Internet Usage and Teens’ Psychological Well-being in China

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Abstract—The aim of this study was to explore the evolution of the relationship between Internet use on psychological well-being from elementary school, middle school, to high schools. Randomized stratified sampling was used. Participants were 3,185 teens in Kunming, a city located in southwest China. They were asked to complete a questionnaire on Internet Use and Well-Being Scale. The result indicated a relationship existed between Internet use and psychological well-being. Higher grade students used Internet earlier, spent more total time online per week, and scored lower psychological well-being. Students of middle and high school shared more similarity on Internet usage behavior and content preference of social and study services. Significant difference existed on loneliness and anxiety among gender. Overall, males significantly used the Internet earlier, more frequently, more for all Internet services, and scored higher psychological well-being. The difference between genders was also discussed.

Keywords—Internet use, teens, psychological well-being

I. INTRODUCTION

It is acknowledged that the Internet has changed our economic and social life dramatically. Users can easily access a wealth of information at any time and communicate with others at any location, with little or no cost. At the same time, a number of potential negative outcomes of Internet exposure have been suggested, such as problematic or addictive Internet use [1,2], social isolation [3,4], and poor academic performance [5]. Researchers showed that teenagers are a population vulnerable to these negative effects [6, 7]. As Internet use among teens has grown exponentially in the past decade, teachers and parents have been debating about the effect of Internet use on teenagers. Growing concerns over Internet use among youth and the relationship between Internet use and psychosocial well-being have been an important topic of research.

Studies of the Internet’s effect on preadolescents’ and adolescents’ well-being have opened a new era of Internet study in developmental psychology [8]. The negative influence of Internet use on psychological well-being has been revealed by many researchers. Liu reported that Internet use increased the degree of loneliness in college students [9]. Kraut et al. reported that using the Internet for as few as three hours a week, led to increased levels of depression and reductions in social support [10]. But in another study, a positive relationship was found between Internet use and communication, social involvement, and well-being [11]. Recruiting 7th and 10th graders from California public schools, Gross et al. reported no association between Internet use and well-being [12]. Later studies found that the purpose of Internet use may influence the effect between Internet use and psychological well-being. Jackson reported that increased Internet use, for purposes other than communication, was associated with increased psychological well-being[13]. Zhu et al. reported that those using the Internet for the purpose of social-affective behavior scored lower in social-psychological health[14]. Subrahmanyam, et al. specifically reviewed the impact of Internet use on the development of children and adolescents. They discussed the difference on computer use with factors, such as age, gender, and ethnicity. Adolescents use the Internet generally for entertainment and communication [15]. Some reported that playing game was preferred by males, while chatting was preferred by females [7, 13, 16]. While Tahirouglu et al. reported that chatting is more common among male adolescents in Turkish. In all, no conclusive results are derived on the relationship between Internet use and teens’ psychological well-being.

Lots of studies have assessed Internet use by the total amount of time respondents spent online per week [6, 9, 12, 14, 17]. Time spent online was the behavior dimension of Internet use. Service preference was the content dimension of Internet use. Some works have examined the association of service content dimension of Internet use with individual personality [18, 19]. This paper divided Internet use into behavior and service content dimensions, which may provide more comprehensive and convincing evidence in understanding the effect of Internet use on psychological well-being.

Chinese Internet user has been the largest population in the world. According to the report of CNNIC (http://www.cnnic.net.cn), the population of Internet users in...
China is about 420 million, accounting for 31.8% of the Chinese population. The population of teenagers (aged 10-19) has been the largest group, accounting for 29.9% Chinese Internet user and 21.4% world Internet user. However, most studies on Internet use and psychological well-being published in international journals were reported from America [6, 12, 13, 20-23] and Europe [7, 17, 24-26]. The major samplings were of college students, some middle school students [6, 27, 28], and few elementary school pupils [22]. In China, research on the relationship between Internet use and adolescent psychological well-being mainly explored the Problematic Internet Use (PIU) or Internet Addiction (IA) [27-34]; few studied general Internet usage [9, 14]. Gross et al. reported no gender difference in Internet use in youth [Gross, 2002 #3]. However, some studies revealed the gender differences in Internet use and psychological well-being [Jackson, 2008 #7] [Tahiroglu, 2008 #4]. What’s the relationship between general Internet use and teenagers’ psychological well-being in China? How these relationships change from male to female, from elementary school, middle school, to high school? These were interesting questions on the issue of Internet use in China.

This study attempts to explore the evolution of the relationship between Internet use on psychological well-being with large randomized stratified sample of elementary, middle, and high schools.

