Exploring Adolescent Cyber Dependency: Conceptualization and Measurement

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Abstract   The purpose of this study is to conceptualize cyber dependency and construct a non-diagnostic scale that would measure the impact of Internet misuse. The study was based on the Internet addiction scale of Young (1996). From the said framework, exploratory factor analysis was used to identify data driven Filipino based factors, 8 factors were hypothesized and 103 items were developed and reviewed by an expert and group of students. Preliminary items were reduced into 98 and were administered to college students (*N*=320). The results showed reduction of factors, wherein, lack of time management, detachment from primary social groups, escapism, neglecting personal tasks and preoccupation remain. The revised version containing 53 items were used for further development of the scale. A confirmatory factor analysis (*N*=803) was used to check the scale's measurement fitness. Provision towards validation of the scale and counseling implications were discussed.

Keywords: *cyber dependency, Internet, exploratory factor analysis, confirmatory factor analysis, psychological test development*

Introduction

The Internet was developed because of the visionary thinking of the people during the 1960's. They saw that computers have a great potential in giving and sharing research information that leads to developing science.

With these discoveries and developments, the Internet is now leading in the digital industrial revolution. It cannot be helped that many people engage in too much Internet use. It is the cheapest entertainment and leisure that every people can have even if they are just at home. The internet can have a powerful psychological impact on some people's lives as its use can sometimes be addicting. A couple of articles and discussion show that heavy internet use can affect the lives of internet users because of loss of control and escapism. Examples of the effects on internet users are falling out of school, splitting up relationships and receiving hospital treatment. Internet misuse is defined as when internet usage affects daily living. (Egger & Rauterberg, 1996; Greenfield, 2000).

Ivan Goldberg coined the term "Internet Addiction Disorder" (Egger & Rauterberg, 1996). Internet addiction can also be defined as an impulse-control disorder that does not involve inhibited drugs (Young, 1998).

This paper describes the development of a scale to measure the cyber dependency of adolescents. The study is important because research shows that Internet can also have a negative impact on academic performance, family relationships, and emotional state of adolescents. The authors hypothesized that the scale developed and proposed in this paper would demonstrate good internal consistency and reliability and thus, adequately measuring the impact of internet misuse among adolescents.

The eight sub factors, mainly diagnostic items that constitute addiction were lifted from the DSM IV (Young, 1996). On her research, "Internet Addiction: The Emergence of a New Clinical Disorder", in this study she developed an eight item Diagnostic Questionnaire (DQ), that serves as an instrument to screen for addictive Internet use. Respondents who answered "yes" to five or more of these questions were classified as an addicted Internet user.

DQ: (1) Do you feel preoccupied with the Internet (think about previous on-line activity or anticipate next on-line session)? (2) Do you feel the need to use the Internet with increasing amounts of time in order to achieve satisfaction? (3) Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet use? (4) Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use? (5) Do you stay online longer than originally intended? (6) Have you jeopardized or risked the loss of significant relationship, job, educational or career opportunity because of the Internet? (7) Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet? (8) Do you use the Internet as a way of escaping from problems or of relieving a dysphoric mood (e. g., feelings of helplessness, guilt, anxiety, depression)? (Young, 1996, pp. 238-239)

Young also examined other problems that are caused by internet addiction. There were five categories of the problems: academic, relationship, financial, occupational, and physical. The categories were arranged according to which category has the most number of problems.

Shaffer, Hall, and Vanderbilt (2000) said that the conceptual framework of addiction was used to examine the problems related to internet use. The idea of addiction has been applied to many and varied human activities. The public began to view the Internet as a mainstream communication in 1995. Researchers have estimated that there are 20-25 million Internet users in the mid-1990s and approximately 100 million in 1997. The new computer

technologies have made access to computer-based information easy and ordinary. The growth of internet use drew attention to the concern that addiction to this new technology and its excessive use may give rise to new psychological disorders. An example is the users' loss of control with internet usage which in turn may lead to adverse consequences. Specifically neglecting the family, work, or school obligations because the users devote more time checking their e-mails, participating on chat rooms or surfing the web.

