Internet addiction:

A woman in Florida has lost custody of her children after a judge ruled that she was addicted to the internet. Judge Jerry Lockett awarded primary custody of Pam Albridge's two children, aged seven and eight, to her husband. … Witnesses testified that after the couple separated, Mrs Albridge moved the computer into her bedroom, put a lock on the door and began spending most of her time on line. (*The Guardian*, 24 November 1997.)

MARK GRIFFITHS *explores the empirical reality behind the media hype.*

THE report above is typical of the kind of stories that have been saturating the popular press in the UK about 'internet addiction'. The UK edition of *Newsweek* reported that 2 to 3 per cent of the on-line community have serious internet addictions, and spend most of their waking time surfing and chatting in this medium (Hamilton & Kalb, 1995).

Research into the area of intemet addiction is at present sparse but growing. This article attempts to separate the empirical research from the media hype and to assess whether internet addiction can really be seen in the same light as addictions to gambling and alcohol.

Defining 'addiction'

For many people, the concept of addiction involves the taking of drugs (e.g. Walker, 1989). Therefore, it is perhaps unsurprising that most official definitions concentrate on drug ingestion. Despite such definitions, there is now a growing movement (e.g. Orford, 1985) that views a number of other behaviours as potentially addictive.

These include activities as diverse as gambling (Griffiths, 1995*b*), overeating (Orford, 1985), sex (Carnes, 1983), exercise (Glasser, 1976), computer game playing (Griffiths, 1993) and pair bonding (Peele & Brodsky, 1975). Such diversity has led to new all-encompassing definitions of what constitutes addictive behaviour.

Most people have their own conception of what constitutes 'addiction'; but actually trying to define it is difficult. The way to determine whether non-chemical (i.e. behavioural) addictions are addictive in a non-metaphorical sense is to compare them against clinical criteria for established drug-ingesting addictions. This method of making behavioural excesses more clinically identifiable has been proposed for behavioural addictions such as 'television addiction'(McIlwraith *et al*., 1991) and 'amusement machine addiction' (Griffiths, 1991).

Once 'addiction' has been operationally defined, there are two further questions that need answers. These are: Does intemet addiction really exist? And, if it does exist, what are people actually addicted to? These questions will be explored by examining the core components of *bona fide* addictions and then relating them to excessive internet use.

The rise of internet addiction

It has been alleged by researchers like myself that social pathologies are beginning to surface in cyberspace in the form of technological addictions (e.g. Griffiths, 1996*a*, 1997*a*).

Technological addictions are operationally defined as non-chemical (behavioural) addictions that involve human–machine interaction. They can be either passive (e.g. television) or active (e.g. computer games). The interaction usually contains inducing and reinforcing features (e.g. sound effects, colour effects, event frequency, etc.) that may promote addictive tendencies (Griffiths, 1995*a*).

Technological addictions can be viewed as a subset of behavioural addictions (Marks, 1990). They feature what I consider to be the core components of addiction: salience, mood modification, tolerance, withdrawal, conflict and relapse (see Griffiths, 1996*b*). For the purposes of this article, any behaviour fulfilling these six criteria is therefore operationally defined as an addiction. These core components are expanded below.

Salience This occurs when the particular activity becomes the most important one in the person's life. It dominates thinking (leading to preoccupations and cognitive distortions), feelings (resulting in cravings) and behaviour (socialised behaviour deteriorates). For instance, in the case of internet users, even if they are not actually on-line, they will be thinking about the next time they will be.

Mood modification This refers to the subjective experiences that people report as a consequence of engaging in the particular activity and can be seen as a coping strategy. For example, they get an arousing 'buzz'or a 'high' when they log on. Or, paradoxically, they experience a tranquillising feeling of 'escape' or 'numbing' when they have been on-line for hours.

Tolerance This is the process whereby increasing amounts of the particular activity are required to achieve the same effects. For instance, an internet user may gradually have to increase the length of time spent on-line to experience a mood-modifying effect initially obtained in less time.

