

Some Observations On Internet Addiction Disorder Research

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Abstract

Internet addiction is a contemporary problem brought about by easy access to computers and online information. Individuals addicted to the Internet can develop many types of disorders. In extreme cases, persons addicted to the Internet may be destructive to themselves, their families, and their place of employment. Corporate executives need to have a better understanding of Internet addiction because employees with Internet addiction can be highly counter-productive as well as cause other legal problems. This study examines research trends in the area of Internet addiction and provides management implications for policy development and planning. Specifically, this study identifies the leading researchers, institutions, specialization, and information dissemination outlets for Internet addiction research in the last quarter of the 20th Century to the present. This study should be of interest to educators at academic institutions, students interested in institutions offering Internet addiction courses and programs, and researchers specializing in online addiction studies. Clinical psychologists, behavioral counselors, psychiatrists, clergy, and addiction therapists will find the results of this study useful. In particular, corporate attorneys dealing with addiction cases, human resource specialists seeking rehabilitation facilities for addicted employees, health related policy makers, computing consultants, and risk assessors of insurance companies will find the results of this study to be valuable.

Keywords: Internet addiction disorder (IAD), cyber addiction, virtual addiction, information technology and behavior

1. INTRODUCTION

Internet addiction disorder (IAD) is a modern day addiction. Persons with IAD can exhibit symptoms, suffer drawbacks, and face consequences that are similar to individuals addicted to alcohol, gambling, narcotics, shopping, and other compulsive behaviors. One way to describe persons infected with this disorder is that they find the virtual environment to be more attractive than everyday reality. Their daily lives are dominated with their need to be online. Sadly, this addiction is affecting millions of Americans and their families in every aspect of their life. The primary areas affected include school, family, work and relationships (Young 1998).

As early as in 1976, the year after the Internet came into being, the American Psychological Association (APA)

had anticipated that the Internet would potentially lead to addictive behavior among users. The psychology community was asked to develop policy guidelines for counseling persons who may become addicted to the Internet (APA 1976). Compared to other known forms of addictions such as gambling and alcohol, public awareness about Internet addiction is still in its stage of infancy. However, a number of specialists have studied the Internet addiction problem and have offered a number of definitions and reasons for the behavior.

First, Internet addiction can be defined as an impulse disorder. Some of the characteristics of this problem are similar to those of pathological gambling. For instance, Orzack conducted a study in 1999. She found that people who are susceptible to Internet addiction are people who are easily bored, lonely, shy, depressed and

suffering from other addictions (Orzack 1999). Orzack's findings are not new. A year earlier, Young had identified seven other reasons to this list and had actually called the problem Internet Addiction Disorder (IAD). The remaining seven reasons are marital discontent, work related stress, financial problems, insecurity, anxiety, struggle in life, and limited social life (Young 1998). As an impulsive disorder, there are two major types of treatments that are available to help persons who may be Internet addicted. The treatments are cognitive behavioral therapy (CBT) and motivational enhancement therapy (MET). CBT is found to be more popular than MET (Orzack 1999).

Second, it can be viewed as a psychiatric disorder. Based on this point of view, a new field of research called "Internet Psychotherapy" has emerged (Stein 1997). This view recognizes Internet addicts as patients. The suggested method of treatment involves the formation of newsgroups and discussion groups. In this form of treatment, members of relevant psychiatric disorders act as a support group to reduce Internet addiction by giving online suggestions and treatment procedures (Huang; Alessi 1997).

Third, Internet addiction is a behavioral problem. This is because there is a strong correlation between persons involved with Internet addiction and chemical dependency. Studies have confirmed that people who are having chemical dependency problems tend to spend more time per week online chatting than the "non chemical dependent" users (Scherer 1997).

As a disorder, Internet addiction has a number of medical and behavioral implications. Corporations should monitor and be concerned about this addiction because excessive and improper Web usage by employees can result in the loss of productive time and poor job performance (Young 1998). Furthermore excessive Internet usage by employees may lead to destructive behavioral changes and in the worst case, it may also bring about legal liabilities (Daniel 1996). For example, female employees may be offended by a male counterpart addicted to online pornography. These embarrassed female employees can file a sexual harassment suit against the company that can lead to monetary damages and an intangible loss called corporate goodwill.