In the study of Ko et al. (2009), "Predictive Values of Psychiatric Symptoms for Internet Addiction in Adolescents: A 2-Year Prospective Study" they used the Chen Internet Addiction Scale (CIAS) in assessing their participants. The CIAS contains 26 items on a 4-point Likert scale with a scoring range of 26 to 104. The internal reliability of the scale and it's subscales ranged from 0.79 to 0.90. According to the CIAS diagnostic criteria of internet addiction, the score of 64 has the highest diagnostic accuracy. Consequently, subjects with scores of 64 or higher were categorized as the Internet addiction group in their study.

In "Problematic Internet use or Internet addiction?" (Yellowlees & Marks, 2007), the syndrome indicating internet addiction are the following: extreme preoccupation with using the internet, too much amount of time spent online, uncontrollable use of the internet, difficulty in controlling the time spent on the internet, feeling that the world outside of the internet is boring, becoming irritated if bothered while online, decreased social interaction with "real" people, and increased isolation and depression. Young (1996) also observed that people can also be addicted to various internet applications (i. e., online gambling, shopping, or chatting) and not on the internet or medium itself. Young's original criteria for internet addiction was modified to problematic Internet use because it categorizes the "disorder" more appropriately.

Counselors and psychologists in the Philippines even suggested that the improper use of the internet should be under impulse control disorder not otherwise specified with excessive internet use. Some also hypothesized that students are more prone to developing problematic internet use because for most of them, online access is free and available all the time. These students will most likely prefer online activities rather than sleeping and attending classes.

Toronto (2009) said that the Internet presents a substitute for the real world. It also allows people to interact and communicate with ease. Across boundaries and time, people can interact and satisfy their pleasure of connecting with friends and loved ones. The present generation has fully accepted the "unreal" world that the internet offers through blog, social networking sites, internet games and even pornography. People are more likely to have less satisfying relationships and social functioning if they are overly preoccupied with the virtual world. Too much preoccupation with the virtual world may lead to internet addiction and dependency. It further results to impairment in academic and social activities. In addition, with just a few clicks of the mouse people are able to escape their real emotions and may impair development of having true relationships with other people. Furthermore, the internet can be the source of support and venue to repair for past unavoidable failures of a person. The internet is a way for people to reconstruct themselves since the Internet is an unsecured human relatedness wherein only a few really knows who you are. In this case, people build a sense of completeness that enables them to move on with life.

Sheldon (2008) conducted a survey with 172 students in a research university to examine how unwillingness-to-communicate in inter-personal communication influences satisfaction sought and obtained from Facebook use. The main purpose of social networking, as indicated in the study, is to make new friendships or to maintain those who already exist.

This study of Sheldon investigated the relationship of the unwillingness-to-communicate and the different motives of Facebook users. It also examined the relationship between communication and the behavioral and attitudinal outcomes of Facebook use.

Willoughby (2008) said that excessive internet use has different impacts on people depending on regularity of their internet use. He said that there are some applications on the internet that enhance social and family relationships. In contrast, there are also internet applications that bring violence and detachment from social groups because of internet misuse. In his study, he found that internet use can improve cognitive functioning. However, the result of the same study showed that too much internet use can influence a student to have poor academic standing. It is primarily because its use is prioritized more than studying. Also, negative parental relationships may also cause the excessive use of the internet among adolescents. It was also observed that people with moderate internet use exhibited stronger friendship bonds than those who use the internet excessively and those who do not use the internet at all. Moderate users have better academic standings than the extreme users of the internet.

Kraut et al. (1998) found that some people with internet access at home tend to neglect to go to church, attend parties, and may tend to have less participation because they are preoccupied in their internet use. However, they said that internet used for communicating with significant people may help sustain and nurture long distance relationships. Depression is one of the consequences of internet misuse because people tend to be active in online social communications but would also tend to decline in social participations among friends and family. They also said that internet misuse can lead to poor psychological well-being since people tend to stay up in the internet even if there's no reason for them to stay online. In addition, depression is very rampant among internet users. Prolonged internet use may promote laziness and sedentary lifestyle. In addition, it was also observed that when people use the internet for a long time, they tend to forget their responsibilities.

Van den Eijnden et al. (2008) on the other hand, argue that the internet can also have positive effects on people who use it. The internet does not always give bad consequences because it can also be the source of social online support and it can connect people more easily than the traditional snail mails. Also, the internet is the safest and easiest place to make friends because having social skills may not be required at all. However, too much internet use may also cause the depletion of psychosocial well-being of a person. A person may feel bad when one is not able to use the internet. Another is that the internet becomes the escape for people's depression and loneliness. Excessive internet users end up using the internet longer than they originally intended to. Internet is said to be attractive in the eyes of isolated people because they can change their profiles making them look nicer to other people. On the negative side, the internet can destroy real communication and can deter the development of strong relationship connections among family and friends. It can also cause depression because people may feel isolated from the world and from the community.

