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INFO BRIEF

Internet Addiction -- Is It Real?

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This annotated bibliography includes a variety of resources related to the concept of "Internet addiction" a disorder gaining increased attention as the use of the web, "smart" cell phones, and online computer games grows. Some researchers and clinicians do not believe that excessive use of technology constitutes a "disorder;" others feel strongly that it is an addiction similar to gambling or substance abuse. The bibliography includes magazine and peer-reviewed journal articles, books, online resources, and measures to screen and assess internet addiction.

General Interest Magazines

Friedman JC. Understanding, assessing and treating online role playing game addiction. Counselor 2010;11(3):22-27.
This article reviews the signs and symptoms of online gaming addiction, the social and clinical issues, addiction potential, and effective treatment and recovery programs.

Gitlow S. From the addiction physician: Fuss about video games. *Counselor* 2008;9(1):36-37.
This essay addresses the question of whether or not excessive and seemingly detrimental use of video games (both arcade-style and computer/internet-based) can be considered an "addiction," and, if so, how the disease can be clearly defined.

Ricci S. A tangled web. *Professional Counselor* 1998;13(5):33-37.
This professional magazine article examines the debate over Internet addiction and the negative impact that debate is having on the ability of those afflicted with the disorder to get help.

Ross W. A World Wide Woe: Internet addiction sounds like a punch line, but it ruined my brother's life. *Newsweek*, 2009, October 8. http://www.newsweek.com/id/216911. This article describes the author's personal experiences with his brother's Internet addiction, and the development of the Fall City, WA ReSTART Internet Addiction Recovery Program.

Sharples T. Breaking an online addiction. *Time International (Atlantic edition)* 2009;171(15):44. This article discusses ReSTART, the first residential recovery program for Internet and video game addicts in the U.S. A discussion of the costs and services of the program, which lasts 45 days and takes place in the Washington state home of social worker Cosette Rae, is presented.

Stewart CS. Obsessed with the Internet: A tale from China. *Wired* 2010; February. http://www.wired.com/magazine/2010/01/ff_internetaddiction/http://www.wired.com/magazine/2010/01/ff_internetaddiction/. A camp in Qihang, China promises to cure children of Internet addiction, an ailment that has grown into one of China's most feared public health hazards.

Online Resources

A Day Without Media
http://withoutmedia.wordpress.com/
This blog presents research from a University of Maryland study about college students and addiction to social networking.

The Center for Internet and Technology Addiction
http://www.virtual-addiction.com/
This center, founded by Dr. David Greenfield, provides a forum to educate, train, and prevent the negative behaviors that may result from Internet and other digital addictions.

reSTART: Internet Addiction Recovery Program (Fall City, WA)
http://www.netaddictionrecovery.com
This program is specifically oriented towards launching tech dependent youth and adults back into the real world, using a 45-day abstinence-based recovery program. The program is designed to address a wide variety of underlying issues which may contribute to excessive Internet use, including mental health disorders, ADHD, family problems, and childhood trauma.

Screening and Assessment Instruments

From the ADAI Library's Screening and Assessment Instruments Database.

- Internet Addiction Scale: http://bit.ly/IAS_inst
- Internet Related Problem Scale: http://bit.ly/IRPS_inst
- Internet-User Assessment Screen: http://bit.ly/IUAS_inst
- Internet Over-Use Scale & Cell-Phone Over-Use Scale: http://bit.ly/IOS_COS_inst
- Problem Video Game Playing: http://bit.ly/PVP_inst

Books

The Multiplicities of Internet Addiction: The Misrecognition of Leisure and Learning.
   Nicola F. Johnson / Aldershot, England: Ashgate, 2009. ISBN: 978-0-7546-7496-2
   http://books.google.com/books?vid=ISBN9780754674962

Oxford Handbook of Internet Psychology.
   Edited by Adam N. Joinson et al. / Oxford, New York: Oxford University Press, 2007.
ISBN: 9780198568001
   http://books.google.com/books?vid=ISBN9780198568001