The terms normal Internet usage and addictive usage are still debatable and subjective issues among researchers who are trying to differentiate between these two categories. There are various interpretations of Internet addiction usage, its significance and context. This is because research in the area of Internet addiction is still in its infancy. Holmes, for example, defines normal Internet usage to mean any amount of usage that does not exceed 19 hours of usage per week (Holmes 1997). This definition is derived from a survey conducted. Young, on the other hand, offers a more generous

definition for the term "normal Internet usage." According to her, an addicted person is one who spends at least 38 hours per week or 8 hours per day on the Internet (Young 1998).

Specialists in the field of pathology offer the most restrictive definition for classifying Internet usage. According to pathological theory, any person that reported 2 to 3 hours per week of Internet use is considered a normal user. Any one who logged 8.5 hours or more per week is classified as a pathological user (Morahan; Schumaker 1997)

2. STATEMENT OF THE PROBLEM

As the usage of the Internet is growing rapidly each year, Internet addiction has become a problem among some users. As a known form of disorder, the common reasons and consequences of this disease can be similar to that of alcohol addition, drug abuse, compulsive gambling, chronic overreacting behavior, sexual compulsions, and obsessive viewing of television. Addicted persons may come from all walks of life and as a result they are suffering in the main aspect of everyday life in situations such as school, family, work and relationships. There are at least four major studies documenting this growing problem:

- Greenfield estimated that six percent of the Web users are addicted to the Internet. This study was patterned after theories on compulsive behavior (Greenfield 1999).
- Kraat surveyed 169 people from 73 Pittsburgh households before and after one or two years of Internet usage. He reported that teenagers who withdrew from social contacts were using the Internet as an escape from reality (Kraat 1999).
- Anderson studied the effect of Internet addiction on college students. In a study of 1,200 undergraduates, he found out that one third of them had academic problems traceable to heavy Internet usage (Anderson 1997).
- Young conducted a study about usage patterns and online addiction on 496 responses from Internet users. Eighty percent of the self identified addicted persons had 38 hours of online per week for non-office purposes (Young 1998).

The last study in particular should be of interest and concern to corporate managers. Assuming a normal 40-hour workweek, the addict person has basically done only 2 hours of work. That computes to 95 percent of the week where the addicted person has been stealing corporate time. If this problem is left undetected by the employer, it can become an extremely costly expense to the company or organization.

3. STATEMENT OF OBJECTIVE

Internet addiction is a contemporary problem brought about by easy access to computers and online information. Individuals addicted to the Internet can develop many types of disorders. In extreme cases, persons addicted to the Internet may be destructive to themselves, their families, and their place of employment. Corporate executives need to have a better understanding of the Internet addiction problem because employees with this type of disorder can be highly counter-productive as well as bring other legal ramifications.

This study examines the trends in Internet addiction studies for the period 1975 to 2000. The output of this study should provide invaluable information and implications for policy development and management planning. Specifically, this study identifies the leading researchers, research institutions, specialization areas, and information dissemination outlets associated with Internet addiction in the last quarter of the 20th Century to the present. This study should be of interest to educators at academic institutions, students interested in institutions offering Internet addiction courses and programs, and researchers specializing in online addiction studies. Clinical psychologists, behavioral counselors, psychiatrists, clergy, and addiction therapists will find the results of this study useful. In particular, corporate attorneys dealing with addiction cases, human resource specialists and insurance providers seeking rehabilitation facilities for addicted employees, health related policy makers, computing consultants, and risk assessors of insurance companies will find the results of this study significant.

4. DATA GATHERING

The primary target subjects in this study are manuscripts where IAD research articles have been accepted for publication. Specifically, this study included articles that have been published on IAD during the period 1975 through 2000. The publications included practitioner and academic journals, proceedings, magazines, newspapers, books and Web-based documents. All manuscripts identified from the various academic databases and Web databases were included in this research.

The key word "Internet addiction," "IAD," and Cyber addiction," were utilized for locating the articles for this research project. A list of the academic databases and Web-based search engines used are indicated below:

- WebSPIR's Silverplatter
- ABI Inform
- Yahoo
- Excite
- Alta Vista
- Lycos

The WebSPIR's Silverplatter academic search can access 15 specialized databases. The outputs are arranged according to the year of publication with the most recent article listed last. The search yielded results from the following ten databases:

- Education abstracts
- The ERIC database
- PsycInfo
- Applied science and Technology abstracts
- Wilson business Abstracts
- CINAHL (R) database
- General Science abstracts
- Reading guide abstracts
- Social science abstracts
- Sociological Abstracts

ABI Inform is the other academic research database used for accessing IAD manuscripts. This search yielded 17 articles, with the earliest published in 1995 and the most recent one in 1999. All of these articles were already identified in the search using the WebSPIR's Silverplatter academic research database. The World Wide Web yielded 17 articles from magazines, journals, and conference paper presentations.

