

INTERNET ADDICTION: THE EMERGENCE OF A NEW CLINICAL DISORDER

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Published in CyberPsychology and Behavior, Vol. 1 No. 3., pages 237-244

*Paper presented at the 104th annual meeting of the
American Psychological Association, Toronto, Canada, August 15, 1996.*

Anecdotal reports indicated that some on-line users were becoming addicted to the Internet in much the same way that others became addicted to drugs or alcohol which resulted in academic, social, and occupational impairment. However, research among sociologists, psychologists, or psychiatrists has not formally identified addictive use of the Internet as a problematic behavior. This study investigated the existence of Internet addiction and the extent of problems caused by such potential misuse. This study utilized an adapted version of the criteria for pathological gambling defined by the DSM-IV (APA, 1994). On the basis of this criteria, case studies of 396 dependent Internet users (Dependents) and a control group of 100 non-dependent Internet users (Non-Dependents) were classified. Qualitative analyses suggests significant behavioral and functional usage differences between the two groups. Clinical and social implications of pathological Internet use and future directions for research are discussed.

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INTERNET ADDICTION: THE EMERGENCE OF A NEW CLINICAL DISORDER

Recent reports indicated that some on-line users were becoming addicted to the Internet in much the same way that others became addicted to drugs, alcohol, or gambling, which resulted in academic failure (Brady, 1996; Murphey, 1996); reduced work performance (Robert Half International, 1996), and even marital discord and separation (Quittner, 1997). Clinical research on behavioral addictions has focused on compulsive gambling (Mobilia, 1993), overeating (Lesieur & Blume, 1993), and compulsive sexual behavior (Goodman, 1993). Similar addiction models have been applied to technological overuse (Griffiths, 1996), computer dependency (Shotton, 1991), excessive television viewing (Kubey & Csikszentmihalyi, 1990; McIlwraith et al., 1991), and obsessive video game playing (Keepers, 1991). However, the concept of addictive Internet use has not been empirically researched. Therefore, the purpose of this exploratory study was to investigate if Internet usage could be considered addictive and to identify the extent of problems created by such misuse.

With the popularity and wide-spread promotion of the Internet, this study first sought to determine a set of criteria which would define addictive from normal Internet usage. If a workable set of criteria could be effective in diagnosis, then such criteria could be used in clinical treatment settings and facilitate future research on addictive Internet use. However, proper diagnosis is often complicated by the fact that the term addiction is not listed in the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV; American Psychiatric Association, 1994). Of all the diagnoses referenced in the DSM-IV, Pathological Gambling was viewed as most akin to the pathological nature of Internet use. By using Pathological Gambling as a model, Internet addiction can be defined as an impulse-control disorder which does not involve an intoxicant. Therefore, this study developed a brief eight-item questionnaire referred to as a Diagnostic Questionnaire (DQ) which modified criteria for pathological gambling to provide a screening instrument for addictive Internet use:

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 on-line 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)?

Respondents who answered "yes" to five or more of the criteria were classified as addicted Internet users (Dependents) and the remainder were classified as normal Internet users (Non-Dependents) for the purposes of this study. The cut off score of "five" was consistent with the number of criteria used for Pathological Gambling. Additionally, there are presently ten criteria for Pathological Gambling, although two were not used for this adaptation as they were viewed non-applicable to Internet usage. Therefore, meeting five of eight rather than ten criteria was hypothesized to be a slightly more rigorous cut off score to differentiate normal from addictive Internet use. It should be noted that while this scale provides a workable measure of Internet addiction, further study is needed to determine its construct validity and clinical utility. It should also be noted that the term Internet is used to denote all types of on-line activity.

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METHODOLOGY

Subjects

Participants were volunteers who responded to: (a) nationally and internationally dispersed newspaper advertisements, (b) flyers posted among local college campuses, (c) postings on electronic support groups geared towards Internet addiction (e.g., the Internet Addiction Support Group, the Webaholics Support Group), and (d) those who searched for keywords "Internet addiction" on popular Web search engines (e.g., Yahoo).

Materials

An exploratory survey consisting of both open-ended and closed-ended questions was constructed for this study that could be administered by telephone interview or electronic collection. The survey administered a Diagnostic Questionnaire (DQ) containing the eight-item classification list. Subjects were then asked such questions as : (a) how long they have used the Internet, (b) how many hours per week they estimated spending on-line, (c) what types of applications they most utilized, (d) what made these particular applications attractive, (e) what problems, if any, did their Internet use cause in their lives, and (f) to rate any noted problems in terms of mild, moderate, or severe impairment. Lastly, demographic information from each subject such as age, gender, highest educational level achieved, and vocational background were also gathered..

