

# Internet Heavy Use and Addiction among Taiwanese College Students: An Online Interview Study

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## ABSTRACT

This paper presents empirical qualitative results of Internet heavy-use and addiction among some college students in Taiwan. It offers in-depth, online interviews of student-subjects in order to facilitate an interdisciplinary understanding of Internet heavy use, addiction and its potential impacts. A total of 83 subjects were interviewed, both as individuals and in chat-room groups. The analysis of qualitative data presented in six major themes: (1) Internet use and reasons; (2) Internet features; (3) the Internet as replacement for other media; (4) impact of Internet overuse; (5) controlling Internet use; and (6) coping with Internet withdrawal. Discussions, explanations, along with examples and quotes from subjects, are provided in each section. Implications for student affairs administrators and further research directions are also addressed.

## INTRODUCTION

**I**N RECENT YEARS, the Internet has become the most popular consumer technology and is changing the way people all over the world live and communicate. Taiwan's first network infrastructure, Tanet, has been in existence since 1990, and connects all schools and major research institutes. Tanet has provided convenient and free access to faculty and most students. However, overinvolvement with the Internet on college campuses has occasionally been observed and reported.<sup>1</sup> Some students have exhibited Internet addiction symptoms, such as heavy preoccupation with the Internet, excessive online time, compulsive behavior, and time-management problems.

Kandell<sup>2</sup> stated that college students as a group appear more vulnerable to developing

dependence on the Internet than any other segment of society, probably because college students have strong drives to develop firm senses of identity, and to develop meaningful and intimate relationships. In Taiwan, most students leave their homes and move toward independent lives when they enter college. Many reside in school dormitories and have convenient and free Internet access through school network systems. They find the Internet to be an important window through which they can communicate and interact with the world. Further, college students usually have free and easily accessed connections, meaning that Internet use is both implicitly and explicitly encouraged by a recognized, institutional authority. Therefore, Grohol<sup>3</sup> suggests that societal acceptance of the Internet and the effects of labeling Internet use are additional issues that must be taken

into consideration when we study Internet addiction or heavy use. Therefore, inspecting the substituting net time for generally accepted television time became one of the interview questions for this study. The implications of Grohol's observations are that Internet use hours should not be the only factor used to judge Internet addiction, and that observations of online behaviors should not be on temporal bases only.

However, from previous studies, it can be found that user time is an important index for research of Internet addiction. For example, in Young's study,<sup>4</sup> 396 Internet-dependent subjects reported a striking average of 38.5 h/week spent online, compared to 4.9 h of nondependent Internet users. In Chou and Hsiao's study,<sup>1</sup> 54 Internet addicts spent 20–25 h/week connected to the Internet—almost triple the number of hours that 856 nonaddicts spent. The fact that addicted (or dependent) individuals spend more time online than nonaddicts has been empirically verified, and remains an important component of research and analysis.

Online activity or application is another factor used by researchers to evaluate Internet addiction. Young<sup>4</sup> reports that dependents primarily use two-way communication functions such as chatrooms, multi-user dimensions or multi-user dungeons (MUDs), newsgroups, and e-mail, while nondependents use information-gathering functions available on the Internet, such as information protocols and the World Wide Web (WWW). Chou and Hsiao's study<sup>1</sup> reports that an addicted group spent more time on electronic bulletin board systems (BBS) and e-mail than the nonaddicted group. However, it was found that the addicted group also spent more time on the WWW than the nonaddicted group. This study reports that BBS use hours and e-mail use hours are two powerful factors in predicting Internet addiction.

Heavy Internet users often report problems caused by excessive Internet use. Time distortion is a significant and frequently reported problem. Users who spend a significant amount of time online often experience academic, relational, financial, and occupational difficulties, as well as physical impairments.<sup>4</sup> For example, students may have difficulty com-

pleting homework assignments, studying, and getting sufficient sleep to meet their academic responsibilities (such as getting up and getting to class). Chou and Hsiao<sup>1</sup> report that the addicted group rated the impact of heavy Internet use on studies and daily living as significantly worse than the nonaddict group. Results showed that most heavy users had experienced one or more negative impacts, but how they coped with these consequences was still unclear from this early work. Did they cut down their Internet use time or reduce the time they spent on daily activities and chores? Were they successful in compensating for the exorbitant amount of time spent on the Internet? This paper focuses on these questions.

Young<sup>4</sup> reports that Internet-dependents gradually spent less time with friends and family in exchange for solitary time in front of a computer. Brenner<sup>5</sup> also reports that some respondents experienced increasing social isolation except for Internet friends. However, Chou and Hsiao's study<sup>1</sup> found that both addicted and nonaddicted groups experienced the impact of Internet use on their relationships with friends/schoolmates as positive, because they felt that the Internet provided them with opportunities to meet new people, with more topics to share, and with additional, if not primary, tools for communicating with old friends.

