use has a negative impact on users' normal life, mainly

Table 1. Statistical table of basic information of participants (N = 217).

		Number (person(s))	Percentage (%)
Gender	Male	128	58.9
	Female	89	41.1
Grade	Primary School Group	122	56.2
	Middle School Group	95	43.8

referring to interpersonal, health and academic problems caused by surfing the internet). The APIUS uses a 5-point self-rating scale, ranging from “completely inconsistent” to “completely consistent”. The α coefficient of the scale in this study was 0.948, and the test-retest reliability was 0.857. In APIUS, those with an average score higher than or equal to 3.15 are defined as “internet-addicted groups”, those with an average score between 3 and 3.15 are defined as “marginal groups” and those with an average score less than 3 are defined as “normal groups”.

2) *Adolescent Online Social Support Questionnaire*

The study adopted *the Adolescent Online Social Support Questionnaire* compiled by Liang & Liu (2010), which includes four dimensions: information support (reflecting the acquisition of information that is of teenagers’ concern during their interaction with others through the internet), companionship support (mainly referring to whether teenagers can find someone to talk to when they are unhappy, or whether they can share their interests and hobbies in life with others, which reflects teenagers’ needs for companionship), emotional support (reflecting teenagers’ perception of others’ response and recognition in the process of showing themselves through the internet), and instrumental support (indicating the material assistance teenagers get from the virtual world). There are 23 items in the questionnaire, and a 5-point scoring system is adopted. From “completely inconsistent” to “completely consistent”, it scores 1 to 5 points respectively. The higher the score, the higher the online social support.

In this study, the internal consistency coefficient of the total score and each dimension of the questionnaire was respectively 0.753, 0.875, 0.769, 0.752 and 0.906, and the test-retest reliability was 0.702, 0.723, 0.714, 0.698 and 0.876, respectively. All the reliability indicators met the requirements of psychometrics, indicating the stability and reliability of the questionnaire.

3) *Adolescent Online Interpersonal Trust Questionnaire*

The study adopted *the Adolescent Online Interpersonal Trust Questionnaire* produced by Huang (2008a, 2008b), which contains two dimensions: the emotional trust factor (depicting emotional interaction behaviors in online communication) and the instrumental trust factor (describing instrumental behaviors involving resource interactions in online communication). There are 6 items in the questionnaire, and a 5-point scoring system is adopted. It scores 1 to 5 points severally from “completely inconsistent” to “completely consistent”. The higher the score, the higher the degree of online interpersonal trust. The α coefficients of the two dimensions in this study were 0.670 and 0.827, respectively.

2.3. Research Procedures

The urban left-behind children were tested in groups under the guidance of researchers with unified instructions by means of paper-and-pencil tests and interviews. There were three rounds of tests in this study. The first test was *the Adolescent Pathological Internet Use Scale*, and the second test was *the Adolescent Online Social Support Questionnaire* and *the Adolescent Online Interper-*

sonal Trust Questionnaire. Each test was independently completed by urban left-behind children, and the questionnaires were collected on the spot after each test.

2.4. Data Analysis

The following software was used for analysis and processing of the collected data: EpiData Entry 3.1 for data entry, SPSS Statistics 20.0 for descriptive statistical analysis, t-test, variance test, correlation analysis and regression analysis, and G*Power 3.1.6 for effect size and statistical test power analysis.

3. Results

3.1. Comparison of Factors between Addicted and Non-Addicted Urban Left-Behind Children

According to research needs, this study randomly selected 217 urban left-behind children from “non-addicted groups” to form a normal group and compared them with those from “addicted groups”.

As shown in **Table 2**, there were significant and extremely significant differences ($ps < 0.05, 0.01, 0.001$) between urban left-behind children on the internet-addicted group and the normal group (non-addicted group) 3.2 Variance Analysis of Online Social Support and Online Interpersonal Trust of Urban Left-behind Children with Internet Addiction

A multi-factor analysis of variance was carried out with the gender and grade of internet-addicted left-behind children as independent variables, and the dimensions of online social support and online interpersonal trust as dependent variables. The results showed that there were main effects and interactions.

Table 2. Comparison of differences between addicted group and normal group of urban left-behind children ($M \pm SD$).

	Addicted Group (n = 217)	Normal Group (n = 217)	<i>t</i>	<i>p</i>	<i>d</i>
Information Support	15.53 ± 4.61	2.87 ± 1.23	39.064***	0.000	3.75
Companionship Support	22.50 ± 7.23	2.58 ± 1.14	40.083***	0.000	3.75
Emotional Support	16.34 ± 5.92	2.43 ± 1.04	34.092***	0.000	3.27
Instrumental Support	10.00 ± 4.02	2.02 ± 1.02	28.290***	0.000	2.72
Online Social Support	64.35 ± 16.71	2.50 ± 0.93	54.444***	0.000	5.23
Instrumental Trust Factor	7.57 ± 3.47	5.88 ± 3.28	5.216***	0.000	0.50
Emotional Trust Factor	8.02 ± 3.54	7.29 ± 3.85	2.053*	0.041	0.20
Online Interpersonal Trust	15.59 ± 6.05	13.16 ± 6.34	4.065***	0.000	0.39

Note: *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$.