5. VARIABLES COLLECTED

The variables were collected using a two-tier process. First, the abstracts were obtained from the databases. Second, the articles were retrieved from the various journals, magazines, newspapers, and web sites. Specifically, the variables tabulated are as follows:

- Outlet (journal, magazine, newspaper or web site)
- Author(s)
- Article focus
- Year of publication
- Name of publication
- Affiliation(s) of author(s)

6. STATEMENT OF HYPOTHESIS

Five major hypotheses about the research publications were formulated for testing in this study. The first hypothesis was used to determine if there were any general trends in the appearances of articles on IAD. The other four hypotheses were used to examine the characteristics of published articles. The five hypotheses were as follows:

H1: The published articles on Internet addiction appear to be equally distributed over the 25 years.

H2: The published articles on Internet addiction were not dominated by specific writers and/or researchers.

H3: The published articles on Internet addiction were not dominated by work completed at or by individuals with specific organizations.

H4: The published articles on Internet addiction were not dominated by specific journals.

H5: Internet addiction studies do not have clear areas of focus.

7. METHODS OF PRESENTATION AND DATA ANALYSIS

Upon completion of the data gathering process, the articles were classified and tallied. These mathematical measures included absolute numbers and percentages. These measures were presented in tables for further analysis. The following is a list of the classifications used for tallying the data set:

- Number of articles each year between 1975 through 2000
- Number of articles in each database
- Type of articles by method of publication
- Number of articles by each major author
- Number of articles by name of publication
- Number of articles in each focus area
- Number of articles by organization

8. FINDINGS

Collectively, the searches generated a total of sixty-six extractions from the all databases. Seventeen extractions were obtained from the search using ABI Inform. Forty-one extractions were found from the search using WebSPIR's Silverplatter. Seventeen other extractions were obtained from the World Wide Web using Alta Vista, Yahoo, Excite, and Lycos.

When an audit of all the extractions was conducted, some of the databases were found to have generated similar articles. ABI Inform appeared to be a poor source for IAD articles because it generated only seventeen extractions, all of which were already identified from the first search conducted using WebSPIR's Silverplatter. The Web appeared to be a crucial link to IAD articles. All ten previously published extractions obtained from the World Wide Web search were not duplicates. In fact, the most recent article was extracted from the Internet and it was from the year 2000.

All 17 of the articles in ABI Inform and ten of the extractions within WebSPIR's Silverplatter were duplicates. After the removal of all duplications, there were only 48 articles remaining and the new tally was shown in Table 1. Even though the Internet became operational in the year 1975 and the American Psychological Association issued the call to examine the IAD problem in 1976, there were no articles found for the period 1975 through 1994. The only article that appeared in 2000 was obtained from the World Wide Web search. The non-duplicated count included six book publications. The rest of the information is shown in Table 1.

Table 1. Actual Number of Articles: 1975-2000

Year of Publication	Number of Articles	Percent
1975-1994	0	0
1995	1	2
1996	5	11
1997	16	33
1998	13	27
1999	12	25
2000	1	2
Total	48	100

The 48 citations were published in a variety of printed media outlets. The most common form of print media for IAD articles were magazines. Most of these articles were written normative pieces describing the problem and views by journalists. Most of these articles lacked academic rigor but they appeared to be good articles that can generate needed public awareness about IAD.

During the last quarter of 20th Century, there are 13 journal articles and six conference presentations. Collectively, they account for a little more than one-third of total number of articles. This trend appeared unusual. Normally, it is the scholar community that is doing the majority of the writing and the educating of the issues to the public. In the case of IAD, the journalists appeared to be in the forefront of this issue. The results are shown in Table 2 below.

Table 2. Type of Print Media Where Articles Appeared: 1975-2000

Outlet	Number of Articles	Percent
Newspapers	3	6
Magazines	20	42
Books	6	13
Journals	13	27
Conference Paper	6	12
Total	48	100

The articles were then divided into four major areas of focus. The areas identified were Theory of Definition, Method of Design, Target Audience, and Type of Issues. The results of the classifications are presented in Table 3.

Using theory and definition as the focus, about 40 percent of articles were found to be about behavioral aspects. Another 35 percent of the articles were related to pathological theories. The third highest group, about 17 percent of the articles, dealt with mental issues. Behavioral, pathological, and mental issues dominated the content of these articles because the writers or the persons interviewed by the journalists in those articles were primarily psychologist, behaviorist, and mental health professionals.