Suler<sup>6</sup> posits that whether Internet use is healthy, pathologically addictive, or somewhere in between is determined by the cluster of needs that Internet use fulfills, and how, exactly, those needs are met. In particular, Suler addresses two interpersonal needs: the need to belong and the need for relationships. Both of these needs can be observed among Taiwan's college students. When most students enter college, they are separated from their families and treated as adults by society—often for the first time. These late adolescents must contend with two important tasks: developing a sense of belonging and identify, and developing new, meaningful relationships. Suler states that, in this sense, the Internet is more than just an information superhighway; it is also a powerful social domain. Kandell<sup>2</sup> observes that college students may overuse two-way Internet communication applications such as chatrooms, e-mail, and MUD games in an effort to accom-

plish these difficult tasks. The danger lies in overuse, making these activities the central focus of their lives. Young<sup>4</sup> concludes that, while the Internet itself is not addictive, specific applications with interactive, embedded features appear to play a significant role in the development of pathological Internet use. Therefore, one major focus of our study was which Internet applications subjects most often used, how they used them, and what impacts the applications had on their daily activities.

This paper presents results from a 3-year national project entitled "Internet Addiction among Taiwan Students." The quantitative results of the first year were presented in Chou and Hsiao's study,<sup>1</sup> which described the overt behaviors of Internet addicts—in particular, network usage patterns. As Griffiths<sup>7</sup> comments, however, the survey method, at best, indicates that Internet addiction may be prevalent in a significant minority of individuals. He suggests that other empirical techniques such as in-depth qualitative interviews are required. Therefore, the present study continues the focus on Taiwan college students, but includes in-depth interviews with subjects to further investigate the reasons for Internet heavy use and addiction, and the impact of such behavior.

## MATERIALS AND METHODS

### Subjects

Subjects in this study are students living on college campuses in Taiwan, who are Internet heavy users or addicts; subjects were chosen from:

1. The pool of Internet addicts identified by the previous study<sup>1</sup>
2. Volunteers responding to campus BBSs who also answered "yes" to five or more of Young's DQ questions<sup>4</sup>
3. Any heavy users, defined by more than 30 h/week on the Internet
4. Students who identified themselves as Internet heavy users, contacted and evaluated by the author

Subject recruitment and interviewing was conducted from March through August 2000.

Each time we were able to arrange for one, two, or more subjects during one time slot, we conducted interviews. In other words, we continued our recruitment while interviews were being conducted.

Of the 83 valid subjects in the study, 59% (49 subjects) were male and 41% (34 subjects) were female; 85.5% (71 subjects) were full-time college students (freshmen to doctoral students), and 14.5% (12 subjects) were part-time students.

### Research setting and methods

A designated chatroom (Fig. 1) was used for all interviews. Each chatroom included a prominent conversation box in the middle of the screen; on the right side of the screen was a list of people present in the chatroom; and, on the lower right, a list of emoticons (icons, each indicating a particular emotion). Subjects typed their thoughts and responses to questions in a small workbox below the conversation box; after completing their writing, they clicked on the "submit" button, and their sentences appeared in the conversation box, visible to everyone in the chatroom. Subjects were allowed to click on emoticons, if they wished, which would then appear in the conversation box in lieu of more traditional prose.

Interviews were conducted online in two forms: individual and group. Subjects met with researchers to decide interview times and preferred form. We conducted a total of 21 inter-



FIG. 1. Sample screen of the chatroom in which interviews were conducted.

views for this study: 12 groups (group sizes ranged from 2 to 12 subjects) and nine individual interviews. Quotation sources were derived from group interviews A through L, and individual interviews M through U.

During interviews, nonsubjects online were blocked from entering the chatroom. All questions and answers were presented and recorded in a text format for further analysis. Interviewing was semistructured and interactive; that is, researchers prepared sets of fixed questions, but some "follow-up" questions were created spontaneously, based on subjects' answers.

The interview method was used to supplement our previous survey findings, and to gather first-hand, self-reported verbal data from our subjects. Interviews provide access to participants' own language and concept. We expected that the qualitative nature of this study would provide more in-depth and richer descriptions, such as "how" and "why" of Internet addiction and heavy use, and would enable us to draw a holistic, and thus more complete, picture of our subjects. The aim, however, was not to provide exact quantitative or statistical descriptions, nor to generalize findings to a larger population.

The online rather than face-to-face interviews were adopted because the researcher decided to query our target population directly within the context of their (and our) interest in Internet use, and because some difficulties were encountered in earlier face-to-face interviews. As reported in Chou and Hsiao,<sup>1</sup> some students refused to participate in interviews because they believed it would reduce their time on the Internet.