Withdrawal symptoms These are the unpleasant feelings or physical effects that occur when the particular activity is discontinued or suddenly reduced. For example, an internet user may suffer the shakes, moodiness and irritability if prevented from going on-line.

Conflict This refers to the conflicts involving the activity between addicts and those around them (interpersonal conflict),

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conflicts with other activities (job, social life, hobbies and interests) or from within individuals themselves (intrapsychic conflict).

Relapse This is the tendency for reversions to earlier patterns of the particular activity to recur, and for even the most extreme patterns typical of the height of the addiction to be quickly restored after many years of abstinence or control.

Surveying internet use

The popular stereotypes (see Rheingold, 1993) surrounding various types of hacking and computing addictions (e.g. Shotton, 1991; Turkle, 1995) portray 'addicts' as socially unskilled male teenagers. They have little or no social life or self-confidence, and are given labels such as 'nerd', 'geek' or 'anorak'.

The stereotype appears to be partly true. Research conducted in the mid-1980s on 'computer addicts' indicated that computer-dependent people were likely to be male, introverted and educated and likely to use computers in their profession (Shotton, 1991). Recent surveys have confirmed that a vast majority of internet users are in fact male (e.g. Pitkow & Kehoe, 1996).

There have been a few surveys that have tried to explore the concept of internet addiction. Young (1996*a*, 1998) was the first to carry out such research in this area. She surveyed excessive internet activity using an adapted version of the DSM-IV criteria for psychoactive substance dependence (American Psychiatric Association, 1994).

Although Young's study relies on a purely self-selected sample who replied to adverts asking for 'avid internet users', her results are nevertheless interesting. All her respondents who scored three or more affirmative responses on the adapted version of the DSM-IV were operationally defined as 'internet dependent' (n = 396). This group was then compared with a group of 100 'non-dependent internet users'.

The majority (60 per cent) of Young's respondents were female, who obviously did not fit the stereotype of the excessive internet user (i.e. a male in his late teenage years). Why this occurred is unclear, although it may be because of the tendency for more females than males to discuss emotional issues and problems (Weissman & Payle, 1974).

Internet-dependent individuals used the internet for an average of 38.5 hours a week, compared to 4.9 hours a week for the non-dependent users. It is unlikely that every one of her 396 dependent internet users was a *bona fide* internet addict (particularly as they only had to score three or more on the dependency checklist).

However, Young did report that many of her respondents displayed on-line dependence, including tolerance, loss of control, withdrawal symptoms, and impairment of functioning resulting in negative academic, social, financial and occupational consequences.

Brenner (1997), like Young, has also examined excessive internet usage amongst a self-selected sample of the general population in a study that is still ongoing. Brenner has developed a 32-item 'true–false' questionnaire called the Internet-Related Addictive Behavior Inventory (IRABI), which people could fill out when they accessed his website. At the time of writing, the responses of the first 563 participants had been analysed (30 per cent of the people who had accessed the site).

Results to date indicate that respondents (mean age 34, 73 per cent male) used the internet for an average of 19 hours a week. They experienced an average of 10 signs of interference (e.g. failure to manage time effectively, cutting short on sleep, missing meals, etc.) on the IRABI. Older respondents experienced fewer problems with the intemet, and 80 per cent of the total sample endorsed at least five of the signs. This suggests that what observers see as excessive may in fact be the norm.

It is hard to assess whether any of Brenner's respondents are really addicted to the internet, as his scale items do not

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properly relate to addiction. Brenner claims that tolerance, withdrawal and craving are common. However, further examination of these claims suggests that Brenner somewhat 'overplays' his data.

For instance, he claims: that 55 per cent are experiencing 'tolerance' because they spend too much time on the internet; that 28 per cent are suffering 'withdrawal' because they find it hard to stop thinking about the internet if they have not logged on in a while; and that 22 per cent are 'craving' because they have attempted to spend less time connected to the internet but have been unable to do so. Some may argue that these behaviours do not wholly indicate genuine signs of addiction.

