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REVIEW

Online information, extreme communities and internet therapy: Is the internet good for our mental health?

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Abstract
Background: Questions have been raised about the internet's effect on mental health, although no principled review has yet tackled the issue.
Aims: To examine the effect of the internet on mental health.
Method: Literature review.
Results: The internet is typically discussed as if it were a set of activities when it is actually a medium upon which various activities can occur. It is, therefore, neither ''good'' nor ''bad'' for mental health, although specific activities may have an influence. The standard of mental health information on the internet is probably equivalent to the mainstream media, although overall it still remains poor. The concept of ''internet addiction'' looks increasingly invalid, although it is likely that depressed or isolated individuals are more likely to focus on certain activities to excess. A number of ''extreme communities'' have formed online, such as pro-anorexia, pro-suicide, pro-amputation and likely-psychotic groups. These serve to provide support, outside a medical and social mainstream that finds their beliefs and behaviours unacceptable. A review of preliminary randomized controlled trials shows online therapy to be effective for many disorders.
Conclusions: Mental health professionals are advised to lead the creation of online treatments and information. Clinical recommendations for the use of the internet are offered.
Declaration of interest: None.

Keywords: *Internet, online, extreme communities, cybertherapy, mental health, e-therapy*

Introduction

The internet is now ubiquitous. Its popularity stems from the fact that it is, at its core, a medium of communication for electronic devices. This subtlety is often lost in debates about the internet, where it is usually discussed as if it were a specific activity or set of software, when, in fact, these are simply resources that use the internet to communicate. This is also a crucial point when trying to determine the effect of the internet on mental health, as any psychological consequences will depend on the activities that the technology enables, the attributes of the user, and how the two interact (Joinson, 2003). Conceivably, two different computer-enabled activities could both use the internet as a medium of communication, but share no common psychological attributes.

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This implies that there is no general ''psychology of the internet'' (no more than there is a ''psychology of radio waves'' or other medium of communication) to be understood and applied by clinicians wanting to prevent or alleviate mental distress. Therefore, the internet can only be understood in terms of specific applications, pieces of software or activities that take place upon it. Although this means that there can be no general consensus about whether the ''internet'' is inherently good or bad for mental health, this does not deny that there are popular applications and activities on the internet which are likely to have shared features and specific psychological effects. Relatively little research has focused on these, despite the fact that they are the subject of common concern and will undoubtedly play an increasingly important role in the lives of people across the world.

Method

This review focuses on recent research on both the interaction between common internet activities and mental health, and on the current state of online interventions. Notably, the review is selective, in that it focuses on studies which are likely to be of most interest to clinicians. It preferentially covers studies that have examined traditional mental health concerns and tends not to include studies of wider issues for which mental health professionals may nonetheless have an interest (for example, the understanding of general health information online, or the impact and management of chronic physical conditions, to name but two) unless they provide useful context for the discussion.

Furthermore, the review aims both to highlight concerns not previous considered, and to ''plug gaps'' in the existing literature and, hence, is not intended as a systematic review of all individual studies on the internet and mental health. Where current and comprehensive review papers of a relevant area already exist, these are discussed in preference to a review of individual papers. Most notably, the research into online therapy for anxiety disorders is covered only very briefly, as an excellent review of this area has recently been provided by Andersson et al. (2005a). However, where no such current reviews exist for a particular area, individual studies are reviewed to provide an overview of the current state of research.

Within this remit, however, this review provides specific evidence-based recommendations and advice for clinicians wanting to understand the internet to improve mental health care for clients, to design effective internet-based information resources and interventions, and to enhance their own use of internet technology.

Mental health information on the internet

It is estimated that about 5% of web searches are health-related (Eysenbach & Kohler, 2004) despite the fact that the quality of information is mixed and users have limited competency in finding and accessing information when online (Morahan-Martin, 2004). One concern commonly raised by professionals is that anyone can create internet content, and so there is little quality control. This is perhaps less of a concern than it first seems, however, owing to the fact that search engines often use a measure of how many other web pages link to a specific page (a measure of popularity) as a significant factor when ranking pages, so obviously false or eccentric information is unlikely to be immediately encountered when looking for general health information. Indeed, the rankings given to depression information websites by the popular search engine *Google* have been reported to largely correlate with ratings from a standardized tool for assessing quality of information (Griffiths & Christensen, 2005), suggesting that this process of online ''natural selection'' is quite effective in filtering out the most flawed information from general view.

A further concern is that mental health information on the internet is generally considered to be of a low standard. Studies have reported varying, but an overall level of poor quality information for disorders such as depression (Berland et al., 2001; Griffiths & Christensen, 2000, 2002; Lissman & Boehnlein, 2001), schizophrenia (Kisely et al., 2003), attention deficit hyperactivity disorder (Kisely et al., 2003) and eating disorders (Murphy et al., 2004). Nevertheless, this is not necessarily a feature of the internet, as mental health information in the mainstream media has found to be similarly lacking (Christensen & Griffiths, 2000; Inch & Merali, 2006).