#### *Interview questions*

The following is a list of the questions addressed to each subject; however, follow-up questions were not limited to those listed, but were dependent upon contexts and subjects' answers.

These questions focus on the reasons for heavy Internet use and addiction; the impacts of such use; and how subjects cope with resulting difficulties. Questions are divided into four groups: (A) Internet use; (B) reasons for

and features of that use; (C) substitution for other media; and (D) impacts and coping strategies.

#### A. Internet use questions:

- A-1 What Internet applications do you most often use?
- A-2 What online activities (search for information, communication with others, etc.) do you engage in most often?
- A-3 How much time do you spend on the Internet per day, and at what time of the day are you usually online?
- A-4 Describe your Internet-use pattern(s).

#### B. Reasons and features questions:

- B-1 Why do you use this (these) application(s) the most?
- B-2 Do you enjoy using the Internet in general, and this(these) application(s) in particular?
- B-3 Does the Internet and/or the application(s) you use help you escape from the real world, or relieve your negative feelings (e.g., anxiety)? Explain.
- B-4 What major features of the Internet attract you most (multimedia, interactivity, information richness, versatility, availability, virtual experience, etc.)? Give examples and explanations.
- B-5 How do you use the two-way communication functions available on the Internet?
- B-6 Do you enjoy these two-way communication functions? Explain.

#### C. Substituting for other media questions:

- C-1 Does the Internet replace some of the information sources in your daily life (e.g., TV, radio, newspaper, etc.)? If yes, how?
- C-2 Does the Internet replace some of the interpersonal communication facilities in your daily life (e.g., phone and regular mail)? If yes, how?

#### D. Impact and coping questions:

- D-1 How do people around you (parents, siblings, roommates, classmates, friends, etc.) feel about your Internet use?

- D-2 Does anybody complain that you use the Internet too much? What do they say?
- D-3 Please evaluate the Internet's impact on your life in terms of study, daily life routines, health, relationships with friends/schoolmates, parents, and teachers.
- D-4 Do you plan to control or reduce your Internet-use?
- D-5 If the answer to question D-4 is yes, how do you plan to do this?
- D-6 Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop your Internet-use?
- D-7 If the answer to question D-6 is yes, what are you going to do about it?

## RESULTS

The following section presents the major theme in our analysis of the data gathered from 83 subjects. Generally speaking, subjects were very cooperative in reporting and evaluating their Internet experiences.

### *Internet use and reasons.*

Most of the subjects have 2 or more years experience using the Internet. They spend approximately 4–5 h per weekday online during the school semester, and more (5–10 h per day) online during weekends and school breaks. Ten subjects even indicated that they spend whole days on the Internet during their waking hours while in the lab, workplace, or dormitory; that is, they never log off from the Internet. It is worth noting that these three places usually do not charge end-users for Internet use. No home-users reported that they stayed logged on to the Internet 24 h a day. Although these 10 subjects did not really use the Internet all day, the frequently checked e-mail and BBSs, and participated in chatrooms sporadically. Although more than half of the subjects said their Internet use hours varied both daily and weekly, about 12 subjects admitted that they tended to spend more time using the Internet than the subject-average would indicate.

The major applications our subjects use are BBSs, e-mail, and the WWW, as reported by 95% of interviewees. This is consistent with our

previous years' findings.<sup>1,8</sup> Other applications include ICQ, games, and MUD. The posting function of BBSs allows users to monitor environments and to become familiar with other users who have similar interests; BBS chatroom functions allow them to form specific discussion groups, and to share their opinions and feelings. One reason for this is the sense of companionship or belonging they derive from such interactions. Subject B-8 described his/her Internet use after school as follows:

B-8: "When I get back to the dorm room, I log-on to the chatroom I usually go to . . . it is something I need to fulfill every day . . . They [people in the chatroom] greet me, and are ready to share my day . . . I like the feeling that a group of friends is always out there, I have someone's accompany . . ." [sic].

Everyone needs interpersonal contacts, social recognition, social support, and a sense of belonging to live healthy and balance lives. On-line social support, as Young defined,<sup>9</sup> is formed by groups of people who engage in regular computer-mediated communication with one another over extended periods of time. With routine or frequent visits to a particular newsgroup, chatroom, or BBS boards, especially in Taiwan's case, familiarity and sense of belong can be established. It seems that B-8 has his/her social recognition, support, and a sense of belong through one particular chatroom.