Cyberaddition: Fundamental and Perspectives.
   Pierre Vaugeois / Montreal: Centre quebecois de lutte aux dependances, 2006.
   ISBN: 0-9780797-5-2-3

Virtual Addiction: Help for Netheads, Cyberfreaks, and Those Who Love Them.
   David N. Greenfield / Oakland, CA: New Harbinger, 1999. ISBN: 1-57224-172-1
   http://books.google.com/books?vid=ISBN1572241721

Caught in the Net: How to Recognize the Signs of Internet Addiction & a Winning Strategy for Recovery.
   Kimberly S. Young / New York: J Wiley, 1998. ISBN: 0-471-19159-0
   http://books.google.com/books?vid=ISBN0471191590

Real Solutions for Overcoming Internet Addictions.
   Stephen O. Watters / Ventura, CA: Vine Books, 2001. ISBN: 1569552681
   http://books.google.com/books?vid=ISBN1569552681

Truth, Lies and Trust on the Internet.
   Monica Whitty and Adam Joinson / Hove, East Sussex, New York: Routledge, 2009. ISBN: 9781841695846
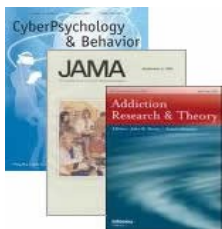   http://books.google.com/books?vid=ISBN9781841695846

Hooked on the Net.
   Andrew Careaga / Grand Rapids, MI: Kregel Publications, 2002. ISBN: 0825423821
   http://books.google.com/books?vid=ISBN0825423821

Research Articles

Bergmark KH, Bergmark A. The diffusion of addiction to the field of MMORPGs. *Nordic Studies on Alcohol and Drugs* 2009;26(4):415-426.
Extensive engagement in MMORPGs (Massively Multiplayer Online Role Playing Games) is one of the newest contributions to the ever-growing list of activities that have been identified as addictive. This analysis discusses issues of dependency and addiction to online gaming.

Blaszczynski A. Internet use: in search of an addiction. *International Journal of Mental Health and Addiction* 2006;4(1):7-9. DOI: http://dx.doi.org/10.1007/s11469-006-9002-3
Innovative technological advances coupled with economies of scale have led to the mass availability of personal computers, cell phones with integrated web access, and GPS devices. The potential for misuse and inappropriate and excessive use of certain technological applications has led to the expression of concerns related to the psy chological and behavioral impact of the Internet on addiction.

Carbonell X, Guardiola E, Beranuy M, Belles A. A bibliometric analysis of the scientific lit- erature on In- ternet, video games, and cell phone addiction. *JAMA* 2009;97(2):102-107. DOI: http://dx.doi.org/10.3163/1536-5050.97.2.006
This literature review analyses the current research dealing with addiction to the Internet, video games, and cell phones and char- acterizes the pattern of publications in these areas.

Caplan S, Williams D, Yee N. Problematic internet use and psychosocial well-being among MMO players. *Computers in Human Behavior* 2009;25(6):1312-1319. DOI: http://dx.doi.org/10.1016/j.chb.2009.06.006
This study examined problematic internet use (PIU) among people who play massively multiplayer online games (MMOs) to deter- mine whether aspects of the MMO experience are useful predictors of PIU. The results revealed that MMO gaming variables contrib- uted a substantively small, but statistically significant amount of explained variance to PIU scores.

Chappell D, Eatough V, Davies MNO, Griffiths M. EverQuest -- It's just a computer game, right? An in- terpretive phenomenological analysis of online gaming addiction. *International Journal of Mental Health and Addiction* 2006;4(3):205-216. DOI: http://dx.doi.org/10.1007/s11469-006-9028-6
One of the most popular massively multiplayer online role-playing games (MMORPGs) is *EverQuest*. This study examined how indi- viduals perceived *EverQuest* in the context of their lives. It is clear from accounts that players/ex-players appear to be "addicted" to *EverQuest* in the same way other people become addicted to alcohol or gambling, exhibiting symptoms common to the core components of addiction, such as salience, mood modification, tolerance, conflict, withdrawal symptoms, cravings, and relapse.