Procedures

Telephone respondents were administered the survey verbally at an arranged interview time. The survey was replicated electronically and existed as a World-Wide-Web (WWW) page implemented on a UNIX-based server which captured the answers into a text file. Electronic

answers were sent in a text file directly to the principal investigator's electronic mailbox for analysis. Respondents who answered "yes" to five or more of the criteria were classified as addicted Internet users for inclusion in this study. A total of 605 surveys in a three month period were collected with 596 valid responses that were classified from the DQ as 396 Dependents and 100 Non-Dependents. Approximately 55% of the respondents replied via electronic survey method and 45% via telephone survey method. The qualitative data gathered were then subjected to content analysis to identify the range of characteristics, behaviors and attitudes found.

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RESULTS

Demographics

The sample of Dependents included 157 males and 239 females. Mean ages were 29 for males, and 43 for females. Mean educational background was 15.5 years. Vocational background was classified as 42% none (i.e., homemaker, disabled, retired, students), 11% blue-collar employment, 39% non-tech white collar employment, and 8% high-tech white collar employment. The sample of Non-Dependents included 64 males and 36 females. Mean ages were 25 for males, and 28 for females. Mean educational background was 14 years.

Usage Differences

The following will outline the differences between the two groups, with an emphasis on the Dependents to observe attitudes, behaviors, and characteristics unique to this population of users.

Length of Time using Internet

The length of time using the Internet differed substantially between Dependents and Non-Dependent. Among Dependents, 17% had been online for more than one year, 58% had only been on-line between six months to one year, 17% said between three to six months, and 8% said less than three months. Among Non-Dependents, 71% had been online for more than one year, 5% had been online between six months to one year, 12% between three to six months, and 12% for less than three months. A total of 83% of Dependents had been online for less than one full year which might suggest that addiction to the Internet happens rather quickly from one's first introduction to the service and products available online. In many cases, Dependents had been computer illiterate and described how initially they felt intimidated by using such information technology. However, they felt a sense of competency and exhilaration as their technical mastery and navigational ability improved rapidly.

Hours Per Week

In order to ascertain how much time respondents spent on-line, they were asked to provide a best

estimate of the number of hours per week they currently used the Internet. It is important to note that estimates were based upon the number of hours spent "surfing the Internet" for pleasure or personal interest (e.g., personal e-mail, scanning news groups, playing interactive games) rather than academic or employment related purposes. Dependents spent a $M = 38.5$, $SD = 8.04$ hours per week compared to Non-Dependents who spent $M = 4.9$, $SD = 4.70$ hours per week. These estimates show that Dependents spent nearly eight times the number of hours per week as that of Non-Dependents in using the Internet. Dependents gradually developed a daily Internet habit of up to ten times their initial use as their familiarity with the Internet increased. This may be likened tolerance levels which develop among alcoholics who gradually increase their consumption of alcohol in order to achieve the desired effect. In contrast, Non-Dependents reported that they spent a small percentage of their time on-line with no progressive increase in use. This suggests that excessive use may be a distinguishable characteristic of those who develop a dependence to on-line usage.

Applications Used

The Internet itself is a term which represents different types of functions that are accessible on-line. Table 1 displays the applications rated as "most utilized" by Dependents and Non-Dependents. Results suggested that differences existed among the specific Internet applications utilized between the two groups as Non-Dependents predominantly used those aspects of the Internet which allowed them to gather information (i.e., Information Protocols and the World Wide Web) and e-mail. Comparatively, Dependents predominantly used the two-way communication functions available on the Internet (i.e., chat rooms, MUDs, news groups, or e-mail).