Kandell<sup>2</sup> states that the Internet is a coping mechanism for adolescents negotiating developmental challenges; gaining a sense of identity and belonging are two of these challenges. In Taiwan, young adolescents are often carefully protected by their families, and are strongly encouraged to attend, if not literally pushed into, college. Although some students had access to the Internet in high school, not many began using the Internet for social purposes until college. Subject B-8's case demonstrates a typical college student's need to share. If parents and siblings at home, or roommates in the dorm are not available, Internet friends seem a good choice to fulfill this necessary activity.

E-mail is another major application that subjects frequently use. Most subjects receive mul-

multiple electronic messages every day, which means that they spend a lot of time reading and replying to e-mail. Although some e-mail messages do not require a response, such as advertisements, warning of new viruses, jokes, articles to share, and so on, others do require replies. Some subjects seem very accustomed to being "secondary-broadcasters"; that is, they often forward interesting messages to groups of friends.

Subjects use the WWW mainly to search for information about homework, personal interests, and life activities, such as movie times, concert tickets, and school events. When asked what kind of personal-interest information is sought, subject N-1 provided this example: s/he likes Web novels very much. S/he begins every day by logging on to the WWW and reading a chapter in a serial novel. If s/he is fascinated by the story, s/he usually goes to a chat-room after reading the chapter to talk about the plot and characters. Subject G-1 said s/he was very interested in recent breakthroughs in gene sequencing, and the WWW offers her/him frequent updates and comprehensive coverage.

Subjects find BBSs and the WWW good for killing time; in other words, time seems to fly faster for subjects while they are logged on to the Internet. Subject C-2 wrote, "I wonder whether Net time is triple the speed of our real-world clock." Interestingly, Subject D-5 volunteered: "I wish I had 100 hours per day to be on the Internet."

Most subjects expressed the idea that the Internet is good for both work and entertainment, and affords users some degree of fun and gratification. About one-fourth of subjects reported that the Internet was a good place for them to escape from problems, upsets, and depression. Verbalizing their feelings about problems, they believe, helps them relieve negative emotions. Although disputes or "flames" on some issues do occur, subjects displayed a high degree of loyalty to their preferred BBSs and chatrooms. Morahan-Martin and Schumacher<sup>10</sup> stated that the Internet provides a place to relax, escape pressure, and seek excitement. Scherer<sup>11</sup> found that Internet-dependent college students spend twice as much time online for leisure activities than do other students. Chou, Chou, and Tyan's study<sup>8</sup> found that Taiwanese college

students' Internet addiction scores were positively correlated with their total communication pleasure scores, in particular the "escape pleasure" scores and "interpersonal relationship pleasure" scores. Chou and Hsiao<sup>1</sup> provided their theoretical explanation of these observations. According to the theory of use and gratification, and the play theory of mass communication, students have a variety of needs (social, academic, personal, etc.) to use the Internet, which lead to different degrees of exposure to Internet applications (BBS, E-mail, WWW, etc.) and result in varying degree of gratification and pleasure experience. Problems arose when people gave up almost all other leisure time and activities to pursue online pleasures, exhibiting an intense preoccupation with the Internet. Some students may tend towards overinvolvement with or pathological use of the Internet, and gradually develop addictive tendencies.

#### *Internet features*

In this study, one interview question was what major features of the Internet attract subjects most. Subjects collectively expressed appreciation for the following Internet features:

- Interactivity (includes both human-computer and human-human interaction)
- Ease of use (most applications are easy to use, and thus enhance both types of interactive relationships)
- Availability (widely accessible, often free use for students via institutional network infrastructures)
- Breadth of information accessed online (diversity of information and perspectives, both of which are continuously changing)

Subject A-3 described the Internet's attraction in terms of breadth of online information:

A-3: "I am fascinated by the interesting people and information on the Internet. I never imagined that the world could be so different and diversified. Although sometimes I wonder how somebody's opinion, exactly opposite to mine, also can sound reasonable and right . . . but I am very glad to be an individual in this world."

Greenfield<sup>12</sup> also stated that accessibility, intensity of information accessed online, and the potency of its content are the unique qualities of the Internet which contribute to the potential for Internet addiction. Interactivity has two aspects: human-computer and interpersonal. Most Internet applications such as the WWW are very easy to use, and thus enhance human-computer interactions; further, some applications, such as chatrooms and e-mail, are especially good at facilitating interpersonal interactions. Availability means easy, low-cost access for users. Finally, the diversity of ideas, subjects, attitudes and opinions presented on the Internet continuously changes users' perspectives.

Interestingly, at least five subjects said that they had some kind of "information anxiety," that is, difficulty handling a morass of information. However, they agreed that abundance is better than information scarcity. Subject S-1 recounted this experience:

S-1: "It is hard to say that I enjoy the advantage of abundant information on the net. Sometimes I am terrified by the number of items provided by search engines, say, '22500 matched items found' . . . I feel I am swallowed in a dark hole of information. . . ."