From **Table 3**, it can be seen that there were significant gender main effects on emotional support, instrumental support and emotional trust factors for urban left-behind children with internet addiction ($F_{(1,209)} = 5.879, p < 0.05, \eta_p^2 = 0.027$, statistical test power = 0.685); $F_{(1,209)} = 4.124, p < 0.05, \eta_p^2 = 0.028$, statistical test power = 0.702; $F_{(1,209)} = 6.018, p < 0.05, \eta_p^2 = 0.028$, statistical test power = 0.702), and all of them were higher in females than in males.

The total scores of the instrumental trust factor ($F_{(1,209)} = 4.894, p < 0.05, \eta_p^2 = 0.023$, statistical test power = 0.614) and online interpersonal trust ($F_{(1,209)} = 4.690, p < 0.05, \eta_p^2 = 0.022$, statistical test power = 0.595) of urban left-behind children with internet addiction showed significant gender and grade interactions (as shown in **Table 3**). Further simple effect analysis showed that there were significant differences in the instrumental trust factor and online interpersonal trust of male students in grades ($F_{(1,209)} = 16.735, p < 0.001, \eta_p^2 = 0.073$, statistical test power = 0.984; $F_{(1,209)} = 12.450, p < 0.01, \eta_p^2 = 0.055$, statistical test power = 0.829), and the scores of the primary school group were better than those of the middle school group; There were very significant differences between the middle school students' instrumental trust factor and online interpersonal trust in gender ($F_{(1,209)} = 7.830, p < 0.01, \eta_p^2 = 0.035$, statistical test power = 0.798); $F_{(1,209)} = 9.852, p < 0.01$, partial $\eta^2 \eta_p^2 = 0.214$, statistical test power = 0.712), and females had an advantage over males in the scores.

3.2. Relationship between Online Social Support and Online Interpersonal Trust of Urban Left-Behind Children with Internet Addiction

There was a very significant positive correlation between online social support and online interpersonal trust, $r_{(215)} = 0.636, p < 0.001, \delta = 0.797$. Further regression analysis and significance test revealed that the regression model was significant, $F_{(4,212)} = 40.893, p < 0.001, R^2 = 0.436$, statistical test power = 1.000; Online social support had an extremely significant positive predictive effect on online interpersonal trust, $\beta = 0.624, t_{(212)} = 11.992, p < 0.001, \delta = 0.770$.

Table 3. Variance analysis of online social support and online interpersonal trust (N = 217).

	Information Support	Companionship Support	Emotional Support	Instrumental Support	Online Social Support
Gender	0.404	3.610	5.879*	6.124*	4.356
Grade	0.303	0.461	1.747	1.289	0.766
Gender * Grade	1.426	2.680	3.502	3.126	2.123
	Instrumental Trust Factor	Emotional Trust Factor	Online Interpersonal Trust		
Gender	2.212	6.018*	5.280		
Grade	1.620	1.280	1.952		
Gender * Grade	4.894*	2.308	4.690*		

Note: *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$.

4. Discussions

The total scores and scores in each dimension of urban left-behind children in the two scales of online social support and online interpersonal trust were higher on the internet-addicted group than those in the normal group (non-addicted group). The analysis of variance of urban left-behind children with internet addiction showed the main effect and interaction of each variable. In the dimensions of emotional support and instrumental support for online social support, internet-addicted urban left-behind girls were higher than boys.

Furthermore, this study showed that there was a significant positive correlation between online social support and online interpersonal trust for urban left-behind children with internet addiction, and online social support can make an extremely significant positive prediction of online interpersonal trust, which can explain 43.6% of its variation. The status quo and relationship results were analyzed as below:

4.1. Analysis of the Status of Each Variable

The status quo result supports the viewpoint that online social support and online trust will increase with internet use: online social support is an important supplement to traditional social support and has a direct positive effect on the tendency of internet addiction (Ding, Xiao, & Zhang, 2013; Zhong, 2020). The internet can help individuals establish a new type of interpersonal trust relationship (Huang, 2008a, 2008b; Chen & Cui, 2012; Zhao, Sun, Zhou et al., 2013). Compared with non-addicted urban left-behind children, internet-addicted urban left-behind children have more access to the internet to combat the loneliness of not having parents around (Song et al., 2021), so they are more likely to get social support on the internet, and their trust and dependence on internet communication are higher than those of non-addicted urban left-behind children.