The majority of the articles were classified as normative because they were written by journalists or were book publications that did not require academic peer reviews. This categorization provided the best implication to support the opinion that research in this field is still in its infancy stage.

Forty-five of the 48 articles did not focus on the effects of IAD on a specific audience or environment. Again, part of the reason for this trend can be attributed to the primary objectives of the authors for writing the article. The majority of articles were from magazines written by journalists. Their objectives were to educate the public about IAD.

Table 3. Focus Area of Articles: 1975-2000

Focus Criteria	Number of Articles	Percent
By Theory of Definition:		
Behavioral	19	40
Mental	8	17
Chemical	2	4
Pathological	17	35
Other	2	4
By Method of Design:		
Quantitative	18	38
Descriptive	30	62
By Target Audience:		
Kids	1	2
College Student	3	6
General Public	42	88
Work Place	1	2
Other	1	2
By Issues:		
Economic	3	6
Political	0	0
Social	45	94

As expected, the majority of the articles dealt with social issues because they were written to help the public become aware of IAD. It is surprising that there are no articles that addressed political implications. One would expect educators in the area of political science and especially politicians would want to know how IAD could hinder or foster a campaign.

Fifty-seven authors wrote the 48 articles. Six of the articles, especially those that were found in journals and conferences, had multiple authors. Young wrote the highest number (4) followed by Griffin (3). Dvorak, Green, Victor, Huang, and Alessi had two publications on IAD each. In other words, seven of the authors produced 31 percent of the articles. With the exception of Huang and Alessi, the rest of the authors and their co-authors had one article each. A review of the list of authors engaged in joint research is rather discouraging. These authors appear to be located at the same institution. In other words, there were little or no

collaborative effort among institutions and disciplines. However, these "piece meal" approaches in IAD research did support the notion that this is an emerging research area.

The affiliations of the authors are presented in Table 4. All four articles listing the University of Pittsburgh as the sponsoring organization were written by the same author, Dr. Kimberly Young. There were two multiple authored articles. Morahan and Schumaker wrote one of the articles. Chao, Chao, and Tyan wrote the other paper. Two articles were written by a foreign sponsoring institution. One of the articles was written by authors from National Chiao Tung University in Taiwan. As a matter of fact, this is the only article that listed a foreign academic institution. A journalist in London wrote the other article. The majority of the articles did not list their affiliations because they were non-academic publications.

Table 4. Organizations Producing IAD Research: 1975-2000

Author's Affiliation	Number of Articles	Percent
Bryant College	1	2.08
Carnegie Mellon University	1	2.08
Harvard Medical School	1	2.08
National Chiao Tung University	1	2.08
University of California, Oakland	1	2.08
University of Pittsburgh	4	8.32
University of Texas-Austin	1	2.08
Virginia tech University	1	2.08
York University	1	2.08
Not Indicated	36	75.00
Total		100.00

IAD publications were found in a variety of print media ranging from publications that required peer reviewed such as refereed journals to featured articles in newspapers. Six of the IAD publications were in book form. Interestingly, the largest number of articles about IAD was found in *ComputerWorld*, a computing magazine. The second largest number of articles was found in *The American Journal of Psychiatry* and from APA conferences. There were two articles in *The Chronicle of Higher Education*, *NewsWeek*, *New York Times*, and two faculty working papers, one from Virginia Tech University and the other from York University. The appearances of these articles provided the best support for the notion that this area of research is finally getting the attention and interest of the academic community. In addition to the five articles in *ComputerWorld*, three other computing magazines have also produced IAD articles. These publications included *PC Computing*, *PC Magazine*, and *PC World*. The appearance of eight articles in computing journals is

most encouraging because IAD is a computer related disease. These interests showed that IAD is finally getting the attention of the business sector.

As indicated earlier, behaviorists, psychologists, and mental health experts wrote many of these articles. This is the primary reason why many of the journals were related to the field of psychology and other behavior related disciplines. Finally, two book publishers, Academic Press and Professional Resource Press, appeared to be used more as an outlet by authors that have IAD book published.

9. OUTCOMES OF HYPOTHESES TESTED

Five hypotheses about IAD studies were examined in this research study. The five hypotheses were about publication trends and characteristics in the literature identified. The hypotheses and outcomes of the tests were as follows:

H1: The published articles on Internet addiction appear to be equally distributed over the 25 years.

This hypothesis was rejected. There was no publication prior to 1994. Majority of the articles was published in 1997, 1998, and 1999. To date, there is only one article published in the year 2000.