Subject J-5 described a different kind of "anxiety":

J-5: "The problem with the Internet is that garbage and useful information are equal in amount. . . . Sometimes I feel a little bit anxious because I spend so much time searching but find so little useful information. . . ."

Since Subject A-3 used the "world" in her talking to refer to the virtual one created by the Internet. We therefore asked whether this "virtuality" attracted our subjects, or, which "world" attracted them more. Subject P-3 expressed dissatisfaction with our question:

P-3: "What is virtual and what is real? I don't agree with the labels you use . . . I think the virtual world, as you call it, is more real to me. I make sincere friends, express my true feelings, say things from my heart in this world rather than in the world you call 'real'. . . ."

#### *Internet as replacement for other media*

We found that 67 (80.7%) subjects were living on campus, so their access to television was limited. Since the Internet is more available on campus, we wanted to know if students watch Web TV instead of regular broadcasting or cable television, and read electronic newspapers instead of printed newspapers. About one-third of the subjects who answered this question said that they did not regularly watch television or listen to radio anyway, so they did not "substitute" the Internet for these media. About one-third of the subjects reported that they used the Internet to replace television or radio at school. Some of them still watched television when they went home in the evening or on weekends, and some listened to radio while driving. It seems that whether students use the Internet to replace broadcast media (television or radio) depends on geographical context, or Internet accessibility in their environment.

We detected different perspectives on this question in five of our subjects. Three subjects said that they usually listened to television or radio while they were on the Internet. However, subject A-10 said that s/he tried to avoid watching any monitor-like shape after s/he got offline, such as the television set (but not including microwave oven). Subject C-3 found that the image quality of television is superior to that of computers. Since s/he could not accept inferior image quality, s/he did not watch video on the Internet.

Since electronic newspapers are quite popular on the Internet in Taiwan, they were another focus of this study. Surprisingly, more than 95% of the subjects had read some form of e-news on the WWW. Among these subjects, half read e-news regularly, primarily because e-news is free. Subject H-2 elaborated:

H-2: "I guess that, in the future, only rich people will read print newspapers; poor people will read electronic news. Print newspapers require paper, and paper will become more and more precious and expensive."

Other reasons for reading e-news included:

- The speed with which the Internet can update news events (some publishers update e-news every 4–6 h)

- The ease of searching for information (some e-news services provide databases for related news stories, so research is easy)
- Interactivity (users can write to reporters or editors, and participate in forums on some issues)
- Colorful animated images (e-news is presented in a multimedia format which often includes color, sound, and movement)

We also asked subjects whether they use the Internet to replace regular telephone and mail services. About one-third of subjects said they reduced telephone use in communicating with others since they used the Internet; two-thirds said they still used both. It is worth noting that "telephone" in their sense includes both regular wired phones and cellular (mobile) phones. Cellular phones are very popular among Taiwan's students. When looking for friends, some subjects first log on to frequently visited chatrooms and then make cellular phone calls if friends are not in the chatrooms. Most subjects indicated, however, that phone conversations are faster and more direct than text-based conversations, and are especially good for gossip.

More than half of the subjects reported that they have reduced the number of letters they write by hand since acquiring e-mail accounts. Eleven subjects said they were no longer used to writing by hand. Subject A-11 expressed concern that her handwriting had become worse due to lack of practice. However, if subjects' target receivers do not use the Internet in general, or e-mail in particular (for example, boyfriends in compulsory army service), subjects will still write letters. Two subjects said that they like to receive hand-written love letters. Subject A-7 stated:

A-7: "It [the hand-written letter] reads more sincerely and sensibly . . . I like to touch the paper texture, to scrutinize the handwritten characters, to guess at the feelings when the letter was written . . . email messages do not give me any senses of these . . . it seems that you can make many copies and send them to many people" [sic].

We concluded that although the Internet does not replace the use of television, radio,

and newspapers for most students, it provides another source of information and entertainment. The choice depends on Internet availability in their living environments. Similarly, although the Internet does not totally replace the use of phone or mail, it provides other channels for interpersonal communication. The choice here is more dependent on target receivers. It is expected, though, that college students will become increasingly more reliant on the Internet as broadcast as well as personal media in campus life. The Internet is, indeed, the window through which students communicate and interact with the world.

