Virtual Addiction: Sometimes New Technology Can Create New Problems

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Abstract

Here is little doubt that the Internet represents the spearhead of the industrial revolution. I love new technologies and gadgets that promise new and better ways of doing things. I have many such gadgets myself and I even manage to use a few of them (though not without some pain).A new piece of technology is like a new relationship, fun and exciting at first, but eventually it requires some hard work to maintain, usually in the form of time and energy. I doubt technology's promise to improve the quality of life and I am still surprised how time-distorting and dissociating the computer and the Internet can be for me, along with the thousands of people I've interviewed, studied and treated in my clinical practice. It seems clear that the Internet can be used and abused in a compulsive fashion, and that there are numerous psychological factors that contribute to the Internet's power and appeal. It appears that the very same features that drive the potency of the Net are potentially habit-forming.

This study examined the self-reported Internet behavior of nearly 18,000 people who answered a survey on the ABCNEWS.com web site. Results clearly support the psychoactive nature of the Internet, and the potential for compulsive use and abuse of the Internet for certain individuals.

Introduction

Technology, and most especially, computers and the Internet, seem to be at best easily overused/abused, and at worst, addictive. The combination of available *stimulating content, ease of access, convenience, low cost, visual stimulation, autonomy, and anonymity*—all contribute to a highly psychoactive experience. By psychoactive, that is

to say mood altering, and potentially behaviorally impacting. In other words these technologies affect the manner in which we live and love. It is my contention that some of these effects are indeed less than positive, and may contribute to various negative psychological effects.

The Internet and other digital technologies are only the latest in a series of "improvements" to our world which may have unintended negative effects. The experience of problems with new and unknown technologies is far from new; we have seen countless examples of newer and better things that have had unintended and unexpected deleterious effects. Remember Thalidomide, PVC/PCB's, Atomic power, fossil fuels, even television, along with other seemingly innocuous conveniences which have been shown to be conveniently helpful, but on other levels harmful. Some of these harmful effects are obvious and tragic, while others are more subtle and insidious.

Even seemingly innocuous advances such as the elevator, remote controls, credit card gas pumps, dishwashers, and drive-through *everything*, have all had unintended negative effects. They all save time and energy, but the energy they save may dissuade us from using our physical bodies as they were designed to be used. In short we have convenience ourselves to a sedentary lifestyle.

Technology is amoral; it is not inherently good or evil, but it is *impact* on the manner in which we live our lives. American's love technology and for some of us this trust and blind faith almost parallels a religious fanaticism. Perhaps most of all, we love it

because of the hope for the future it promises; it is this promise of a better today and a longer tomorrow which captivates us to attend to the call for new better things to come.

We live in the age were computer and digital technology are always on the cusp of great things-- Newer, better ways of doing things (which in some ways is true). The old becomes obsolete within a year or two. Newer is *always* better. Computers and the Internet purport to make our lives easier, simpler, and therefore more fulfilling, but it may not be that simple.

People have become physically and psychologically dependent on many behaviors and substances for centuries. This compulsive pattern does not reflect a casual interest, but rather consists of a *driven* pattern of use that can frequently escalate to negatively impact our lives. The key life-areas that seem to be impacted are marriages and relationships, employment, health, and legal/financial status.

The fact that substances, such as alcohol and other mood-altering drugs can create a physical and/or psychological dependence is well known and accepted. And certain behaviors such as gambling, eating, work, exercise, shopping, and sex have gained more recent acceptance with regard to their addictive potential. More recently however, there has been an acknowledgement that the compulsive performance of these *behaviors* may mimic the compulsive process found with drugs, alcohol and other substances. This same process appears to also be found with certain aspects of the Internet.

The Internet can and does produce clear alterations in mood; nearly 30 percent of Internet users admit to using the Net to alter their mood so as to relieve a negative mood state. In other words, they use the Internet like a drug (Greenfield, 1999).