Two recent studies have examined excessive internet use among a student population. Although unrepresentative of the general public, college students are considered high-risk for internet problems because of ready access and flexible time schedules (Moore, 1995). A survey by Pitkow and Kehoe (1996) indicated that 32 per cent of internet users access the internet through education providers, and that 28 per cent of internet users are college students.

Morahan-Martin and Schumacher (1997) examined what they termed 'pathological internet use'(PIU) in 277 college students. PIU was assessed using a 13-item questionnaire in which all those who scored four or more affirmative answers were defined as pathological internet users (PI users) (see Table 1).

PI users accounted for 8.1 per cent of the total sample. Males were more likely to be PI users (12.2 per cent of the males in the sample) than were females (3.2 per cent of the females in the sample). PI users were more likely to use technologically sophisticated channels, on-line games and so on.

Perhaps surprisingly, PI users only spent an average of 8.48 hours a week on the internet, a figure significantly lower than the studies outlined above. However, the authors argued that such a finding suggests that problems can occur in relatively short periods of internet use.

Other defining characteristics of PI users were that they were more likely to use a wide variety of internet services, and were more likely to use the internet to meet new people, for emotional support, to talk to others with the same interest, to play interactive games like MUDs (Multi-User Domains), to gamble and to engage in net-sex. They were also more lonely as measured on the UCLA Loneliness Scale.

Again, the results are at best suggestive of internet addiction without proving it, as the items used on the PIU scale were very similar (and in some cases identical) to Brenner's.

Morahan-Martin and Schumacher described the internet as the 'Prozac of communication' for such users, as they appeared to other users to be more friendly and open than they would have seemed in the real world. It has also been argued that their profile partially confirmed the stereotypical image of computer addicts (Shotton, 1991) and hackers (Turkle, 1995).

I have suggested (Griffiths, 1995*a*) that the internet provides an alternative reality to users. It allows them feelings of immersion and anonymity that may be psychologically rewarding. Such immersion may actually lead to an altered state of consciousness.

Finally, Scherer and Bost (1997) surveyed 531 students about their internet use, and developed a checklist of ten clinical symptoms to parallel the symptoms of substance abuse and dependency. Students had to indicate whether any of the symptoms had occurred in the preceding year. Those reporting three or more symptoms were classed as 'internet dependent' (ID). Again, like Young (1996*a*), the cut-off point for genuine addiction was perhaps too low.

Results indicated that 49 respondents (13 per cent) of weekly internet users scored three or more on the dependency checklist and that the majority of these were male (71 per cent). The average amount of time spent per week on the internet was 8.1 hours a week.

Results also showed that the ID used less popular services on the internet (games, bulletin boards, IRC (Internet Relay Chat), MUDs, etc.), and that they were more likely to have on-line relationships. Sixty-five per cent of the ID group had tried to reduce their time on-line, and about half had been successful.

Thirteen per cent of the sample reported internet use had interfered with either their academic work, professional performance or their social lives, and 2 per cent perceived the internet to have had an overall negative effect on their lives.

Surveys conducted to date do not show conclusively that internet addiction exists, mainly because the criteria chosen appear to be only peripheral to the core components of addiction.

This is not to criticise the data collected by the researchers cited, as all the data are of descriptive value. Young (1996*a*; 1998) perhaps comes closest to tapping into the concept of internet addiction, with her own clinical model based on psychoactive substance dependency.

The surveys that have been conducted, at best, indicate that internet addiction may be prevalent in a significant minority of individuals. But more research using validated survey instruments is required.

TABLE 1 Some items on the Pathological Internet Use Scale (from Morahan-Martin & Schumacher, 1997)

- I have been told that I spend too much time on-line.
- I have tried to hide from others how much time I am actually on-line.
- I have gotten into trouble with my employer or school because of being on-line.
- I have attempted to spend less time on-line but have not been able to.
- I have never gotten into arguments with a significant other over being on-line.
- I have routinely cut short on sleep to spend more time on-line.
- If it has been a while since I last logged on, I find it hard to stop thinking about what will be waiting for me when I do.
- My work and/or school performance has not deteriorated since I started going on-line.
- I have missed classes or work because of on-line activities.