In the emotional support and instrumental support, the result has some consistency and inconsistency with previous studies: the consistency is that women get more emotional support than men, while the inconsistency is that previous studies showed that men get more instrumental support than women, but this study found that women get more instrumental support than men. Several studies on different groups show that in the gender differences in online social support, women could perceive, obtain and provide significantly more emotional support than men, while men are more inclined to seek online information support and instrumental support (Hobfoll & Stokes, 1988; Sullivan, 2003; Seale, Ziebland, & Charteris-Black, 2006; Zhao, Zhang, Liu et al., 2012; Liu, Jiang, & Bai, 2014). Generally speaking, there are differences between men and women in the function of using the internet. Women achieve psychological comfort by chatting and shopping, while men vent their bad emotions through online games (Liang, Yang, & Wei, 2008; Huang & Tong, 2009; Zhou, 2014b). This is because women are more perceptual, more expressive and more emotional, and have

stronger requirements for emotional comfort; Men's emotional expression is relatively restrained, and they like to experience a sense of presence and accomplishment in attack and competition. Games are the best carrier for them. [Zheng & Shen \(2009\)](#) also found the same phenomenon in their study on teenagers with internet addiction. The instrumental support dimensions in this study all involved games. The later-stage interviews with the participants suggested that many urban left-behind girls with internet addiction were game players, and their familiarity and love for games were no less than those of boys, so they needed both emotional comfort and material support. During the interview, they repeatedly stressed their need for an excellent player to help them win the games, and they hoped to get equipment and spiritual support. Perhaps these prompted them to show higher demand for emotional support and instrumental support. Subsequent studies should pay special attention to this trend reflected by urban left-behind children with internet addiction.

In terms of the online interpersonal trust, the existing studies also showed different results. Most studies thought that due to the differences in physiological and psychological characteristics and social and cultural orientation, men have natural advantages in physiology and psychology. They show a higher level of trust in the internet environment, while women are conservative and alert ([Alesina & La Ferrara, 2002](#); [Awad & Ragowsky, 2008](#); [Cho & Jialin, 2008](#); [Yu, 2010](#); [Du, 2011](#); [Chi & Gong, 2011](#)). However, [Zhao et al. \(2013\)](#) found that female college students' online interpersonal trust level is significantly higher than that of male students. Men's adventures and impulses will make them explore the internet more, which will increase the probability of negative experiences in online communication, and thus reduce their interpersonal trust after experiencing high online insecurity. It is the complexity of the internet that makes the gender differences in online interpersonal trust more diverse. In the current study, the emotional trust factor of urban left-behind girls with internet addiction was higher than that of boys, which echoed the result of the above-mentioned online emotional support. The non-verbal, transient and anonymous nature of online communication enables individuals to freely choose the form and depth of self-expression, which makes it easy for underage girls to idealize their communication objects, casually put down their guard in "congenial" communications, expand their self-exposure, and show their emotional needs and trust ([Joison, 2001](#); [Xi & Zhu, 2004](#)). The total score of online interpersonal trust and instrumental trust factor of internet-addicted middle school left-behind girls were higher than those of boys, which is also consistent with the result of the above-mentioned instrumental support. Instrumental trust is premised on and mediated by the interaction between information and resources. According to the interview, the left-behind girls in middle schools have more demand for online information when playing games, and they are more attracted to this trust relationship that breaks the information boundary and realizes resource sharing. The total score of online interpersonal trust and instrumental trust factor of primary school boys are higher than those of middle school boys, which is con-

sistent with the research of Zhu (2003). He thought that lower-grade children are immature in mental development due to the limitation of their mental development level, and they lack sufficient knowledge of the differences between the internet environment and reality, so they are blind and irrational in online interpersonal communication. In the interview, younger boys showed more innocence and credulity to the online world.

4.2. Analysis of the Relationship between Online Social Support and Online Interpersonal Trust

Based on the correlation and regression results, the relationship between online social support and online interpersonal trust was deeply anatomized. Social support is the degree to which individuals are respected, cared for and understood in interpersonal interaction. Mutual benefit and mutual support in interpersonal interaction can promote mutual trust. Ridings (2000) pointed out that the most important social exchange in virtual communities is information and social support, and online social support is the sense of belonging and security that individuals get through online interaction, while online interpersonal trust is the positive expectation and recognition of online interaction. Due to the anonymity and de-resistance features of the internet, the bystander effect, the phenomenon of decentralization of responsibilities and the restriction of entity norms are all weakening. People must experience being respected, cared for, protected and supported through communication and interaction, so as to realize the expected interpersonal identity and build and strengthen online interpersonal trust.

5. Conclusion

Compared with normal urban left-behind children, urban left-behind children with internet addiction have higher online social support and interpersonal trust. Among the urban left-behind children with internet addiction, the emotional support, instrumental support, and emotional trust factors of girls are higher than those of boys. The total score and instrumental trust factor of online interpersonal trust of middle school girls and primary school boys are higher than those of middle school boys. The regression effect of online social support on online interpersonal trust is significant, and the former can positively predict and affect the latter. The research results provide a basis and reference for further study on urban left-behind children with Internet addiction.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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