In addressing the phenomenon of Internet behavior, initial behavioral research (Young, 1996, 1998) focused on conceptual definitions of Internet use and abuse, and demonstrated similar patterns of abuse as found in compulsive gambling. There have been further recent studies on the nature and effects of the Internet. Cooper, Scherer, Boies, and Gordon (1998) examined sexuality on the Internet utilizing an extensive online survey of 9,177 Web users, and Greenfield (1999) surveyed nearly 18,000 Web users on ABCNEWS.com to examine Internet use and abuse behavior. The later study did yield some interesting trends and patterns, but also raised further areas that require clarification. There has been very little research that actually examined and measured specific behavior related to Internet use. The Carnegie Mellon University study (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, and Scherlis, 1998) did attempt to examine and verify actual Internet use among 173 people in 73 households. This initial study did seem to demonstrate that there may be some deleterious effects from heavy Internet use, which appeared to increase some measures of social isolation and depression.

What seems to be abundantly clear from the limited research to date is that we know very little about the human/Internet interface. Theoretical suppositions abound, but we are only just beginning to understand the nature and implications of Internet use and

abuse. There is an abundance of clinical, legal, and anecdotal evidence to suggest that there is something unique about being online that seems to produce a powerful impact on people.

It is my belief that as we expand our analysis of this new and exciting area we will likely discover that there are many subcategories of Internet abuse, some of which will undoubtedly exist as concomitant disorders alongside of other addictions including sex, gambling, and compulsive shopping/spending. There are probably two types of Internet based problems: the first is defined as a primary problem where the Internet itself becomes the focus on the compulsive pattern, and secondary, where a preexisting problem (or compulsive behavior) is exacerbated via the use of the Internet. In a secondary problem, necessity is no longer the mother of invention, but rather convenience is. The Internet simply makes everything easier to acquire, and therefore that much more easily abused. The ease of access, availability, low cost, anonymity, timelessness, disinhibition, and loss of boundaries all appear to contribute to the total Internet experience. This has particular relevance when it comes to well-established forms of compulsive consumer behavior such as gambling, shopping, stock trading, and compulsive sexual behavior where traditional modalities of engaging in these behaviors pale in comparison to the speed and efficiency of the Internet.

There has been considerable debate regarding the terms and definitions in describing pathological Internet behavior. Many terms have been used, including Internet abuse, Internet addiction, and compulsive Internet use. The concern over terminology

seems spurious to me, as it seems irrelevant as to what the addictive process is labeled. The underlying neurochemical changes (probably Dopamine) that occur during any pleasurable act have proven themselves to be potentially habit-forming on a brain-behavior level. The net effect is ultimately the same with regard to potential life impact, which in the case of compulsive behavior can be quite large. Any time there is a highly pleasurable human behavior that can be acquired without human interface (as can be accomplished on the Net) there seems to be greater potential for abuse. The ease of purchasing a stock, gambling, or shopping online allows for a boundless and disinhibited experience. Without the normal human interaction there is a far greater likelihood of abusive and/or compulsive behavior in these areas.

Research in the field of Internet behavior is in its relative infancy. This is in part due to the fact that the depth and breadth of the Internet and World Wide Web are changing at exponential rates. With thousands of new subscribers a day and approaching (perhaps exceeding) 200 million worldwide users, the Internet represents a communications, social, and economic revolution. The Net now serves at the pinnacle of the digital industrial revolution, and with any revolution come new problems and difficulties.

Methods

In an effort to better understand the issues surrounding Internet behavior 17,251 participants completed an extensive research survey. The survey was conducted online in cooperation with ABCNEWS.com who placed the study on their web site in the late fall

of 1998. We received well over 18,000 responses in less than 2 weeks, reflecting geographic representation throughout the United States and Canada, along with smaller representations throughout other English speaking countries. The average age was 33 years old, with a range from 8 to 85. They were predominantly white (82%), and mostly male (71%). Most were employed (85%) with the majority of those unemployed to be students. The

Average income range was between $25,000 and $50,000. The majority were college educated (87%), with 49 percent having a bachelors, masters, or doctoral degree.