Table 1: Internet Applications Most Utilized by Dependents and Non-Dependents

Application	Type of Computer User	
	Dependents	Non-Dependents
Chat Rooms	35%	7%
MUDs	28%	5%
News groups	15%	10%
E-mail	13%	30%
WWW	7%	25%
Information Protocols	2%	24%

Chat rooms and Multi-User Dungeons, more commonly known as MUDs were the two most utilized mediums by Dependents. Both applications allow multiple on-line users to simultaneously communicate in real time; similar to having a telephone conversation except in

the form of typed messages. The number of users present in these forms of virtual space can range from two to over thousands of occupants. Text scrolls quickly up the screen with answers, questions, or comments to one another. Sending a "private message" is another available option that allows only a single user to read a message sent. It should be noted that MUDs differ from chat rooms as these are an electronic spin off of the old Dungeon and Dragons games where players take on character roles. There are literally hundreds of different MUDs ranging in themes from space battles to medieval duels. In order to log into a MUD, a user creates a character name, Hercules for example, who fights battles, duels other players, kills monsters, saves maidens or buys weapons in a make believe role playing game. MUDs can be social in a similar fashion as in chat room, but typically all dialogue is communicated while "in character."

News groups, or virtual bulletin board message systems, were the third most utilized application among Dependents. News groups can range on a variety of topics from organic chemistry to favorite television programs to the best types of cookie-dough. Literally, there are thousands of specialized news groups that an individual user can subscribe to and post and read new electronic messages. The World-Wide Web and Information Protocols, or database search engines that access libraries or electronic means to download files or new software programs, were the least utilized among Dependents. This may suggest that the database searches, while interesting and often times time-consuming, are not the actual reasons Dependents become addicted to the Internet.

Non-Dependents viewed the Internet as a useful resource tool and a medium for personal and business communication. Dependents enjoyed those aspects of the Internet which allowed them to meet, socialize, and exchange ideas with new people through these highly interactive mediums. Dependents commented that the formation of on-line relationships increased their immediate circle of friends among a culturally diverse set of world-wide users. Additional probing revealed that Dependents mainly used electronic mail to arrange "dates" to meet on-line or to keep in touch between real time interactions with new found on-line friends. On-line relationships were often seen as highly intimate, confidential, and less threatening than real life friendships and reduced loneliness perceived in the Dependent's life. Often times, Dependents preferred their "on-line" friends over their real life relationships due to the ease of anonymous communication and the extent of control in revealing personal information among other on-line users.

Extent of Problems

One major component of this study was to examine the extent of problems caused by excessive Internet use. Non-Dependents reported no adverse affects due to its use, except poor time management because they easily lost track of time once on-line. However, Dependents reported that excessive use of the Internet resulted in personal, family, and occupational problems that have been documented in established addictions such as pathological gambling (e.g., Abbott, 1995), eating disorders (e.g., Copeland, 1995), and alcoholism (e.g., Cooper, 1995; Siegal, 1995). Problems reported were classified into five categories: academic, relationship, financial, occupational, and physical. Table 2 shows a breakdown of the problems rated in terms of mild,

moderate, and severe impairment.

Table 2: Comparison of Type of Impairment to Severity Level Indicated

Impairment	Impairment Level			
	None	Mild	Moderate	Severe
Academic	0%	2%	40%	58%
Relationship	0%	2%	45%	53%
Financial	0%	10%	38%	52%
Occupational	0%	15%	34%	51%
Physical	75%	15%	10%	0%

Although the merits of the Internet make it an ideal research tool, students experienced significant academic problems as they surf irrelevant web sites, engage in chat room gossip, converse with Internet pen-pals, and play interactive games at the cost of productive activity. Students had difficulty completing homework assignments, studying for exams, or getting enough sleep to be alert for class the next morning due to such Internet misuse. Often times, they were unable to control their Internet use which eventually resulted in poor grades, academic probation, and even expulsion from the university.

Marriages, dating relationships, parent-child relationships, and close friendships were also noted to be poorly disrupted by excessive use of the Internet. Dependents gradually spent less time with real people in their lives in exchange for solitary time in front of a computer. Initially, Dependents tended to use the Internet as an excuse to avoid needed but reluctantly performed daily chores such as doing the laundry, cutting the lawn, or going grocery shopping. Those mundane tasks were ignored as well as important activities such as caring for children. For example, one mother forgot such things as to pick up her children after school, to make them dinner, and to put them to bed because she became so absorbed in her Internet use.

Loved ones first rationalize the obsessed Internet user's behavior as "a phase" in hopes that the attraction would soon dissipate. However, when addictive behavior continued, arguments about the increased volume of time and energy spent on-line soon ensue, but such complaints were often deflected as part of the denial exhibited by Dependents. Dependents become angry and resentful at others who questioned or tried to take away their time from using the Internet, often times in defense of their Internet use to a husband or wife. For example, "I don't have a problem," or "I am having fun, leave me alone," might be an addict's response. Finally, similar to alcoholics who hide their addiction, Dependents engaged in the same lying about how long their Internet sessions really lasted or they hide bills related to fees for Internet service. These behaviors created distrust that over time hurt the quality of once stable relationships.