Gong J, Chen X, Zeng J, Lif F, Zhou D, Wang Z. Adolescent addictive internet use and drug abuse in Wu- han, China. *Addiction Research & Theory* 2009;17(3):291-305.
DOI: http://dx.doi.org/10.1080/16066350802435152
This paper examines the relationship between addictive internet use and drug use among youth in China. Findings indicated that addiction internet use and internet addiction were prevalent among adolescents in China, and that the use of illegal substances was also prevalent. Prevention education of both should be strengthened.

Gray JB, Gray ND. The web of Internet dependency: search results for the mental health professional. *International Journal of Mental Health and Addiction* 2006;4(4):307-318. DOI: http://dx.doi.org/10.1007/s11469-006-9034-8
Some researchers speculate that as many as 10% of users worldwide suffer from "problematic" use of the internet, possibly stem- ming from an internet dependency. This paper provides a critical review of research on problematic internet use and practical im- plications, including suggestions on treatment and prevention.

Griffiths M. Internet addiction -- Time to be taken seriously? [editorial] *Addiction Research* 2000;8 (5):413-418.
The popularity of the Internet as a communication medium has become an ever-increasing part of many people's day-to-day lives, leading the mainstream media to increasingly describe excessive use as "internet addiction." Although this concept appears to have popular support, there is a form of "knee-jerk skepticism" among the academic community. If these pathologies do exist, though, there is no doubt they will develop as internet usage continues to increase. Further examination seems warranted.

Griffiths MD, Dancaster I. The effect of type A personality on physiological arousal while playing comput- er games. *Addictive Behaviors* 1995;20(4):543-8. DOI: http://dx.doi.org/10.1016/0306-4603(95)00001-S
Despite the widespread use of computer games, there is a lack of systematic research in the area, especially in regards to their "addictiveness." This study found that type A personalities experience a significantly greater increase in arousal when playing com- puter games than Type B personalities, which may make them more susceptible to addiction.

Han DH, Lee YS, Yang KC, Kim EY, Lyoo IK, Renshaw PF. Dopamine genes and reward dependence in adolescents with excessive Internet video game play. *Journal of Addiction Medicine* 2007;1(3):133-138.
DOI: http://dx.doi.org/10.1097/ADM.0b013e31811f465f
Excessive Internet game play has emerged as a leading cause of behavioral/developmental problems in adolescents. This study investigates characteristics in game-playing adolescents as they potentially relate to genetics and temperament. Results find teens who play excessively have higher reward dependency and an increased prevalence of specific genetic alleles.

Han DH, Lee YS, Na C, Ahn JY, Chung US, Daniels MA, Haws CA, Renshaw PF. The effect of methylpheni-date on Internet video game play in children with attention-deficit/hyperactivity disorder. *Comprehensive Psychiatry* 2009;50(3):251-256. DOI: http://dx.doi.org/10.1016/j.comppsych.2008.08.011
This article looks at methylphenidate treatment as a way to reduce Internet use in subjects with co-occurring ADHD and Internet video game addictions, and suggests that Internet game playing might be a means of self-medication for children with ADHD.

Hart VA. Psychotherapy in the age of the computer: The debate concerning computer addiction. *Journal of Addiction Nursing* 2001;13(3/4):143-148. DOI: http://dx.doi.org/10.3109/10884600109052649
The emergence of the World Wide Web and its explosive growth has affected every part of the human condition and psychotherapy is no exception. This paper explores the various components of the debate surrounding the potentially harmful and positive aspects of computer use, as well as criteria that can be useful during the assessment of a client presenting with concerns about excessive computer use.