#### *Impact of internet use*

Subjects generally rated the Internet more positively than negatively as a component in their campus lives. The positive impacts noted included self-identification, closer relationships with friends, bonding with the world, and so on, as discussed above. Of all subjects who responded, 38 (45.8%) reported that they had better relationships with old friends due to extra communication channels provided by the Internet. When asked about their relationships with old friends who never log on to the Internet, some subjects said that they introduced the Internet to those friends and, in most cases, it worked: they now use the Internet as their major, if not their only, communication channel. Further, 45 (54.2%) subjects said that they have made new friends on the Internet. Some reported meeting their Internet friends in person. While subject K-1 described an unhappy experience in one such real-life encounter, most subjects felt the Internet extended their social circles in mostly positive ways, consistent with the findings in Chou and Hsiao,<sup>1</sup> but not with the findings in Young.<sup>4</sup> Therefore, it can be concluded that if online friendship is counted as a part of users' overall friendship patterns, heavy internet use may not result in negative effects; on the contrary, the Internet may provide users with the opportunity to meet new people, provide additional, if not primary tools for communicating with friends, and create more topics to share with them.

Among the negative impacts of Internet use, eyesight deterioration and sleep deprivation



were the major complaints. Since problems with myopia are common among Taiwanese college students, more than half of the subjects believed that excessive computer use might make their eyesight problems even worse. Related complaints included sore, dry, or uncomfortable eyes. About half of the subjects reported that their sleep patterns were typically disrupted due to late night log-ins. Some said that they stayed awake and online until 1, 2, 3, or even 4:00 in the morning. The consequences of late night log-ins were sore shoulders, backs, hands, and fingers; fatigue; being late for classes or appointments; and so on. These results were consistent with Young's findings.<sup>4</sup> Subject L-1, however, had this to say about late night log-ins:

L-1: "I believe that the Internet belongs to the night. The deeper the night, the prettier the Internet . . . I enjoy the quietness of the surroundings, while the hustles and bustles on the net are about to start . . ."

Not every subject saw the Internet in such a romantic light, however. Subject A-11 lamented that his/her Internet use had been significantly curbed due to earlier, excessive use habits: "I now can only search for wildlife-related information on the net," s/he said. Several subjects reported more serious consequences such as poor grades, flunked courses, and even job losses. Subject E-4 reported this:

E-4: "Once I stayed up online until 5:00 am. You can image that working the next day was very miserable. My lab director happened to give a long talk during the meeting . . . I could not help falling asleep . . . I almost lost my job."

Subject S-1 is now a master's degree candidate. S/he remembered this from her/his junior year:

S-1: "I was addicted to MUDs at that time. I knew I had to take final exam the next morning, but I could not stop playing MUD until 6 o'clock. Then I decided not to take the exam. I announced this decision in the MUD; all players in it applauded me . . . At that time, I thought I was a tragic hero . . ."

### *Controlling or cutting down Internet use*

Thus far we have described Internet heavy use among our subjects. Some incidents meet the "salience" and "conflict" criteria suggested by Griffiths,<sup>13</sup> or the "compulsive use" and "related problems" criteria identified by Chou and Hsiao.<sup>1</sup> However, these incidences are not enough to assess subjects' tendencies toward Internet addiction. Griffiths<sup>13</sup> also lists other criteria, including mood modification, tolerance, and withdrawal symptoms. Among them, withdrawal is one of the most important criteria, including unpleasant feelings, state of mind, or physical effects when Internet use is stopped or curtailed.

We asked our subjects whether they had tried to cut down their Internet use and, if they had, how. Surprisingly, fewer than 10% answered yes, although most subjects had reported some existing problems related to excessive Internet use. Subject U-1 explained that s/he would not cut down use, but would instead use the Internet more efficiently. Subject O-1 said only when phone bills arrived did s/he seriously contemplate cutting down use-time. However, s/he never succeeded in reducing Internet use time, despite her/his good intentions. Subject T-1 said the Internet is already a part of his/her daily life, and nobody can ask that him/her to cut it out completely, just as nobody can ask him/her to stop eating or sleeping.

How did our subjects feel when they could not log on to the Internet for a long period of time? Out of all subjects who responded, 25 (30.1%) subjects said they experienced loss, moodiness, anxiety, or an intense desire to log on to the Internet. Subject S-1 reported that s/he experienced depression and became very irritable when s/he tried to stay away from a favorite MUD. Subject K-2 said that the maximum time s/he can bear to be away from the Internet is 5 days. Although more than half of the subjects said the situation might be acceptable for a short period of time, most of them would like to get back to the Internet as soon as possible. Subject H-2 observed that:

H-2: "I would not feel anxious about an Internet breakdown if I knew it was large-scale, af-

fecting all my friends, for instance, during the power supply cut-off after 1999's devastating 9/21 earthquake in central Taiwan. I feel anxious if only I cannot log on to the net while all my friends are there . . . I wondered if I am missing lot of information."