Results

Results of the survey suggest that there is psychological pattern of compulsive Internet use for certain individuals. For others, there are indications that the Net is an easily abused medium in and of itself, and that for certain specific content areas (pornography, gambling, stock trading, shopping/auctioning, and cybersexual behaviors) the potential for such abuse rises considerably. This supports earlier studies done by Young (1996, 1997) and others.

The diagnosis of compulsive Internet use was made if participants endorsed 5 or more items on the VAS (Virtual Addiction Survey) which is based on an adapted composite of diagnostic questions from the DSM-IV (American Psychiatric Press, 1996) pathological gambling criteria. Preliminary analysis suggests that approximately 5.7 percent of Internet users surveyed meet the criteria for a serious compulsive Internet use pattern. Additional results support a high correlation between on-line cybersex and

subsequent real-time sexual affairs, along with evidence to support the existence of disinhibition, accelerated intimacy, dissociation (time distortion), lack of boundaries, and other alterations in mood and consciousness. In short, the Internet appears to be psychoactive, and is quite capable of changing the way we communicate, socialize, and conduct commercial transactions. The Net also seems capable at producing a total shift in psychological reference points that help govern our behavior. We can see a similar phenomenon in the behavior of casino gamblers, where the physical environment alters the perceptual and behavior landscape of consumers. In short, people act differently, in response to the contextual cues in the casino, just as they seem to on the Net.

The Internet is very popular in sexual areas due to accelerated intimacy or Love @ Light Speed. Often, the progression of virtual cyber-sexual relationships toward real-time sexual contact move quite rapidly; and about thirty-one percent of the time people who engage in cyber sexual contact will eventually meet for old-fashioned, real-time sexual activity. Is cybersex a new form of Virtual Gratification? And can it take the place of other (more traditional) forms of sexual behavior? Perhaps the more important question is whether it provides the same healthy psychosocial experience as real-time interaction or is a new type of intimacy? Clearly, the Net is a Petri dish for the development and enactment of various forms of sexual behavior. It represents a virtual sexual smorgasbord of activity and opportunity. It also encourages the ease of extramarital contact and infidelity. Morality aside—is it a good thing that we can so easily have sex, gamble, shop, by stocks without the buffer of human contact and interaction? We clearly see a phenomenon of threshold reduction where it is far easier to

cross the line online and engage in many behaviors that might otherwise not occur. In the

vast majority of cybersex and sexual addiction problems I see involve people who clearly

would not have engaged in the behavior where it not for the Internet! Currently cyber

sexual infidelity is a common reason for seeking advice or marriage counseling and is the

most upsetting aspect of Internet-based sexual infidelity because of the perceived

violation of the marital and family space!

As previously noted online sexual behavior doesn't necessarily remain online.

Greenfield, (1999) found that among Internet addicts there appears to be a progression

from virtual sex to the actual sex. The following table describes the progression of sexual

behavior from online to real-time comparing Internet compulsive versus non-compulsive

individuals (N=17,251).

Table 1

ONLINE BEHAVIOR	NON-COMPULSIVE	COMPULSIVE
FLIRTING	20%	57%
EXPLICIT SEX TALK	9%	38%
MASTURBATION	12%	37%
ONLINE AFFAIR	14%	42%
PHONE CONTACT	18%	50%
REAL-TIME SEX	13%	31%

Table 1 *data collapsed across males and females.

