

Analysis of Attitudes Toward Computer Networks and Internet Addiction of Taiwanese Adolescents

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ABSTRACT

This study explored the interplay between young people's attitudes toward computer networks and Internet addiction. Ninety possible Internet addicts were selected for examination after analyzing the questionnaire responses of an initial sample of 753 Taiwanese high school adolescents. It was found that the subjects' attitudes toward computer networks could explain many aspects of Internet addiction. However, actual behaviors on Internet usage and perceptions on the usefulness of Internet were more important than affective responses toward computer networks in predicting adolescents' Internet addiction.

INTRODUCTION

IN RECENT YEARS most people have experienced some of the various benefits of computer networks, with the rapid growth and prevalence of computer network technology. For example, on the Internet, people can find specific information, talk with others, and purchase almost any kind of merchandise. Young people are generally viewed as the majority of Internet users. However, recent studies¹⁻⁵ revealed that some young people exhibit addictive behaviors, termed "Internet addiction" by researchers. However, few studies on high school adolescents' Internet addiction previously existed. In educational research, students' attitudes toward a subject matter are often viewed as important variables for predicting related performance. Hence, adolescents' attitudes toward computer networks are treated as an important variable contributing to their Internet addiction herein. This study explored the relationships between

adolescents' attitudes toward computer networks and Internet addiction by analyzing the questionnaire responses of 90 Taiwanese high school adolescents who appeared to be addicted to the Internet.

METHODOLOGY

Subjects

The initial sample included 753 high school adolescents (around 16 to 17 years old) who had Internet experience. The population was stratified into three demographic areas: Northern, Central, and Southern Taiwan. The adolescents were asked to finish a series of questionnaires about their attitudes toward computer networks and Internet addiction. Those with a score of 5 or higher (likely Internet addicts) on Young's questionnaire,⁶ a total of 90 (72% of them are male), were selected for

study. Young's questionnaire included eight items of assessing people's Internet addiction (in yes/no format). By Young's definition, people with a score of 5 or higher are Internet addicts.⁶

Instruments

The computer attitude scale developed by Selwyn⁷ was modified into a Computer Network Attitude Inventory (CNAI) to assess the subjects' attitudes toward computer networks. The original CNAI included 32 Likert scale (ranging from 1 to 4) questions. The final CNAI consisted of 18 questions with the same scales proposed by Selwyn after factor analyses of the initial sample of 753 adolescents:

1. *Affective scale* (5 items, $\alpha = 0.71$): An assessment of the adolescents' feelings toward the Internet (e.g., *the Internet make me feel uncomfortable*; scored in a reverse manner).
2. *Perceived usefulness scale* (5 items, $\alpha = 0.82$): An assessment of the degree to which the adolescent believes using computer networks will enhance job performance (e.g., *the Internet can allow me to do more interesting and imaginative work*).
3. *Perceived control scale* (5 items, $\alpha = 0.68$): An evaluation of the perceived ease of using computer networks (e.g., *I need an experienced person nearby when I use computer networks*, scored in a reverse manner).
4. *Behavior scale* (3 items, $\alpha = 0.49$): An assessment of behavioral intentions and actions with respect to computer networks (e.g., *I use the Internet regularly throughout school*).

The reliability coefficient for all questions of the CNAI is 0.82, with an explained accumulated variance of 54%. Adolescents with better attitudes toward computer networks (e.g., showing more confidence in using the Internet) would have higher scores.