According to Shapira et al. (2003), a report from the Commerce Department's National Telecommunications and Information Administration and Economics and Statistics Administration in the United States of America, show that computer and internet access increased from December 1998 to August 2000. Internet usage worldwide also expanded rapidly and as this expands, problematic behaviors related to this application also increased. Overall, the problematic use of internet could be characterized by the inability to control

internet use. This problem may lead in turn to distressed feelings and to the functional impairment of daily activities.

A study of Kraut et al. (1998) as cited in Shapira et al. (2003) indicated that there is an association between a person's increased internet usage and his/her withdrawal from family activities. The internet can therefore provide a false sense of interaction which may result to the isolation of individuals from their peers and from any social interactions. Milani, Osualdella, and Di Blasio (2009) conducted a research about adolescents' problematic internet use and the quality of their interpersonal relationships. The study shows that adolescents appeared to be attracted to communication technologies that offer them the opportunity to interact with others to experience that sense of social acceptance and community. Milano et al. administered three test instruments namely: Internet Addiction Test, Test of Interpersonal Relationship and Children's Coping Strategies Checklist, to 98 adolescent participants. The Child Behavior Checklist was administered to the parents of the participants. From the administered tests, 36.7% of the adolescents showed signs of Problematic Internet Use or PIU, the participants' responses fall within the global interpersonal relationships index, avoidance coping and active coping. Lastly, the study showed that the adolescents use of the internet for many hours, may lead to problematic interpersonal relationships and to dysfunctional coping strategies.

The aim of the study is to construct a scale and conceptualize cyber dependency. With the scale that would measure the impact of internet misuse, the authors will make the adolescents aware of their condition and may be able to help stop the growing number of adolescents who misuse the internet or is dependent on it. By measuring the impact of internet misuse, it will be easier to identify the necessary and appropriate treatment or intervention for their particular concern. The proposed scale is different from the ones in the literature because this scale is non-diagnostic.

Method

Purpose and Preliminary Item Development

There were eight hypothesized factors based from the literature of Young (1996): losing track of time, preoccupation, isolation, escapism, trouble completing tasks, change in behavior and loss of control. Losing track of time is defined as using the internet longer than the person thought; the minutes turn to hours. Preoccupation means the person thinks about the internet while he/she is offline. Isolation is when the social life of the person is suffering because he/she prefers being online than being with his or her friends and family. Escapism is the compulsion to cheer one's self up by surfing the web. Trouble completing tasks is when one is too busy online that he/she neglects his or her school work or chores. Change in behavior is when the person feels restless, moody, depressed and irritable when attempting to cut down internet use. Loss of control is when one cannot manage and stop the use of the internet. The one hundred three preliminary items were developed based on the literature.

Griffiths (2000) identified the seriousness of addiction consisting of salience, mood modification, tolerance, withdrawal, conflict, and relapse state. In this regard, the researchers identified the weakness of Young's model which consists of 8 items to categorically identify an internet addicted individual. Given the said criteria of addiction, Young's scale fall short in the dimensionality of problematic use of internet among adolescents. It is clear that an 8-item questionnaire cannot determine the misuse of the internet or exceeds to become

pathological. Kesici and Sahin (2010) presented studies of different experts regarding time control among internet addicted individuals beyond the categorical criteria from the DSM IV. They also suggested that not all internet addicted individuals are disabled, problematic and clinically dependent to it.

In order to test for the non-pathological use of internet among adolescents, the researchers decided to use Young's model given its identified structure to be used as foundation for item generation. A focus group discussion among 25 college students provided behavioral themes to support and refute the diagnostic items of Young. Encoded themes formed as basis for the item pool subjected to item evaluation.

Item Evaluation

The initial items were evaluated by a certified clinical psychologist who is also a college professor in a College. The expert identified which item is valid by choosing from the accepted and rejected check boxes. Spaces for suggestions were also provided for items that need revisions and for the items that were either accepted or rejected. Ninety eight items were retained. Another group of psychology students taking a test development subject evaluated the items.