 There were other tentative hypotheses that were addressed in this study. It is believed

that the attractiveness of the Internet can not be relegated to any single feature. It seems

reasonable that there are several *stimulating/initiating* and *maintenance* variables

which account for the Internet's behavior altering potency. Indeed there were

many interesting features noted as follows: 1) ***Intense Intimacy***- among all participants

both males and females report intense intimacy while online (41%), among Internet

compulsives this figure raises to seventy-five percent! There appears to be little

difference between males and females, although it appears to be slightly higher for

females. 2) ***Disinhibition***- forty-three percent surveyed report an experience of

disinhibition and this figure again jumps to eighty percent for Internet addicts, and again

there were no robust sex differences here either. 3) ***Loss of Boundaries***- thirty nine

percent reported a loss of boundaries while online, with eighty-three percent of addicts

reporting this experience. 4) **Timelessness**- the majority of those surveyed admitted to

"sometimes loosing track of time"; however, for those addicted to the Internet

timelessness was described as "almost always" occurring. 5) ***Feeling out of Control***-

only eight percent of the total group surveyed report feeling out of control when online,

while forty six percent of those who were addicted admitted to "feeling out of control".

        Initial regression analysis seemed to show preliminary support for seven variables

contributing to nearly sixty-five percent of the total variance for the continuous Internet

compulsion dependent variable.

The regression results in table 2 support a preliminary set of criteria for the identification and prediction of compulsive Internet behavior, although some of the predictor variables overlapped with items on the continuous dependent variable on the VAS. Table 3 reflects the seven most significant variables in predicting risk for developing compulsive Internet problems.

Table 2. Results of multiple regression analysis.

Regression output for Addiction scores regressed on Independent Variables.

VAS Variable (abbreviated)	b	β	R	Semipartial r	F	VIF
1. Remain on the computer longer than planned?	.0746	.0622	.3586	.0397	26.30***	2.46
2. Remain on the Internet longer than planned?	.1224	.1088	.3942	.0639	68.09***	2.90
3. Lose track of time on Internet?	.1072	.1045	.3925	.0760	96.27***	1.89
4. Find the Internet sexually arousing?	.0214	.0202	.2669	.0148	3.65	1.87
5. Log on to adult or sexually explicit Web sites?	-.1400	-.0402	.1301	-.0325	17.61***	1.54
6. Sense of disinhibition?	.1199	.0344	.3118	.0286	13.70**	1.44
7. Sense of no boundaries?	.4012	.1139	.3468	.1011	170.50***	1.27
8. Intense feelings of intimacy?	.1781	.0508	.2672	.0451	33.86***	1.27
9. Feel "out of control" or "carried away"?	1.60	.2503	.4136	.2356	926.28***	1.13
10. Seek out greater sexually stimulating material?	.5942	.0869	.2613	.0755	95.19***	1.32
11. Flirting, using subtle sexual language?	.0378	.0094	.2859	.0068	.766	1.91
12. Engage in very explicit sexual discussions?	.1778	.0336	.2829	.0242	9.75***	1.93
13. Masturbated while on Internet?	.1975	.0414	.2353	.0333	18.46***	1.55
14. Contact individuals by phone, met on Internet?	.1138	.0273	.2564	.0172	4.94*	2.52
15. Found yourself developing an in-person relationship?	.1425	.0334	.2323	.0210	7.35**	2.53
16. Do seek out certain individuals in chat rooms?	.1074	.1251		.0967	155.91***	1.68
17. Ever thought you were addicted or dependent?	.2797	.0760	.1913	.0742	91.74***	1.05
18. Ever engaged in an online affair?	.0305	.0066	.2245	.0048	.384	1.89
19. Developed a sexual relationship with someone met on the Internet?	-.1435	-.0300	.1620	-.0230	8.81**	1.70
20. Ever lied about self to someone on the Internet?	.2168	.0531	.2398	.0489	39.90***	1.18
21. Use Internet to engage in gambling activities?	.1909	.0216	.0727	.0215	7.70**	1.01
22. Total number of hours spent on Internet per day.	.0258	.0633	.2266	.0593	58.59***	1.14

Note: Constant was –1.267, n = 9754

*** $p < .0000$; ** $p < .01$; ** $p < .05$

b = unstandardized beta coefficient; β = standardized beta coefficient; r = zero-order Pearson correlation coefficient; VIF = variance inflation factor.