II. MATERIALS AND METHOD

A. Participants

Using stratified random sampling in each school, participants were recruited from 12 schools including elementary schools (graded 4-6), middle schools (graded 7-9) and high schools (graded in 10-12) in Kunming, a city located in southwest China. Four hundred questionnaires were delivered to each grade. Three thousand, one hundred and eighty-five valid samples were obtained from the total 3,600 delivered questionnaires.

B. Measures

The Internet Use Scale (IUS) on a 5-point Likert-type scale was adopted in this study (1= highest level and 5= lowest level). A self-report version of IUS which assesses two types of behavior of Internet use (tenure and total times spent online per week) and three content preferences of Internet use (leisure services, study service, and social service) were adapted from the scale developed by Hills and Argyle [19]. The content preferences of Internet use refers to the main usage of Internet services. Leisure services preferences means most online time is spent on gaming, chatting, shopping, and downloading music or movies. Social services preferences means more time is spent on email, personal website, and community. Study services preferences means more time is spent on learning online, searching information, downloading software or documents, and reading news. As similar to the study of Gross et al., the Teen Well-Being Scale (TWBS) contains twelve items in three dimensions: loneliness, depression, and social anxiety. The questionnaire also consists of demographic questions such as age, gender (male as 1 and female as 2), grade in school and Internet user (Internet user as 1 and non-Internet user as 2).

C. Statistic analysis

SPSS 16.0 was used for statistical analyses. Factor analyses were conducted on IUS and TWBS to investigate the factor structure of the instruments. An Independent-Sample T test was conducted to explore the differences between Internet users and non-Internet users, and between males and females, respectively. One-Way ANOVA was conducted to explore the differences among grades. Bonferroni correction was conducted when necessary. Hierarchical regression analyses were used to examine relationships between Internet use and psychological well-being of teens.

III. RESULTS

A. Sample

Three thousand one hundred and eighty-five fourth- to twelfth-grade students participated in this survey. Nine hundred and sixty two participants (30.2%) came from elementary schools (graded 4-6), 1,131 (35.5%) from middle schools (graded 7-9) and 1092 (34.3%) from high schools (graded in 10-12). One thousand five hundred and ninety one (50%) of them were males (M), and 1,594 (50%) were females (F). Average education level was 8.124 ± 2.541 grades (F: 8.348 ± 2.545; M: 7.900 ± 2.519). Two thousand seven hundred and ninety five (87.8%) of them have surfed online. Among users, the mean online per week was 4.19 ± 8.160 hrs online per week (F: 3.740 ± 6.630, M: 5.820 ± 10.016), the mean tenure online was 1.916 ± 2.233 years (F: 1.913 ± 2.072; M: 2.449 ± 2.402).

B. Exploratory Factor Analysis and Reliability Analyses

In order to test the psychometric properties of the adapted scales, the exploratory factor analyses were employed. The TWBS scores formed an internally consistent scale, with Cronbach = 0.801. With the method of varimax rotation, the exploratory factor analysis extracted three factors, each with eigenvalues greater than 1.0, which together accounted for 60% of total variance. An exploratory principal components analysis with varimax rotation with three fixed factors was conducted on IUS (Cronbach = 0.886). These three factors all together accounted for 66% of total variance.

C. Independent-Sample T test and One-Way ANOVA

Independent-Sample T test was used to compare the difference in psychological well-being between males and females, as well as between Internet user and non-Internet user. The results showed significant differences on all variables except loneliness between Internet user and non-Internet user. One-Way ANOVA among grades (i.e. elementary schools, middle schools, and high schools) yielded significant differences on the subscale of psychological well-being. Post Hoc tests found significant differences on all variables among schools, except loneliness and depression between elementary schools and middle schools.

The relationship of Internet use and psychological well-being was examined with the sample of Internet users.
Independent-sample T test was conducted between male and female. The results indicated the significant differences on all the subscale of Internet use except content preference of study services. No significant differences were founded on the subscale of psychological well-being except anxiety. One-way ANOVA was conducted among grades. The results indicated significant difference on all variables. Post Hoc tests founded no significant differences on total time spent online per week, content preference of social and study services between middle schools and high schools. Moreover, there’s no significant difference on depression between elementary schools and middle schools. Yet significant difference on loneliness and anxiety existed among elementary-, middle-, and high-schools.