Item Response Format of Preliminary Form

The researchers used a five-point Likert scale to capture the degree of the participants' responses. The options are: 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree.

Pilot Testing and Participants

The revised 98-item scale was administered to one hundred twenty college students gathered from fifteen colleges and universities around Metro Manila. Convenient sampling was used to collect the participants (N= 320). The age ranges from sixteen to twenty three and the mean age is 18.74.

Data Analysis

Exploratory factor analysis (EFA) was used to test whether our items correlate to our construct and if there are other dimensions revealed or sub-factors to eliminate other than those set by Young (1996). Eigenvalue is set to one (1) and the factor loading is set to .30. Varimax raw was used to rotate the items; to maximize the loading of each variable. Cronbach's alpha was used to check the inter-item correlation for each factor to know the reliability of the scale. Confirmatory factor analysis (CFA) was also used to test the measurement model given by the EFA; to test the goodness of fit of the measurement model.

Final Testing and Participants

The 53-item form of the scale was administered to eight hundred three (N = 803) college students from forty two colleges and universities (i. e., Mapua Institute of Technology, Far Eastern University, De Los Santos–STI, Informatics International College, and

Polytechnic University of the Philippines). Convenient sampling was again used to identify the participants (N= 803). The age ranges from sixteen to twenty four and the mean age is 18.74.

Item Response Format for Final Testing

The response format was changed to a four point Likert scale. The options are: 1- strongly disagree, 2 – disagree, 3 – agree and 4 – strongly agree. It was changed to easily identify if the items load under the correct factor. Also, for data analysis, confirmatory factor analysis and Cronbach's alpha were used to evaluate the inter-item correlation.

Results

Based on the scree plot, five factors remained out of the initial seven factors. The dimensionality of the scale was supported by the Kaiser-Meyer-Olkin for sampling adequacy (.882) and a significant value for the Bartlett's test of sphericity. The new five factors are time control, detachment from primary social group; escapism, neglecting personal tasks, and preoccupation (see Table 1). Eigenvalues showed that Factor 1 with 25.20, Factor 2 with 4.98, Factor 3 with 4.72, Factor 4 with 3.37, and Factor 5 with 2.75.

Table 1
Definition of Cyber Dependency five Sub Factors

Sub factor	Definition
Time Control	Time is not being properly managed when online and cannot stop oneself form using the internet.
Detachment from primary social group	Being alone while using the internet is being preferred rather than spending time with family and friends.
Escapism	Internet is used to forget problems and to cheer up Oneself.
Neglecting personal tasks	School work and household chores are being neglected or is not finished on time when online.
Preoccupation	Thinks about internet usage even if offline.

After running the EFA, thirteen items remained for factor one (see Table 2), twelve items for factor two, sixteen items for factor three, seven items for factor four and five items for factor five. From the 98-item scale, forty five items were eliminated and the scale was reduced to fifty three items. Another run of exploratory factor analysis identified three factors by strictly increasing the factor loading to .40 and above. It showed significant decrease of items from 53 to 41 with the aim of increasing the chance to meet the standards for validation.

Table 2
Item and Factor Loading

Factor 1	Loading	Factor 2	Loading	Factor 3	Loading
Item 1	0.61	Item 4	0.41	Item 3	0.46
Item 5	0.54	Item 12	0.62	Item 8	0.60
Item 6	0.51	Item 14	0.59	Item 17	0.46
Item 10	0.60	Item 20	0.56	Item 18	0.68
Item 11	0.65	Item 22	0.53	Item 28	0.52
Item 15	0.63	Item 24	0.54	Item 30	0.51
Item 16	0.56	Item 27	0.73	Item 32	0.60
Item 21	0.65	Item 29	0.69	Item 39	0.55
Item 23	0.42	Item 31	0.55	Item 42	0.52
Item 34	0.70	Item 33	0.66	Item 45	0.50
Item 37	0.54	Item 38	0.55	Item 48	0.73
Item 46	0.72	Item 41	0.62	Item 51	0.61
		Item 44	0.52	Item 52	0.69
		Item 47	0.70		
		Item 50	0.53		
		Item 53	0.44		

Note. F1 = Time control, F2 = Detachment from intrapersonal and interpersonal needs, and F3 = Escapism

Table 3
Inter-Item Reliability

|	Cronbach's alpha	*M*	*SD*
Time Control	.88	31.62	7.22
Detachment	.90	26.67	7.31
Escapism	.88	31.26	6.59
Combined Scale	.94	86.99	17.11

Table 3 shows the inter-item reliability of the scale and of each factor. The Cronbach's alpha of the 41-item scale is.94. All the three hundred twenty cases were valid. The mean is 86.99 and the standard deviation is 17.11. The Cyber Dependency scale has high reliability whose factors yield moderate to high reliabilities.