Case studies

Case studies of excessive internet users may provide better evidence of whether internet addiction exists, by virtue of the fact that the data collected are much more detailed. Even if just one case study can be located, it indicates that internet addiction actually does exist — even if it is unrepresentative.

Both myself (Griffiths, 1997*b*) and Young (1996*b*) have described what we consider to be detailed case studies of internet addicts. Young provided an account of a 43-year-old US homemaker whose internet usage resulted in significant impairment to her family life. Over a three-month period, the woman in question gradually built up to spending 50 to 60

hours a week on the internet, particularly on chat lines. Some of her sessions lasted up to 14 hours at a time.

She eventually felt depressed, anxious and irritable when she was not on-line, and her usage started to interfere with both her domestic duties and her relationship with her husband and children. She also got into financial trouble, running up monthly telephone bills of about $400.

Young argued that this case broke the stereotype of excessive internet users (in not involving a young male), and suggested that certain risk factors may be associated with the development of addictive use of the internet (i.e. the interactive nature of the chat-room). These themes have been expanded (Griffiths, 1995*a*), and will be returned to briefly at the end of this article.

More recently, I outlined five case studies of excessive internet users — three teenage males, one middle-aged woman with physical disabilities, and one male in his early thirties (Griffiths, 1997*b*). However, I argued that only two of them were actually addicted using the six criteria of addiction.

One of the two addicts was 'Jamie'(not his real name), a 16-year-old British male (at college) who was an only child and lived alone with his mother. Jamie had no physical problems although he was very overweight. He spent around 70 hours a week on his computer, including 40 hours on the internet. This included two 12-hour sessions at the weekend.

Jamie's usual pattern was to log on between 2pm and 4pm and log off between 1am and 5am. He described himself as 'sci-fi mad'and spent 'hours and hours' taking part in internet discussion groups about the television programme *Star Trek* and its spin-offs. As a consequence of his excessive internet use, the house telephone bills were large.

Jamie claimed the internet was the most important thing in his life, and that he thought about it even when he was not using it. He said the internet could change his mood — either calming him or exciting him. He got withdrawal symptoms if he could not get internet access. When trying to cut down or quit, he found the lure of cyberspace too strong to resist and he would get the 'shakes'. However, he does not view himself as an 'addict'.

Jamie had difficulty limiting or controlling his time on-line. Over a two-year period, he upgraded his computer 11 times. He said: 'I log on literally until I am physically unplugged by someone else … I can't work or live without it — my social and intellectual life are linked directly to it.'

Jamie's use of the internet also caused irregular sleeping patterns. It did not bother him that he had become nocturnal in order to use the internet when telephone charges are low. Occasionally, he overslept and missed college because of his computer usage. He tried to quit the internet — once giving up for three days — but the pressure to log back on proved too great.

I argued that Jamie appeared to fit the stereotype of an internet 'addict'. He was a male teenager who appeared to have little or no social life, little or no self-confidence, who displayed all the core components of addiction (as outlined earlier), and who denied he had any kind of problem. His passion for science fiction echoed research carried out by Wolfson (1995), who found that obsessive fans of *Star Trek* use the internet extensively.

Jamie's primary motivation for using the internet excessively was to socialise with other internet users. It may be that he felt comfortable in the text-based (i.e. with no face-to-face interaction) world of the internet because of his obesity. But regardless of the cause of Jamie's excessive internet use, it does appear, in this case at least, that the person involved suffered from a genuine addiction that is comparable with other more accepted addictions.

Evaluating the evidence

Taking all the case study and survey evidence together, it can be argued that excessive usage in a majority of cases appears to be purely symptomatic (i.e. the internet is being used as a tool to engage in other types of rewarding behaviour, like being in a relationship). But for what appears to be an exceedingly tiny minority, the internet may be addictive.