Table 3. The seven critical risk-signs for compulsive Internet use

1. TOTAL HOURS SPENT ONLINE (GREATER NUMBER OF HOURS SEEMS TO INCREASE RISK OF COMPULSIVE USE)

2. OTHER PEOPLE THOUGHT YOU HAD A PROBLEM WITH THE INTERNET.

3. EXPERIENCED SERIOUS CONSEQUENCES RELATED TO INTERNET USE.

4. EXPERIENCES INTENSE INTIMACY ONLINE.

5. KEEPING THE AMOUNT ON TIME SPENT ONLINE A SECRET.

6. AGE (YOUNGER AGE SEEMS TO INCREASE ADDICTION RISK).

7. CAN'T WAIT TO GET ON TO THE COMPUTER AND GO ONLINE.

An additional area that was examined was whether Internet compulsive behavior had similar characteristics to other forms of addiction, including substance-based addictions. Such addictions are often marked by the presence of tolerance and withdrawal symptoms. For those who endorsed themselves as Internet addicted, there were numerous symptoms consistent with tolerance and withdrawal, including: 1.*Preoccupation with going online* (83%), 2. *Needing progressively greater time online* (58%), 3. R*equiring more sexually stimulating material* (22.5%), 4. *Having numerous unsuccessful attempts to cut back on Internet use* (68.5%), and 5. *Feeling restless when attempting to cut back* (79%).

Discussion

All modes of communication involve an attempt to make a connection with other human beings. Any modality of communication, including the Internet, involves creating an analog of real-time human experience in interpersonal relations. However, many times the technology seems to intrude, distract or otherwise detract from the general communicational experience. In the case of connecting to other human being in any context, more may actually be less and certainly with less depth and quality. It seems probable, given the obvious attraction and popularity of the Internet, that there are unique psychosocial factors that contribute to the Internet's power, which clearly have strong interpersonal themes. We seem to be genetically predisposed to socially and physically connect and communicate; the question is whether virtual communications are an analogous representation of real-time relationships. Is it indeed a psychologically (and socially) healthy behavior to be able to e-mail or chat with someone in mainland china but not their neighbors name? The Net can easily afford a certain sense of disconnection and buffer from the reality of human relationships.

Some of the unique communicational qualities that may contribute to the potential for compulsive Internet use may in part be related to the speed, accessibility, and intensity of the stimuli (information) accessed online. Just as addictive potential of substances, is based on the rapidity of absorption of a drug is directly proportional to the drugs addictive potential. In other words, it may be that the relative speed and accessibility to the Internet is in part what makes it so habit forming. If this logic proves

true, then we can expect much higher levels of compulsive use as access and modem

speed increase. These data seem to clearly indicate that for some people, the Net does

pose an addictive potential. Therefore the six percent of users that report compulsive

symptoms may represent only a small percentage of those who are in some way

negatively impacted by the Net, as individuals were only identified as Internet addicted

if they reached all five criteria on the VAS.

Other variables surveyed that seem to be relevant are the Net user's frequent

experiences of **accelerated intimacy, ease and availability of access, anonymity,**

disinhibition, loss of boundaries, and potency (stimulation) of content. The features

noted here seem to have similarity to other experiences that are known to produce

compulsive behavior. Interestingly, in spite of the fact that a clear majority of

respondents of the survey were male, the rates and reactions to the above criteria seem

to be fairly consistent across gender.

Potency of content is defined as the stimulating potential of the material viewed

online and it appears that the most stimulating material, e.g. sexual content, seems to

engender the highest levels of utilization online. It is probable that we may be dealing

with several subcategories of Internet abuser or addict. And there is a strong likelihood

that there is some degree of shared variance between Internet compulsion, sexual

addiction, compulsive gambling and compulsive shopping/spending. Of all the other

addictions that respondents admitted to, sexual addiction was one of the highest at

twenty percent for Internet compulsive individuals.