Table 4
Summary of the Goodness-Of-Fit Statistics

Index	Value
Chi Square	59
Degrees of freedom	17
P level	0.00
Chi square / degrees of freedom	3.5
RMS residual	0.01
Steigr Lind RMSEA	0.04
Non Centrality Fit Index	0.95
Population Gamma Index	0.97
Goodness of Fit Index	0.98
Adjusted Goodness of Fit Index	0.95
Normed Fit Index	0.98
Non Normed Fit Index	0.97
Comparative Fit Index	0.99
AIC	0.15
SBC	0.32

After running the first Confirmatory factor analysis, one item was deleted from factor 2 or detachment from primary social group, because it did not correlate based on the parameter of estimates. Table 4 shows the result of the second run of CFA. As suggested by Schreiber, Stage, King, Nora, and Barlow (2006), the cut off criteria for an absolute / predictive fit such as the ratio of chi square to degrees of freedom must be greater than or equal to 2 or 3. Item parceling was used to fit the number of items per factors identified. A 4-5:1 item and parcel ratio was observed consistently in the model.

Figure 1
Measurement Model
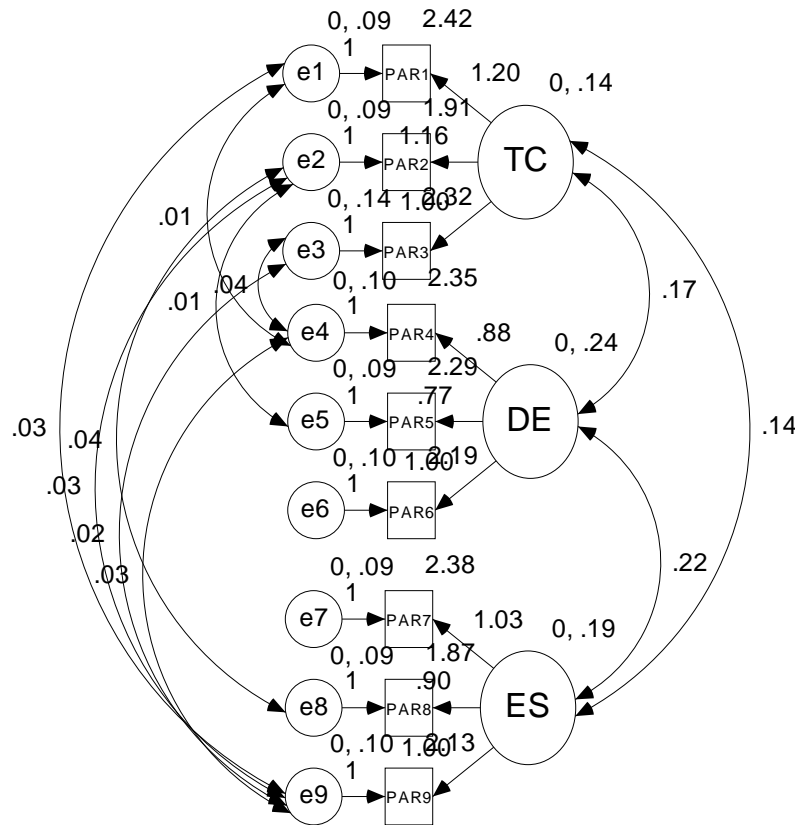
In the tested model the ratio of chi square to degrees of freedom is 3 which means the model provides an indicator of acceptable model fitness. The three-factor model of the scale fits in the final run of confirmatory factor analysis. The root mean square error of approximation that test the "bad fit" of a model shows that values ranging from 0.06 to 0.08 are acceptable model. While values below 0.05 shows model fit. The model structure of the scale is a good fit according to the RMSEA which is 0.04. Other indices (NNFI, GFI, CFI, PGI, and NFI) showed model fitness based on values closer to 1.00.