My case study accounts (Griffiths, 1997*b*) show that the internet was used to counteract other deficiencies in the person's life (e.g. relationships, lack of friends, physical appearance, disability, coping etc.). All of the case studies used the computer for social contact (mostly for IRC services).

As these cases show, text-based relationships can obviously be rewarding for some people, and this is an area for future research. It is perhaps also refreshing that in some circumstances, on-line relationships could be deemed to be psychologically healthy because they break down prejudices. On-line intimate relationships are not based on people's physical appearance.

Another question to consider is whether the social pathologies in cyberspace are inevitable. What we are seeing could merely be the continuation of a decades-long trend of people spending more and more time with technology rather than with humans.

The shift away from family and peers to mass media technology as primary socialisation agents can be traced to the growing popularity of radio in the 1930s, followed by television in the 1950s, and computer networks today. For many people, going on-line could be a way of dealing with a society where people are becoming ever more isolated from one another.

One of the objectives of any future research should be to determine the object of the 'addiction'. As I mentioned earlier, if some people are addicted to the internet, what are they addicted to? Is it the process of typing? The medium of communication? Aspects of its specific style (e.g. no face-to-face interaction)? The information that can be obtained (e.g. pornography)? Specific types of activity (role-playing games, computer games, gambling)? Talking to others (in chat rooms or on IRC)?

One thing that may intensify this focus on the internet is its vast capacity to feed or fuel other addictions or compulsions. For example, to a sex addict or a gambling addict, the internet could be a very dangerous medium.

There is also the problem that the internet consists of many different types of activity (e.g. e-mailing, information browsing, file transference, socialising, role-playing etc.). It could be the case — and probably is the case — that some of

these activities (such as IRC or role-playing games) are potentially more addictive than some other internet activities.

Future research might try to establish why the internet is highly reinforcing for some people. Hammersley (1995) has suggested a number of reasons which appear to fit in with the case study evidence:

- It allows correspondence with people who share mutual interests.
- It puts people in touch with other people that otherwise they would never meet.
- The costs of communicating are low.
- There is a substantial 'puzzle' element to using the intemet, and many people find puzzling tasks reinforcing in themselves.
- People can download software toys, some of which are reinforcing.
- People can keep in touch with friends with minimal time and financial costs.
- It gives people feelings of status and modernity, which may bolster self-esteem.
- It allows people to be taken seriously and listened to.
- It allows people to present a 'well-managed' persona, which may deviate in significant ways from one's everyday, face-to-face persona.
- It allows people to be boring about their favourite hobby horse.

Areas of concern

Finally, it is perhaps worth noting that the structural characteristics of software might promote addictive tendencies (Griffiths, 1995*a*). Structural characteristics — namely, features that manufacturers design into their products — potentially promote interactivity. To some extent, these may help to define alternative realities for users and allow them feelings of anonymity — features that may be very psychologically rewarding.

Structural characteristics are responsible for reinforcement, may satisfy users' needs and may actually facilitate excessiveness.

By identifying particular structural characteristics, it may be possible for researchers to see how (a) needs are identified; (b) information about the internet is presented (or perhaps misrepresented); and (c) cognitions are influenced and distorted (see Griffiths, 1993, for an overview on structural characteristics).

There is no doubt that internet usage among the general population will start to increase over the next few years. If social pathologies are being expressed in this arena, then this should be of interest and concern not only to psychologists but to all those involved in clinical health issues.

Excessive use of the internet may not be problematic in most cases, but the limited case study evidence does seem to suggest that for some individuals, excessive intemet usage is a real addiction and of genuine concern.

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References

American Psychiatric Association (1994). *Diagnostic and Statistical Manual for Mental Disorders* (4th edn). Washington,DC: American Psychiatric Association.

Brenner, V. (1997).Psychology of computer use XLVII. Parameters of internet use, abuse and addiction :The first 90 days of the internet usage survey. *Psychological Reports*, 80, 879–882.

Carnes, P. (1983). *Out of the Shadows:Understanding Sexual Addiction*. Minneapolis:CompCare.