Marriages and dating relationships were the most disrupted when Dependents formed new relationships with on-line "friends." On-line friends were viewed as exciting and in many cases lead to romantic interactions and Cybersex (i.e., on-line sexual fantasy role-playing). Cybersex and romantic conversations were perceived as harmless interactions as these sexual on-line affairs did not involve touching and electronic lovers lived thousands of miles away. However, Dependents neglected their spouses in place of rendezvous with electronic lovers, leaving no quality time for their marriages. Finally, Dependents continued to emotionally and socially withdraw from their marriages, exerting more effort to maintain recently discovered on-line relationships.

Financial problems were reported among Dependents who paid for their on-line service. For example, one woman spent nearly \$800.00 in one month for on-line service fees. Instead of reducing the amount of time she spent on-line to avoid such charges, she repeated this process until her credit cards were over-extended. Today, financial impairment is less of an issue as rates are being driven down. America On-line, for example, recently offered a flat rate fee of \$19.95 per month for unlimited service. However, the movement towards flat rate fees raises another concern that on-line users are able to stay on-line longer without suffering financial burdens which may encourage addictive use.

Dependents reported significant work-related problems when they used their employee on-line access for personal use. New monitoring devices allow bosses to track Internet usage, and one major company tracked all traffic going across its Internet connection and discovered that only twenty-three percent of the usage was business-related (Neuborne, 1997). The benefits of the Internet such as assisting employees with anything from market research to business communication outweigh the negatives for any company, yet there is a definite concern that it is a distraction to many employees. Any misuse of time in the work place creates a problem for managers, especially as corporations are providing employees with a tool that can easily be misused. For example, Edna is a 48 year old executive secretary found herself compulsively using chat rooms during work hours. In an attempt to deal with her "addiction," she went to the Employee Assistance Program for help. The therapist, however, did not recognize Internet addiction as a legitimate disorder requiring treatment and dismissed her case. A few weeks later, she was abruptly terminated from employment for time card fraud when the systems operator had monitored her account only to find she spent nearly half her time at work using her Internet account for non-job related tasks. Employers uncertain how to approach Internet addiction among workers may respond with warnings, job suspensions, or termination from employment instead of making a referral to the company's Employee Assistance Program (Young, 1996b). Along the way, it appears that both parties suffer a rapid erosion of trust.

The hallmark consequence of substance abuse are the medical risk factors involved, such as cirrhosis of the liver due to alcoholism, or increased risk of stroke due to cocaine use. The physical risk factors involved with Internet overuse were comparatively minimal yet notable. Generally, Dependent users were likely to use the Internet anywhere from twenty to eighty hours per week, with single sessions that could last up to fifteen hours. To accommodate such excessive use, sleep patterns are typically disrupted due to late night log-ins. Dependents typically stayed up past normal bedtime hours and reported being on-line until two, three, or four

in the morning with the reality of having to wake for work or school at six a.m. In extreme cases, caffeine pills were used to facilitate longer Internet sessions. Such sleep deprivation caused excessive fatigue often making academic or occupational functioning impaired and decreased one's immune system leaving Dependents' vulnerable to disease. Additionally, the sedentary act of prolonged computer use resulted in a lack of proper exercise and lead to an increased risk for carpal tunnel syndrome, back strain, or eyestrain.

Despite the negative consequences reported among Dependents, 54% had no desire to cut down the amount of time they spent on-line. It was at this point that several subjects reported feeling "completely hooked" on the Internet and felt unable to kick their Internet habit. The remaining 46% of Dependents made several unsuccessful attempts to cut down the amount of time they spent on-line in an effort to avoid such negative consequences. Self-imposed time limits were typically initiated to manage on-line time. However, Dependents were unable to restrict their usage to the prescribed time limits. When time limits failed, Dependents canceled their Internet service, threw out their modems, or completely dismantled their computers to stop themselves from using the Internet. Yet, they felt unable to live without the Internet for such an extended period of time. They reported developing a preoccupation with being on-line again which they compared to "cravings" that smokers feel when they have gone a length of time without a cigarette. Dependents explained that these cravings felt so intense that they resumed their Internet service, bought a new modem, or set up their computer again to obtain their "Internet fix."