Discussion

The 41-item scale was designed to measure the cyber dependency and impact of internet misuse among adolescents. With exploratory factor analysis, the factors and the items were reduced because of its eigenvalues and factor loadings. The results of EFA showed the items that were retained and showed the new five factors from the original seven that were suggested from the study of Young (1996). The five factors were obtained after the data were rotated and got a .3 or higher factor loading. Factor 1 contained items about how to control and manage internet usage which is categorized as time control. Factor 2 is about preferring online friends than being with the person's own family and friends. This was then categorized as detachment from primary social group. Factor 3 contained items that are about cheering up the self and using the internet as an escape to forget problems. This factor was

categorized as escapism. Factor 4 is about not doing household chores and school work due to excessive internet use and it is categorized as neglecting personal tasks. Factor 5 is about thinking of the next internet use even if already offline. It is categorized as preoccupation. Another EFA was used to increase the chance of achieving a desired fit for validation purposes. This run reduced the items further to 41, with only 3 remaining factors left. CFA and inter-item reliability results showed that the scale has a high reliability and the structure has a good model fit.

The dimensions of the Cyber Dependency scale are supported by the study of Young (1996) because the said dimensions are also present in her DQ (i. e., Numbers 1, 3, 5, 6, and 8). She said that people who agrees to five or more of the questions in her DQ is to be categorized or labeled as an internet addict. But on the other hand, caution was pointed out that this scale was used to identify features of cyber dependent adolescents and not totally exhibiting features of addiction.

Yellowlees and Marks (2007) also cited that syndrome of internet addicts are: extreme preoccupation with using the internet, too much amount of time spent online, uncontrollable use of the internet, difficulty in controlling the time spent on the internet, feeling that the world outside of the internet is boring, becoming irritated if bothered while online, decreased social interaction with "real" people, and increased isolation and depression.

Time Control

This factor is defined as a person who does not have an organized time management when he/she is online. The person seems to lose track of time and gets surprised when he/she finds out how long he/she was already online. According to Van den Eijnden, Meerkerk, Velmust, Spijkerman, and Engels (2008), internet excessive users use the internet longer than they should have to. The study of Shaffer, Hall and Vander Bilt (2000) also supports this factor. They said that excessive Internet use is related to the development of internet addiction and disorder. The problem of the users' loss of control with internet usage and the failure to end the involvement has unpleasant consequences. The three sample items with their respective factor loadings are: "I don't have time for bonding with my family and friends because I'm busy online." (0.70), "I keep staying online even if there's nothing to do anymore." (0.65) and "I have my online friends, I don't need anybody else." (0.72), this factor has an alpha of 0.88.

Detachment from Intrapersonal and Interpersonal Needs

The study of Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, and Scherlis (1998) supports the second new factor which is the detachment from primary social groups and neglect of one's personal needs. According to Kraut et al., people that have internet access in their home become preoccupied of using it and tend to neglect social activities like attending gatherings and participating in events. The factor, detachment from primary social groups, means that people prefer to use the internet and spend less time with their families and friends since they can use the internet to chat with other people. Items 27, 29, and 47 have the highest factor loadings. Item 27 has a factor loading of 0.73. The item is "I'm not close to my friends and family anymore because am always busy online." Item 29 "I forget to take care of my personal hygiene because am busy online" this item has a factor loading of

0.69. Item 47 pertains to "my negative feelings go away when I use internet." This item has a loading of 0.70, this factor has an alpha of .85.

Escapism

The third factor is defined as the use of the internet to forget problems and to cheer oneself. The internet is considered as another form of entertainment like that of the television when it first came up. People who use the internet consider it as an outlet for them to at least forget their problems while they are online. Depression is a predictor of internet addiction based on the study of Ko, Yen, Chen, Yeh, and Yen (2009). It is also said in the study of Toronto (2009) that the internet is a way for people to reconstruct themselves since the internet is an unsecured human relatedness wherein only a few really knows who you are. That is, people build a sense of completeness that enables them to move on with life. Items 18, 48, and 52 obtained the highest factor loadings, 0.68 "going online makes everything okay." and 0.73 "I go online first before doing my tasks or schoolwork." While, 0.69 "I get anxious and depressed when I'm not online", this factor has an alpha of 0.88.