Huisman A, van den Eijnden R, Garretsen H. "Internet addiction" -- a call for systematic research. *Journal of Substance Use* 2001;6(1):7-10. DOI: http://dx.doi.org/10.1080/146598901750132036
The popularization of the Internet is accompanied by warnings regarding the possible addictive effect of prolonged computer use. This article examines the lack of consensus regarding the definition of "internet addiction," the wide variability in research results, and the serious flaws in research designs on this subject. More systematic research in this field is needed.

Huang H, Leung L. Instant messaging addiction among teenagers in China: Shyness, alienation, and academic performance decrement. *CyberPsychology & Behavior* 2009;12(6):675-679. DOI: http://dx.doi.org/10.1089/cpb.2009.0060
This exploratory research proposes the concept of instant messaging (IM) addiction and examines whether IM addiction exists among Chinese teenagers and, if so, who the addicts are, what their symptoms are, and to what extent they are addicted. It also looks at whether psychological variables such as shyness and alienation can predict IM use/addiction in teenagers and whether IM use or addiction can impair academic performance.

Hsu S, Wen M, Wu M. Exploring user experiences as predictors of MMORPG addiction. *Computers & Education* 2009;53(3):990-999. DOI: http://dx.doi.org/10.1016/j.compedu.2009.05.016
Similar to Internet addiction, the pathological use of massively multiplayer online role playing games is a kind of modern addiction that can affect students' lives on both a physical and a psychological level. This study examines a way to predict addiction to MMORPGs among college students.

Iacovelli A, Valenti S. Internet addiction's effect on likeability and rapport. *Computers in Human Behavior* 2009;25(2):439-443. DOI: http://dx.doi.org/10.1016/j.chb.2008.10.006
The "Internet Paradox" refers to findings that show that the increase in communications brought about by Internet usage actually had negative effects on user's psychological well-being and social involvement. This study proposes that face-to-face contact promotes the development of rapport and that individuals that use the internet excessively will lack these necessary social skills.

Jenaro C, Flores N, Gomez-Vela M, Gozalez-Gil F, Caballo C. Problematic internet and cell-phone use: Psychological, behavioral, and health correlates. *Addiction Research & Theory* 2007;15(3):309-320. DOI: http://dx.doi.org/10.1080/16066350701350247
This study aimed to assess pathological Internet and cell phone use in college students and to identify psychological, health, and behavioral correlates. The paper also describes the development and preliminary psychometrics for the Internet Over-Use Scale and the Cell-Phone Overuse Scale (see section below on Screening and Assessment Instruments).

Kaltiala-Heino R, Lintonen T, Rimpela A. Internet addiction? Potentially problematic use of the internet in a population of 12-18 year-old adolescents. *Addiction Research & Theory* 2004;12(1):89-96 DOI: http://dx.doi.org/10.1080/1606635031000098796
Online surveys indicate excessive use of the Internet can result in psychosocial problems. This study looked at harmful Internet usage in a sample of 12-18 year olds, using criteria tailored analogously from pathological gambling scales, and found that 4.6% of boys and 4.7% of girls scored as "addicts."

Kim J, LaRose R, Pen W. Loneliness as the cause and the effect of problematic internet use: The relationships between Internet use and psychological well-being. *CyberPsychology & Behavior* 2009;12

(4):451-455. DOI: http://dx.doi.org/10.1089/cpb.2008.0327
This study showed that individuals who were lonely or did not have good social skills could develop strong compulsive Internet use behaviors resulting in negative life/social outcomes instead of relieving their original problems. It also determined that, in terms of the key paths leading to compulsive Internet use, there is no between using the Internet for social interaction (e.g., social network-ing, instant messaging) versus using it for entertainment (e.g., downloading movies).