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DISCUSSION

There are several limitations involved in this study which must be addressed. Initially, the sample size of 396 Dependents is relatively small compared to the estimated 47 million current Internet users (Snider, 1997). In addition, the control group was not demographically well-matched which weakens the comparative results. Therefore, generalizability of results must be interpreted with caution and continued research should include larger sample sizes to draw more accurate conclusions.

Furthermore, this study has inherent biases present in its methodology by utilizing an expedient and convenient self-selected group of Internet users. Therefore, motivational factors among participants responding to this study should be discussed. It is possible that those individuals classified as Dependent experienced an exaggerated set of negative consequences related to their Internet use compelling them to respond to advertisements for this study. If this is the case, the volume of moderate to severe negative consequences reported may be an elevated finding making the harmful affects of Internet overuse greatly overstated. Additionally, this study yielded that approximately 20% more women than men responded which should also be interpreted with caution due to self-selection bias. This result shows a significant discrepancy from the stereotypic profile of an "Internet addict" as a young, computer-savvy male (Young,

1996a) and is counter to previous research that has suggested males predominantly utilize and feel comfortable with information technologies (Busch, 1995; Shotton, 1991). Women may be more likely to discuss an emotional issue or problem more than men (Weissman & Payle, 1974) and therefore were more likely than men to respond to advertisements in this study. Future research efforts should attempt to randomly select samples in order to eliminate these inherent methodological limitations.

While these limitations are significant, this exploratory study provides a workable framework for further exploration of addictive Internet use. Individuals were able to meet a set of diagnostic criteria that show signs of impulse-control difficulty similar to symptoms of pathological gambling. In the majority of cases, Dependents reported that their Internet use directly caused moderate to severe problems in their real lives due to their inability to moderate and control use. Their unsuccessful attempts to gain control may be paralleled to alcoholics who are unable to regulate or stop their excessive drinking despite relationship or occupational problems caused by drinking; or compared to compulsive gamblers who are unable to stop betting despite their excessive financial debts.

The reasons underlying such an impulse control disability should be further examined. One interesting issue raised in this study is that, in general, the Internet itself is not addictive. Specific applications appeared to play a significant role in the development of pathological Internet use as Dependents were less likely to control their use of highly interactive features than other on-line applications. This paper suggests that there exists an increased risk in the development of addictive use the more interactive the application utilized by the on-line user. It is possible that a unique reinforcement of virtual contact with on-line relationships may fulfill unmet real life social needs. Individuals who feel misunderstood and lonely may use virtual relationships to seek out feelings of comfort and community. However, greater research is needed to investigate how such interactive applications are capable of fulfilling such unmet needs and how this leads to addictive patterns of behavior.

Finally, these results also suggested that Dependents were relative beginners on the Internet. Therefore, it may be hypothesized that new comers to the Internet may be at a higher risk for developing addictive patterns of Internet use. However, it may be postulated that "hi-tech" or more advanced users suffer from a greater amount of denial since their Internet use has become an integral part of their daily lives. Given that, individuals who constantly utilize the Internet may not recognize "addictive" use as a problem and therefore saw no need to participate in this survey. This may explain their low representation in this sample. Therefore, additional research should examine personality traits that may mediate addictive Internet use, particularly among new users, and how denial is fostered by its encouraged practice.

A recent on-line survey (Brenner, 1997) and two campus-wide surveys conducted at the University of Texas at Austin (Scherer, 1997) and Bryant College (Morahan-Martin, 1997) have further documented that pathological Internet use is problematic for academic performance and relationship functioning. With the rapid expansion of the Internet into previously remote markets and another estimated 11.7 million planning to go on-line in the next year (Snider, 1997), the Internet may pose a potential clinical threat as little is understood about treatment implications

for this emergent disorder. Based upon these findings, future research should develop treatment protocols and conduct outcome studies for effective management of this symptoms. It may be beneficial to monitor such cases of addictive Internet use in clinical settings by utilizing the adapted criteria presented in this study. Finally, future research should focus on the prevalence, incidence, and the role of this type of behavior in other established addictions (e.g., other substance dependencies or pathological gambling) or psychiatric disorders (e.g., depression, bipolar disorder, obsessive-compulsive disorder, attention deficit disorder).

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