Hierarchical Regression Analyses

Hierarchical multiple regression analyses were conducted to explore the predictors of teens’ well-being. The behaviors of Internet use (total times spent online per week and tenure online) were entered as the first step in the regression, \( R^2 = 0.056, F = 37.873, p < .001 \). Online tenure significantly predicted the psychological well-being of teens, \( \beta = 0.042, p < .05 \). The content preferences of Internet use were entered as the successive second step. Content preference of internet use predicted an additional 12% of the total variance, \( \Delta R^2 = 0.123, F=50.793, p < .001 \). In predicting the psychological well-being of teens, the Internet use of leisure services (\( \beta = -0.065, p < 0.05 \)), study services (\( \beta = 0.293, p < 0.001 \)), and social services (\( \beta = -0.086, p < 0.001 \)) were significant factors. Grade was always a significant factor (\( \beta = -0.240, p < 0.001 \)). There was a significant difference on the psychological well-being between males and females (\( \beta = -0.043, p < 0.05 \)).

D. DISCUSSION

This study systematically assessed the influence of Internet use behavior and service content preference on the psychological well-being of Chinese teenagers. The large scale survey from Chinese teens complements the previous literature as follows:

For Peer Findings indicated that a relationship existed between Internet use and teens’ psychological well-being. Without considering the influence of Internet service content preference, earlier Internet users scored higher in terms of psychological well-being. Considering both the influence of Internet use behavior and content preference, however, psychological well-being was not affected by tenure online and time spent online per week. All three dimensions of content preference significantly influenced the psychological well-being. Interestingly, positive relationship only existed between content preference of study services and psychological well-being. These results extended the previous studies (e.g. Liu9) which solely considered the relationship between users’ online behavior and psychological well-being. (Subrahmanyan, 2001 #28) suggested the effects of Internet use may vary widely, depending on the amount of time spent, type of activity engaged in, and the nature of content delivered (e.g. service content in our study). This study provided more evidence for this suggestion. In China, study was the most important task to teens both in school and at home. Their Internet usage was under the strict surveillance of parents. Thus, the null associations between online tenure and psychological well-being, as well as between total times spent online per week and psychological well-being, were not surprising.

Reiterating that the different purposes of Internet usage would result in a different psychological well-being [14], this study divided it into three dimensions of content preferences of Internet use. Interestingly, those who used more leisure or social services of the Internet scored lower on psychological well-being. In contrast, greater Internet use of study services was associated with higher rating of psychological well-being. In China, parents hope their children could spend more time on study, even when they are surfing online. Some parents may punish children for spending too much time on leisure entertainment. Thus, teenagers who use Internet for study purposes would be commended and appreciated. Yet they may feel guilt when they play game online.

In contrast to the results reported by Gross et al.[4] and Hills and Argyle [19], which reported no significant differences in Internet use with regard to gender and grades, this study revealed significant gender and grades difference in Internet use. These findings were similar to the studies in Turkey [7] and America [13]. Compared with females, males significantly used the Internet earlier, more frequently, and more for all Internet services. Female reported increased loneliness, anxiety and depression than male. These results suggested that male use Internet to relax from intensive homework, take participate social activities, and develop and maintain relationship. These activities may enhance psychological well-being.

Results indicated that higher grade students used Internet earlier, spent more total time online per week. However, there’s no significant difference on Internet usage behavior middle- and high-school. Similarly, students from high grade used more of all the three Internet content preferences (i.e. leisure service, study service and social service). Yet there’s no significant difference on content preference of social and study services between middle-schools and high-schools. Elementary-school students showed significant difference on Internet usage and content preference with middle- and high-school student. These findings suggested teachers and parents should give more guide to elementary-school students on Internet use time and Internet use purpose. In Kraut’s HomeNet project [10], great use of Internet was related with increases in depression. Similarly, this study found increased Internet use in higher grade students was associated with decreased psychological well-being. Significant difference existed on loneliness and anxiety among elementary-, middle-, and high-schools. Yet no significant difference on depression existed between elementary schools and middle schools. In China, teens, especially elementary- and middle-school, were under the strict surveillance of parents in China. When they grow up and enrolled in high-school, special attention should be paid to help them decrease depression.

The study utilized a large, stratified random sampling procedure that allows the results of the study to be more generalizable than the typical convenience sample used in many other studies. Moreover, psychological well-being may also be influenced by personality and social support. Therefore, researchers in the future could also include personality and social support as variables in relevant research. The focus of
Internet use was changed with the presence of new information technologies (i.e., blog, SNS, spaces). Longitudinal and structured studies of the psychological well-being of teens should be undertaken.

REFERENCES