Glasser, W. (1976). *Positive Addictions*. New York: Harper & Row.

Griffiths,M.D. (1991).Amusement machine playing in childhood and adolescence: A comparative analysis of video games and fruit machines. *Journal of Adolescence*, 14, 53–73.

Griffiths,M.D. (1993). Fruit machine gambling: The importance of structural characteristics. *Journal of Gambling Studies*, 9, 133–152.

Griffiths,M.D. (1995*a*).Technological addictions. *ClinicalPsychology Forum*, 76, 14–19.

Griffiths,M.D. (1995*b*). *Adolescent Gambling*. London: Routledge.

Griffiths,M.D. (1996*a*). Internet 'addiction': An issue for clinical psychology? *Clinical Psychology Forum*, 97, 32–36.

Griffiths,M.D. (1996*b*).Nicotine, tobacco, and addiction. *Nature*, 384, 18.

Griffiths,M.D. (1997*a*).Psychology of computer use XLIII. Some comments on 'Addictive use of the internet' by Young. *Psychological Reports*, 80, 81–82.

Griffiths,M.D. (1997*b*).Technological addictions: Looking to the future. Paper presented at the 105th Annual Convention of the American Psychological Association,Chicago, IL, August.

Hamilton,K. & Kalb, C. (1995).They log on but they can't log off. *Newsweek*, 18 December, 60–61.

Hammersley, R. (1995). Personal communication to ADDICT-L internet discussion group.

McIlwraith,R.,Jacobvitz,R.S., Kubey, R. & Alexander, A. (1991). Television addiction:Theories and data behind the ubiquitous metaphor. *American Behavioral Scientist*, 35, 104–121.

Marks,I. (1990). Non-chemical (behavioural) addictions. *British Journal of Addiction*, 85, 1389–1394.

Moore, D. (1995). *The Emperor's Virtual Clothes: The Naked Truth about the Internet Culture*. Chapel Hill, NC: Algonquin.

Morahan-Martin,J.M. & Schumacher, P. (1997). Incidence and correlates of pathological internet use. Paper presented at the 105th Annual Convention of the American Psychological Association,Chicago, IL,August.

Orford,J. (1985). *Excessive Appetites: A PsychologicalView of the Addictions*. Chichester: Wiley.

Peele, S. & Brodsky, A. (1975). *Love and Addiction*. New York: Taplinger.

Pitkow, J. & Kehoe, C. (1996). Emerging trends in the WorldWide Web user population. *Communications of the ACM*, 39, 106–108.

Rheingold,H. (1993). *The Virtual Community: Homesteading on the Electronic Frontier*. Reading,MA: Addison-Wesley.

Scherer, K. & Bost, J. (1997). Internet use patterns: Is there internet dependency on campus? Paper presented at the 105th Annual Convention of the American Psychological Association,Chicago, IL, August.

Shotton,M. (1991).The costs and benefits of computer addiction. *Behaviour and Information Technology*, 10, 219–230.

Turkle, S. (1995). *Life on the Screen: Identity in the Age of the Internet*. New York: Simon & Schuster.

Walker, M.B. (1989). Some problems with the concept of 'gambling addiction': Should theories of addiction be generalized to include excessive gambling? *Journal of Gambling Behavior*, 5, 179–200.

Weissman,M.M. & Paykel, E.S. (1974). *The Depressed Woman: A Study of Social Relationships*. Evanston,IL: University of Chicago Press.

Wolfson,S. (1995). Star Trek fan behaviour: 'It's addiction Jim, but not as we know it'. Paper presented at The British Psychological Society London Conference, London,December.

Young,K. (1996*a*). Internet addiction: The emergence of a new clinical disorder. Paper presented at the American Psychological Association, Toronto, Canada, August.

Young,K. (1996*b*).Psychology of computer use XL. Addictive use of the internet: A case that breaks the stereotype. *Psychological Reports*, 79, 899–902.

Young,K. (1998). *Caught in the Net*. Chichester: Wiley.