Shopping, stock trading and auctioning behavior are also uniquely impacted by the Internet. The stimulating potency of the products or services seems to be directly proportional to the absence of real-time social cues that exist in more traditional commercial exchanges. It seems that the lack of any social context to purchasing removes any last vestige of judgement or restraint. The "pick and click" features of the Net are too tempting for many, and the "*in your face*" factor of consumer based e-commerce seems to increase the likelihood of making a purchase. Unfortunately, we often see the user returning the merchandise, following a digital version of *buyers' remorse*, whereby the unique features of the Internet produce an impulse buying situation, followed by guilt and remorse, which can create a consumer binge/remorse/purge cycle that I call *"consumer bulimia"*. The aspects of what makes the Net so appealing also make it so easily abused when making a purchase. Money seems less real, and the Net affords a financial transaction that is devoid of human contact. It seems probable that it is that at human contact (even if by telephone) that contributes to increased judgement and better control of impulses. We are social Creatures that benefit in numerous ways from our social connections and contacts, and how we spend money may have the same psychosocial grounding that other aspects of human behavior have.

There appear to be three additional categories of Internet abusers. The first I call *"electronic vagabonds"*. These are the people who like to surf for hours on end with no specific goal or focus. The act of being on-line is in of itself arousing. They enjoy the multimedia stimulation, the challenge of visiting new places, and learning new information. They find the whole Internet experience intoxicating and impossible to master or complete. One can *never* experience closure on-line that makes the Internet so captivating. We tend to revisit areas of our lives' that are incomplete and it is this inability to "finish" anything on the Net without closure that keeps us on-line and coming back for more, even without a rational need to.

The third type of Internet abuser may become compulsive with chat rooms, personals, and e-mail such that they derive a significant portion of their social and interpersonal gratification from the social contacts they make and keep online. Virtual reality may replace less satisfying real-time living for these individuals and in some cases people can experience higher levels of virtual social status from the time they spend on the Net.

The fourth and final type of Internet abuser seems to be someone who finds him or her compulsively accessing online tasks, which are, in and of themselves, highly stimulating. This is seen with excessive stock trading, pornography, gambling, shopping, or auctioning. There were numerous people who reported some problem with these areas prior to going online, but for whom the Internet added fuel to the fire. Still others seem to have little or no difficulty until they engaged in these behaviors online. It

seems that the Net can break down that last vestige of resistance, and/or for some people, introduce them to these behaviors for the first time. Most of these trends are anecdotal at this point (in spite of clear clinical evidence as well) although further examination seems clearly warranted.

The future of Internet research will need to more aggressively tease out the co-morbid conditions that exist, and to more clearly identify possible subtypes of compulsive Internet behavior. In addition further elaboration on the psycho-physiological mechanisms of addiction and what specific factors seem to be the most potent in eliciting Internet addiction patterns. Still more research needs to be done on the unique relationship between sex and the Internet, as so many problems related to online use seem to have a sexual or relational component. There needs to be particular attention paid to compulsive Internet consumer behavior, as e-commerce is here to stay. Further replications of survey studies such as this should be done, along with attempts at more controlled studies to evaluate real-time use patterns and the related effects of excessive Internet use. Current re-evaluation of the ABC News data is currently underway to assess additional information.

Technology, and especially, computers and the Internet, seem to be at best easily overused or abused, and at worst, are addictive. It is very clear that the Internet has produced a host of Internet-enabled problems. The combination of available *content, ease of access, convenience, low cost, visual stimulation, autonomy, and anonymity*—all contribute to a highly mood altering experience which can affect many aspects of life. All technologies affect the manner in which we live and love. It should be remembered that unless technology improves the quality of our lives, it is of no benefit. Simply because we can create and provide brilliant new technologies, does not mean they are benign.

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