Ko C, Hsiao S, Liu G, Yen J, Yang M, Yen C. The characteristics of decision making, potential to take risks, and personality of college students with internet addiction. *Psychiatry Research* 2010;175(1-2):121-125. DOI: http://dx.doi.org/10.1016/j.psychres.2008.10.004
This study aimed to identify risk factors involved in Internet addiction in college students and found that Internet addiction is not identical to substance use disorder or pathological gambling from a neurocognitive standpoint. This result suggests that the loss of control over Internet use might be associated with an overreliance on implicit emotional learning, and that college students the demonstrate high novelty seeking and low reward dependence should be closely monitored for Internet addiction.

Lam LT. The association between internet addiction and self-injurious behaviour among adolescents. *Injury Prevention* 2009;15(6):403-408. DOI: http://dx.doi.org/10.1136/ip.2009.021949
This article examines the association between internet addiction and self-harm in Chinese adolescents, and finds that addiction to the web is detrimental to mental health and increases the risk of self-injury among teenagers. Clinicians need to be aware of po-tential co-morbidities of other addictions among adolescent self-injured patients.

Li H, Wang J, Wang L. A survey of generalized problematic internet use in Chinese college students and its relations to stressful life events and coping style. *International Journal of Mental Health and Addiction* 2009;7(2):333-346. DOI: http://dx.doi.org/10.1007/s11469-008-9162-4
This study examines the incidence of problematic Internet use (PIU) in Chinese college students and its relationship to stressful life events and coping style. Stressful life events seemed to be mainly mediated through avoidant coping styles (e.g., self-blame, fan-tasy, withdrawal, etc.). Prevention programs for PIU must focus on developing stronger coping skills for stress reduction.

Liu M, Pen W. Cognitive and psychological predictors of the negative outcomes associated with playing MMOGs (massively multiplayer online games). *Computers in Human Behavior* 2009;25(6):1306-1311.
DOI: http://dx.doi.org/10.1016/j.chb.2009.06.002
This study integrates research on problematic Internet use to explore the cognitive and psychological predictors of negative conse-quences associated with playing massively multiplayer online games (MMOs). Results demonstrate the important roles that psy-chological dependency and deficient self-regulation play in negative consequences associated with online gaming.

Mottram AJ, Fleming MJ. Extraversion, impulsivity and online group membership as predictors of prob-lematic internet use. *CyberPsychology & Behavior* 2009;12(3):319-321 DOI: http://dx.doi.org/10.1089/cpb.2007.0170
This study investigated predictors of problematic Internet use in both males and females, such as higher frequency of use, lack of perseverance (an aspect of impulsivity) and online group membership.

Rendi M, Szabo A, Szabo T. Exercise and internet addiction: Commonalities and differences between two problematic behaviours. *International Journal of Mental Health and Addiction* 2007;5(3):219-232. DOI: http://dx.doi.org/10.1007/s11469-007-9087-3
Exercise and Internet addiction are opposite disorders, in terms of physical-energy requirements and physical versus cognitive components. However, they also share common symptoms that both meet the proposed characteristics of behavioral addiction.

Taintor Z. Internet / computer addiction. In: Lowinson JH, Ruiz P, Millman RB, Langrod JG (eds.). Sub-stance Abuse: A Comprehensive Textbook / 4th ed. -- Philadelphia: Lippincott, Williams & Wilkins, 2004, pp. 540-548.
This textbook chapter discusses issues relating to computers and the Internet, both as the subjects of addiction themselves and as tools used in the treatment of other addictions. It posits that addiction related to computers themselves is rare; more frequently, the addiction is related to the messages carried by the medium, especially sex, games, gambling, crime, and substances of abuse.

Tejeiro Salguero RA, Moran RM. Measuring problem video game playing in adolescents. *Addiction* 2002; 97(12):1601-6. DOI: http://dx.doi.org/10.1046/j.1360-0443.2002.00218.x
Some researchers suggest that video game playing can be an addictive behavior similar to substance dependence. This article de-scribes the development and validation of a scale to measure the problems associated with the apparently addictive use of all types of video games, the Problem Video Game Playing scale (PVP) (see Screening and Assessment Instruments, below).