Subject N-1 related this experience:

N-1: "When I log off the Net, I feel alone, although I am surrounded by many people in reality . . . I tried not to use the computer and the Internet for a while. Well, the sky was still blue and beautiful . . . However, when I came back to the net, my e-mail box exceeded its limits, and I had to deal with these letters . . . so I got back to normal life quickly."

Noteworthy, perhaps, is Subject N-1's reference to "normal life," which, in this case, refers to using the Internet as excessively as before. How did people around subjects, such as parents, teachers, friends, and any significant others view this "normal" life of excessive Internet use? Subject N-1 answered that his/her parents encouraged him/her to go out with friends, instead of staying at home online for whole days during summer breaks. Many subjects gave similar answers: their parents were often more concerned about their computer use than their friends were, mainly because of psychological as well as physical health considerations. Subject P-1 said that his/her mother censured him/her for being too lazy. By contrast, subject E-3 said that his/her mother was jealous of his/her Internet use.

#### *Strategies for coping with Internet withdrawal problems*

If stopping or cutting down Internet use causes unpleasant feelings, how did our subjects cope with those feelings? Ten subjects answered that they gave up the idea after several failed attempts, so they did not have any effective methods to share. More than 90% of our subjects said that they did not even think about looking for outside help, for example, from school psychologists or counselors. They consistently thought that Internet overuse was a personal or minor problem and was not a legitimate reason to go to school counseling cen-

ter. "Why should I go to counseling center just because I use the Internet?!" several subjects typed. It is obvious that they are not aware of this new disorder, underestimate its negative impacts, and do not know where to look for professional help.

Therefore, subjects tried out their own coping methods. About one-third of the subjects said that they tried real-life activities instead of using the Internet, including shopping (on the street, not online), reading (print) novels, doing laundry, making phone calls, visiting friends' homes, etc. But all these activities were meant to be transitional; that is, they helped subjects to pass the time before their next Internet log-in. Subject A-9 said that while the Internet was out, s/he talked to friends in person, which s/he did not often have a chance to do. What did they talk about? People and issues on the Internet.

Some subjects reported unusual coping strategies, such as subject S-1:

S-1: "In my senior year, I finally decided to stop using the Internet until the written exams for graduate programs were over. Besides, I had skipped classes for half the semester. I would flunk if I continued playing my MUD. So I committed suicide in MUD, and it worked. I lost all weapons, energy, battle power, seniority, etc. . . . I really felt I died at that moment."

Committing "suicide" was indeed a traumatic event for subject S-1, because s/he was not just a regular player, s/he was one of the "Gods" of that MUD; that is, s/he was one of the top-level managers who supervised the programming work as well as players' conduct. Subject U-1 shared this strategy:

U-1: "During the final exam week, several roommates decided to hide the power cord in the neighboring room. It did not work anyway. So we devised a more strict method: fining roommates NT\$200 [approximately equal to US\$6.00] per Internet use during the week. Two hundred dollars it not a small amount for us . . . it could pay for two days' meals. This method worked only for a couple of days. After that, bills were passed from one person to another . . . finally it became a joke . . ." [sic].

It seems that a few subjects repeatedly made efforts to control, cut back, or stop Internet use. However, few were successful. Subjects felt that this failure was due in part to the Internet's pervasive presence in their lives, and in part because it has replaced some of the functions of other broadcasting and/or personal communication technologies. No-cost access is also a major reason for students who usually do not have much money to spend. For those excessive or addicted Internet users, the goal should not be to stop using the Internet altogether, but rather to use it in a productive, healthy, and controlled way. This explained why the abstinence methods (hiding power cord, fining, etc.) used by some subjects did not work out. Our subjects seemed to demonstrate that self-determination and self-regulation of Internet use was a more effective strategy for curbing Internet overuse problem. However, as mentioned above, no matter which method they had tried, they never considered to look for professional help. As Rudall<sup>14</sup> suggests, treatment of this new addiction should follow the same procedures followed for other existing behavioral addictions; that is, it is important not to cut off Internet access altogether, but rather to reduce usage in a controlled fashion. Orzack and Orzack<sup>15</sup> also state that the treatment of Internet addiction cannot be abstinence: it should be treated like an eating disorder where the goal is to normalize network usage to survive. Therefore, how to make students aware of appropriate, and productive use of the Internet becomes the most important task.

## DISCUSSION

Since Internet use in society and on college campuses is growing at an exponential rate, abusive and overinvolved Internet users may increase by both number and degree. The aim of this study was to discuss recent research and interviews focusing on excessive and addictive Internet use among college students in Taiwan. This study does not attempt to determine the number of Internet-addicted students; instead, by directly quoting subjects' words, we intend to provide rich and vivid descriptions of their

psychology and behaviors. In addition, by providing researchers' own observations and analyses, major themes in Internet addiction study may become clearer and more productive.