H2: The published articles on Internet addiction were not dominated by specific writers and/or researchers.

This hypothesis was not rejected. There were 48 articles written by 57 authors. Even though there was no dominant writers, Young had four publications and Griffin had three. Four other authors had two articles each. Collectively, they wrote over one third of the publication on IAD. These outcomes showed that, on the average, a few authors are writing more publications than others.

H3: The published articles on Internet addiction were not dominated by work completed at or by individuals with specific organizations.

This hypothesis was rejected. There was no organization that dominated the field of IAD research. The University of Pittsburgh had the most number of IAD articles because Young wrote four of the articles from that institution.

H4: The published articles on Internet addiction were not dominated by specific journals.

This hypothesis was not rejected. Articles on IAD were published in a variety of printed media. In addition, the articles were published in a variety of journals and book publishers. It should be pointed out, however, that most number of articles was found in *ComputerWorld*. The

American Journal of Psychiatry had the most academic publications on IAD. A good number of the articles were also found in psychology and other behavior related journals. Two book publishers appeared to be used more often by textbook authors for disseminating IAD work.

H5: Internet addiction studies do not have clear areas of focus.

This hypothesis was rejected. Using theory and definition as the testing criteria, the IAD articles were dominated by behavioral articles. Using method as the test criteria, the majority of the articles were descriptive by design. The articles were targeted primarily at the general audience, and were primarily discussion on social issues.

10. SUMMARY AND CONCLUSIONS

In the past twenty-five years, there were 48 publications on IAD. Fifty-seven authors were responsible for writing those articles. Included in the 48 articles, there were six books. There were no IAD studies found up through 1994. The majority of the 48 articles were written in the last five years. Based on these findings, three of the five hypotheses were rejected. Specifically, this study found the following findings or trends about IAD research work for the period 1975 through 2000:

- Published works on the Internet addiction were not equally distributed between the years 1975 through 2000. In fact, the majority of the articles were found in the last five years. The business community is giving more attention to IAD research.
- Published works on Internet addiction were not dominated by any writer, journal, or organization. There were a few writers, organizations, and journals that were beginning to show more interest and publications in IAD research work.
- Internet addiction studies have clear areas of focus. The current writings are heavily behavioral in nature, descriptive, and targeted at the general public. Issues addressed are mostly about the social effects of IAD.

ABI Inform was not a good source for identifying IAD research. WebSPIR's Silverplatter was the best source for getting IAD information. However, there were duplications across the ten databases under this source. The World Wide Web is an excellent supplement for getting IAD articles. All seventeen articles attained using the Internet were not found in any other library databases. Finally, IAD research is in its infant stage of development. There is a need for more research work by faculty members and students to study this problem.

11. REFERENCES

- American Psychological Association, June 1976, Computer Addictions Entangle Students. Available:
<http://www.apa.org/monitor/jun76/onlinea.html>
- Anderson, M.J., April 16, 1997, Info Age - Teen Cyberlove Just a New Version of an Old Problem. Providence Journal-Bulletin, p. A11.
- Daniel, D., July 8, 1996, Just One More Click. ComputerWorld, 126, pp. 93-94.
- Greenfield, D., 1999, Virtual Addiction: Help for Netheads, Cyberfreaks, and Those Who Love Them. Oakland, CA: New Harbinger Publication.
- Holmes, L., October 6, 1997, What is Normal Usage. Mental Health Online. Available:
<http://www.mentalhealth.com/library/wweekly/aa100697>.
- Huang, M. and N. Alessi, 1997, Internet Addiction, Internet psychotherapy. American Journal of Psychiatry, 154(6), p. 890
- Kraat, R., September 30, 1999, Internet Can Make You Lonely, Depressed. New York Times, p. A12
- Morahan-Martin, J. and P. Schumaker, August 1997, Incidence and Correlates of Pathological Internet Use. Paper presented at the annual convention of American Psychological Association.
- Orzack, Hecht M., January 1999, Computer Addiction: Is it Real or Virtual? Harvard Medical School, 15(7), p. i7.
- Scherer, K., August 1997, Healthy and Unhealthy Internet Use. Paper presented at the annual convention of the American Psychological Association
- Stein, D. J., 1997, Internet Addiction, Internet psychotherapy. American Journal of Psychiatry, 154(6), p. 890
- Young, K. S., 1998, Internet Addiction: The Emergence of a New Disorder. CyberPsychology and Behavior, 1(3), pp. 237 - 244.



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