Van Rooij AJ, Schoenmakers TM, Vermulst AA, van den Eijnden RJJM, van de Mheen D. Online video game addiction: Identification of addicted adolescent gamers. *Addiction* 2010 (in press). DOI: http://dx.doi.org/10.1111/j.1360-0443.2010.03104.x

This study confirms the existence of a small group of addicted online gamers (3%) representing about 1.5% of children aged 13-16 years in the Netherlands. Although these gamers report addiction-like problems, relationships with decreased psychosocial health were less evident.

Weinstein AM. Computer and video game addiction — A comparison between game users and non-game users. *American Journal of Drug and Alcohol Abuse* 2010 (in press). DOI: http://dx.doi.org/10.3109/00952990.2010.491879
Psycho-physiological mechanisms underlying computer game addiction are mainly stress coping mechanisms, emotional reactions, sensitization, and reward. Computer game playing may lead to long-term changes in the reward circuitry (especially reduced dopamine response) that resemble the effects of substance dependence.

Weinstein A, Lejoyeux M. Internet addiction or excessive internet use. American Journal of Drug and Alcohol Abuse 2010 (in press). DOI: http://dx.doi.org/10.3109/00952990.2010.491880
Although Internet-addicted individuals have difficulty suppressing their excessive online behaviors in real life, little is known about the patho-physiological and cognitive mechanisms responsible for Internet addiction. Due to the lack of methodologically adequate research, it is currently impossible to recommend any evidence-based treatment of Internet addiction.

Widyanto L, Griffiths M. "Internet addiction:" A critical review. *International Journal of Mental Health and Addiction* 2006;4(1):31-51. DOI: http://dx.doi.org/10.1007/s11469-006-9009-9
It has been alleged by some academics that excessive Internet use can be pathological and addictive. This paper reviews what is known from the empirical literature on "internet addiction" and its derivatives and assess to what extent it exists. It is concluded that if "internet addiction" does indeed exist, it affects a relatively small percentage of the online population. However, exactly what it is on the Internet they are addicted to still remains unclear.

Wood RTA. Problems with the concept of video game "addiction:" Some case study examples. *International Journal on Mental Health and Addiction* 2008;6(2):169-178. DOI: http://dx.doi.org/10.1007/s11469-007-9118-0
This paper argues that the recent concerns about video game "addiction" have been based less on scientific facts and more upon media hysteria. Four case studies, as well as a review of the literature, are presented. Several responses to this article were published in International Journal of Mental Health and Addiction 2008;6(2) (see Blaszcynski, p. 179-181; Griffiths, p. 182-185; Turner, p. 186-190; and Wood, p. 191-193).

Young K. Internet addiction: Diagnosis and treatment considerations. *Journal of Contemporary Psychotherapy* 2009;39(4):241-246. DOI: http://dx.doi.org/10.1007/s10879-009-9120-x
Internet addiction is a new and often unrecognized clinical disorder that can cause relational, occupational, and social problems. To help clinicians identify Internet addiction in practice, this paper provides an overview of the problem and the various subtypes that have been identified.

Young K. Understanding online gaming addiction and treatment issues for adolescents. *American Journal of Family Therapy* 2009;37(5):355-372. DOI: http://dx.doi.org/10.1080/01926180902942191
Massively multi-user online role-playing games (MMORPGs) are one of the fastest growing forms of Internet addiction, especially among children and teenagers. This article explores the emergence of online gaming addiction and its impact on individuals and families, including the warning signs, adolescent issues, parenting/therapy considerations, and industry-targeting of youth.

Young K, Aboujaoude E. Internet addiction: New-age diagnosis or symptom of age-old problem? *Canadian Medical Association Journal* 2009;181(9):575-576. DOI: http://dx.doi.org/10.1503/cmaj.109-3052
This article focuses on issues concerning Internet addiction and notes that it has raised debate in the mental health community, as some say it is becoming a mental health problem and some state that the concept that one can become addicted to communication is absurd. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2764750/?tool=pubmed

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