The subjects in this study were at least Internet heavy users, in terms of time they spent online. On average, they spent 4–5 h per weekday, and 5–8 h during weekends and school breaks. They used BBSs, e-mail, and the WWW for being familiar with other users, developing a sense of companionship (belonging), monitoring environments, searching useful information to improve living, killing time, and having fun and gratification. Subjects used Internet to replace traditional broadcast media depends on geographical context or accessibility in their environment. For example, many subjects read e-news on the WWW, and half of them read e-news regularly. Regarding interpersonal media, one-third of subjects reduced using telephone, and more than half have reduced handwriting letters. If most the information we need in our daily lives (e.g., from mass media) can be easily and cheaply obtained from the Internet, and activities (e.g., making phone calls, writing letters) can also be carried out from the Internet, it is no leap to predict that more and more students will spend more and more time on the Internet.

Subjects expressed their appreciation for the Internet features of interactivity, ease of use, availability, and breadth of information accessed online, although some may develop "information anxiety" because of the difficulty handling a morass of information. Indeed as the Internet's continuously expanding bandwidth continues to deliver multimedia resources in greater amounts, higher quality, and lower cost, the popularity of the Internet will definitely in ascendancy for college as well as other levels of students. Young<sup>4</sup> stated that the Internet itself is not addictive, but specific applications embedded with interactive features appear to play a significant role in the development of pathological Internet use. This study provides some incidences for this statement.

These subjects reported that the Internet significantly enhanced their self-identification, closer relationships with friends, and bonding with the world. However, eyesight deteriora-

tion and sleep deprivation were the major two negative impacts of Internet use. Other problems included poor grades and job performance. About one-third said they experienced loss, moodiness, anxiety, etc., when they could not log on to the Internet. Some subjects had tried the abstinence methods, which did not often work out. More importantly, subjects did not think about looking for professional help from school psychologists or counselors. They consistently thought that Internet overuse was a personal or minor problem and was not a legitimate reason to go to school counseling center.

This paper has some implications for student affairs administrators. As Scherer<sup>11</sup> suggests, administrators can play a primary role in promoting awareness of Internet abuse or addiction on campus by being in a position to both assess the needs of students, and implement preventive programs to decrease the potential dangers of excessive Internet use. Besides promoting diagnostic and preventive strategies, this research may enable more effective management of students' dormitory life, and thus the prevention of excessive late-night log-ins.

For example, the Office of Student Affairs at my university has tried to resolve the related problems of students' sleep deprivation and resultant poor grades. The method they suggested was to cut power supplies to all dorm rooms after 1:00 am, but to keep power on in public study rooms. This was, of course, strongly protested and was therefore not implemented. Interestingly (but not surprisingly), the potential restrictions and ensuing protests were commented upon vociferously on the Internet. The conflict ended with the establishment of "regular-hour" dorms: power to several designated dorms was regularly shut off at midnight. Students could freely choose to live in these dorms, and those who did so were not disturbed by late-night, Internet-using roommates.

Student affairs administrators can also play a crucial role in apprising other campus professionals of the risks to students of Internet abuse or addiction. They and other faculty members are often the first to identify those students with potential or manifest academic

problems—one of the key signs of Internet abuse and addiction. If faculty and others are made aware of warning signs and symptoms, they can more readily identify those students who might benefit from treatment or other interventions.

In the future, specific research questions, such as the relationship among media (the Internet), applications (chatrooms, for example), and messages (what do they talk about), profiles of addicted students, and Internet users' psychological control mechanisms, might be productively addressed. It is worth noting that subjects may have different definitions of the terms virtual, real, and normal life from those used in our interview questions. Therefore, survey questionnaires or interview questions which use these terms should be very careful. Future research could also focus on the effective treatment of Internet addiction. After all, research findings, such as those reported in this paper, are responsible for shedding lights on how to identify and address Internet addiction. Young<sup>4</sup> stated that the most difficult tasks are identifying Internet addicts, and breaking through their denials of addiction and its often devastating effects. College students may lack knowledge about Internet-dependency symptoms, or the services to address these problems; mental health professionals, however, understand the underlying factors that cause or worsen Internet addiction, and are able to use their knowledge to develop and implement effective treatments. As mentioned above, a team approach is required in which students affairs administrators and faculty, as well as psychiatrists, parents and others are made aware of this new disorder and where to look for help.

As educators or researchers, we should not be surprised by the onset of new behavioral conditions when technological advances are changing our students' lives so rapidly, and in such revolutionary ways. We must be prepared to recognize that while the Internet is changing the way we live, those changes are not always for the better. Further research on related topics, based on the qualitative findings in this and other studies, will undoubtedly advance our understanding of the full scope of Internet addiction.

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