Implications to Possible Interventions

To help manage internet use, it is suggested that the person should have a new routine when to go online in order to break the habit of excessive internet use. For example, instead of going straight to the computer after arriving from school, one could do a chore first or eat dinner before using the internet. Another is to have an "external stopper" or an alarm so that the person would be reminded that it is time to go offline. Setting goals could also help (i. e., a goal that the time spent online should be reduced). The person should refrain or withdraw from using applications or websites such as games, chat rooms and social networking sites that he/she finds addictive. To help the person attain his/her goals or abstain from the said applications, reminder cards could also be used as self-monitoring technique. On those cards, problems about internet use and benefits from minimal use could be listed. A "personal inventory" could also be made; list of activities that have been abandoned or ignored because of cyber dependency. Examples are playing sports, going to church or exercising (Young, 1999).

When addicted or preoccupied with online games, Young suggested that parents could set or have a schedule or a time limit for playing online. There are also softwares they could use to help them control the time. Another implication is to encourage educational online games. If there are academic or school problems, a tutor is suggested to help solve this. For family therapy, the Brief Strategic Family Therapy (BSFT) could be used. It is a short term therapy that focuses on interventions to improve behaviors of children and adolescents aged six to seventeen (Young, 2009).

Involvement of either parents or school counselors will not work unless the person with internet addiction or cyber dependency works with himself/herself, his/her family counselor, and his/her therapist to overcome the addiction or dependency. The person with internet addiction or cyber dependency should recognize that he has a problem. Setting realistic goals is a very helpful way to decrease internet usage. In addition, the person who has a cyber dependency problem should have someone or a therapist who will help him/her make decisions or choices that will help him/her overcome the problem. This will help him /her be trained again and re-learn the basics on how to have self-control. Also, it is suggested

that school counselors should have programs in school that allow them to have group discussions or peer counseling. In this way, Internet addiction or cyber dependency intervention may be easier since they can monitor each other's Internet activity with the guidance of the school counselor and with the participation of the parents as well. Another suggestion is, the students should have leadership trainings and workshops where they can divert their attention from excessive internet use. Aside from the students, the parents and the whole school staff especially the school counselors should also undergo seminars on how to deal and help students with Internet addiction or dependency. This will update and inform all stakeholders about the issue of Internet addiction and cyber dependency. Thus, it will make recoveries easier and prevention measure more extensive because this will make the whole environment and community of the person with internet addiction and cyber dependency involved in helping him/her overcome the problem (Caldwell & Cunningham, 2010).

In the study of Ko et al. (2009), results suggested that depression, attention-deficit/hyperactivity disorder, social phobia, and hostility were found to predict the occurrence of Internet addiction in the 2-year follow-up, and hostility and attention-deficit/hyperactivity disorder were the most significant predictors of Internet addiction in male and female adolescents, respectively. The results suggested that attention-deficit/ hyperactivity disorder, hostility, depression, and social phobia should be detected early on and that the necessary intervention be carried out to prevent internet addiction among adolescents. Also, gender differences and psychiatric co morbidity should be taken into consideration when developing prevention and intervention strategies for internet addiction.

The editorial "Internet Addiction: Recognition and Interventions" written by Joyce Fitzpatrick, published in the Archives of Psychiatric Nursing (2008), contains some interventions for internet addiction. According to her, some treatment interventions may include attending boot camps, and having support groups. She also included that one key for intervention is the person's motivation to change, although it can be problematic to some because of their reliance to internet for work and leisure activities.

The researchers' schools could organize seminars or talks about internet usage to students, their parents as well as to the employees so that everyone can be educated about proper internet usage. Inside the school, certain websites (i. e., social networking sites) should be blocked. With this, the students and the employees will not get distracted from doing their work. Finally, cyber dependency could be prevented by encouraging students to consult guidance counselors when they have problems in order for them to have a support and for them to avoid using the internet to escape reality. Moreover, other unhealthy activities could also be prevented (i. e., taking prohibited drugs and drinking alcohol).

Implications for Future Research

In the tested construct of cyber dependency, the researchers hope that more research will come up to guide the community on the advantages and disadvantages of internet use. Specifically researches that will gather a variety of participants such as elementary school children, young professionals among the working population to shed light into the differences and pattern of behaviors when it comes to internet use. Potential research developments can also look into the use of other measures to correlate with the present scale development to provide a more valid and reliable scale (e. g., convergent, discriminant, and criterion). Lastly, the researchers believe that in the advent of cyber-related psychological researches more

empirical data and theoretical models can be tested in the future to help understand the complexity of the psychology of human-computer interactions.

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