The subjects' Internet addiction was assessed by using the Internet Addiction Scale for high schoolers in Taiwan (IAST) developed by Lin and Tsai.⁸ IAST also employed a 4-point Likert scale with 29 items and 4 subscales:

1. *Compulsive use and withdrawal*: An examination of the degree of compulsive Internet use and the degree of depression or moodiness if use is restricted (e.g., *If I cannot use the Internet in a certain period, I feel depressed*; 10 items).
2. *Tolerance*: An assessment of the perception of less satisfaction in spending the same amount of time or using the same applications on the Internet compared with one's previous experience (e.g., *I need to spend more and more time on line, in order to reach the satisfaction I experienced in early days using the Internet*; 7 items).
3. *Related problem: family, school, and health*: An assessment of the consequent problems of using the Internet, focusing on family interaction, learning, and personal health (e.g., *Because of my involvement with the Internet, I spent less time interacting with my family*; 8 items).
4. *Related problem: peer interaction and finance*: An evaluation of the consequent problems of using the Internet, focusing on peer relationships and financial management (e.g., *The online service charges of my family were considerably increased because of my Internet use*; 4 items).

Adolescents addicted to the Internet would have higher scores on the IAST. The reliability for the whole scale is 0.88. IAST shows a high correlation with that measured by Young⁶ ($r = 0.753$, $p < 0.001$) and it provides a more detailed description of adolescents' Internet addiction.⁸

RESULTS

A stepwise (forward) method was utilized to construct regression models (presented in Table 1) to predict adolescents' Internet addiction obtained from IAST by using adolescents' CNAI attitude scale scores as predictors. Table 1 presents the final regression model in predicting adolescents' responses on each subscale of IAST.

The regression results indicated that adolescents who used the Internet more frequently

TABLE 1. REGRESSION MODELS OF PREDICTING ADOLESCENTS' INTERNET ADDICTION

<i>Internet addiction (outcome variables)</i>	<i>Predictors</i>	β	R
Compulsive use along with withdrawal	Behavior	0.416***	0.416***
Tolerance	Perceived usefulness	0.522***	0.552***
Related problem: family, school and health	Behavior	0.316*	0.378*
	Affection	-0.269*	
Related problem: peer interaction and finance	Behavior	0.278*	0.490***
	Perceived usefulness	0.311*	

* $p < 0.05$ *** $p < 0.001$

Note: The order of the predictors corresponds to that of a stepwise regression (forward).

(i.e., CNAI's behavior) tended to have more compulsive behavior of using the Internet, and they would feel depressed if it was restricted. Adolescents who highly valued the Internet tended to have one of the Internet addict syndromes, tolerance, in that they needed more time online to achieve original satisfaction. Moreover, a heavier Internet usage (CNAI's behavior) may have caused family, school, and health problems.

However, those Internet-addicted adolescents who displayed relatively higher anxiety using the Internet (CNAI's affective scale) had a tendency to exhibit more family, school, and health problems. A further analysis indicated that the Internet-addicted adolescents' scores on the CNAI's affective scale were not significantly different from those of nonaddicts ($t = -1.47$, n.s.). That is, some Internet-addicted adolescents may show some anxiety in using the Internet, a finding contradictory to the stereotype of Internet addicts.

Adolescents who actually used computer networks more and had a higher perceived usefulness tended to have more problems with peer relationships and financial management. Adolescents' perceived Internet control was not significantly related to their Internet addiction, perhaps because most of these adolescents did not have relevant problems controlling the computer networks. A comparison of the CNAI responses of perceived control scale of addicts and those of nonaddicts revealed that Internet-addicted adolescents did perceive better control about using the Internet ($t = 3.12$, $p < 0.01$).

CONCLUSIONS

This study explored the interplay between young people's attitudes toward computer networks and Internet addiction. The adolescents' actual use and behavior while utilizing computer networks could explain many aspects of their Internet addiction. Moreover, perceived usefulness also contributed to heavier Internet usage to achieve the same satisfaction received from the initial online experiences. However, the adolescents' affective responses toward computer networks (e.g., the comfort of using the Internet) were not very important in predicting adolescents' Internet addiction. Adolescents' perceived control about the Internet was not significantly related to their Internet addiction. In sum, the adolescents' behavior in actually using the Internet (e.g., behavior) was more substantial than their emotional responses toward the Internet (e.g., affective and perhaps, perceived control) in predicting Internet addiction.

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