Studies which have examined how people evaluate health information online have typically reported that users will judge quality by the endorsement by a government or professional body, ease of understanding, and perceived quality of presentation (Eysenbach & Kohler, 2002; Schwartz et al., 2006), suggesting that users deploy some critical evaluation when accessing information. It is perhaps worth noting that many of the high-ranking mental health information websites are sponsored either directly or indirectly by pharmaceutical companies and so will undoubtedly be rated as reliable sources by users (trust in drug information from traditional media such as television or print media is know to transfer to internet presented material; Menon et al., 2002) but are also unlikely to be free from bias. The few studies that have directly addressed this issue have found that pharmaceutical company websites have significant bias in presenting information about antidepressant medication (Graber & Weckmann, 2002), and in a recent study by Lissman and Boehnlein (2001), the lowest quality information on internet depression sites was found on sites from profit-making companies of various types, rather than from not-for-profit organizations.

Ybarra and Eaton (2005) have recently reviewed the literature on online support groups and note that they are both popular sources of information and support for many internet users. These are typically user-led and tend to be based around bulletin boards, email distribution lists or other types of discussion system. Online mental health support groups may have a number of advantages when compared with similar offline groups. They are known to have a high level of information exchange (with the benefit of being hosted on the same medium upon which a large amount of information is easily referenced) and participants report they are more likely to discuss problems they do not discuss face-to-face (Kummervold et al., 2002), probably owing to the high level of self disclosure found in such groups (Finfgeld, 2000; Haker et al., 2005). Research has also found similar effects for groups that involve or are designed for carers of people with mental health issues (Perron, 2002; Scharer, 2005). In a prospective study, Houston et al. (2002) found that users of an online depression support group had lower social support than comparable samples of patients from primary care, but that heavy users of the group were more likely to show a resolution of their depression over time. The wider effect of such groups has been difficult to judge, however, largely owing to a lack of principled research into the area. One recent review found little evidence for a consistent positive effect of such groups on depression or social support (Eysenbach et al., 2004), although found little evidence that any groups were harmful.

An important implication of these findings is that clinicians should be aware of the major types and sources of information online, and be ready to recommend accessible and high-quality online resources. Clinicians are increasingly being presented with information gleaned from the internet by their clients, and being able to direct a client to more accurate information, rather than discouraging use of a potentially useful resource, is likely to be a fruitful strategy.

Pathological internet use

Two main strands have permeated the literature on pathological internet use. One is on compulsive internet use or ''internet addiction'', the other is on psychopathological effects (typically depression or isolation) related to time spent online.

One of the difficulties with the concept of ''internet addiction'' is that it is rarely made clear exactly what an individual is supposed to be addicted to, in light of the fact that the internet is a medium that can support a number of diverse activities, implemented in a variety of ways, across a range of devices. The proposed criteria for internet addiction (e.g., Beard & Wolf, 2001; Ko et al., 2005; Young, 1998) or pathological internet use (Morahan-Martin & Schumacher, 2000) typically make reference to ''using the internet'' or ''spending time online'' without reference to any specific activity. These criteria suggest the bizarre possibility that one can be addicted to a medium of communication rather than an activity, whereas the accepted criteria for other behavioural addictions (such as DSM-IV pathological gambling) do exactly the reverse, specifying the activity but not the medium. Griffiths (1998; 1999) has also noted that current criteria do not represent the core psychological elements of addiction, namely salience, mood modification, tolerance, withdrawal, conflict and relapse (Griffiths, 1996). This suggests that the validity of a general 'internet addiction' is increasingly doubtful, although it is still feasible that individuals might perform specific internet activities to excessive levels.

Studies which have specifically reported the online activities of users who are deemed to have some form of pathological internet use typically suggest that gaming, chat and erotica are the most significant (Chak & Leung, 2004; Chou & Hsiao, 2000; Leung, 2004; Meerkerk et al., 2006; Morahan-Martin & Schumacher, 2000; Simkova & Cincera, 2004). It is also notable that those classified as ''pathological internet users'' report lower self-esteem (Niemz et al., 2005), increased loneliness (Nalwa & Anand, 2003; Nichols & Nicki, 2004), increased depressive and suicidal ideation (Kim et al., 2006), increased shyness and external locus of control (Chak & Leung, 2004). As these studies are largely cross-sectional, however, it is difficult to infer a direction of causality, and it is just as likely that anxious, lonely or depressed people might attempt to alleviate their distress by seeking online resources for entertainment, social interaction and sexual gratification.

Studies on general internet users seem to support this position. Although initial work suggested that time spent online was correlated with a small but significant increase in loneliness and depression (Kraut et al., 1998), subsequent replications and extensions found the reverse (Howard et al., 2001; Moody, 2001; Wastlund et al., 2001) and a follow-up to the original Kraut et al. study found the negative effects were no longer present and that, in contrast, internet use was generally associated with positive effects on communication, social involvement, and well-being (Kraut et al., 2002). A key finding from this latter study was that extroverts generally showed a positive relationship between internet use and social well-being measures, whereas introverts showed the reverse – reporting an increase in isolation and loneliness. It is still not clear why this might be the case, although it has been suggested that the internet might provide tools to ''amplify'' predispositions (Joinson, 2003), so that extraverts can meet more people and socialize, while introverts can keep them at a distance.

These findings come with some important caveats, however. One of the constant features of the internet is change and one of the most significant developments that has occurred since these studies were published is the massive popularity of websites and software which integrate social cooperation into knowledge-based tasks which were previously individualistic and didactic (such as distributing images, listing favourite links, and creating web-based information). This new approach to online activities has been christened ''Web 2.0''

(O'Reilly, 2005) to denote its fundamentally different approach, and it is not clear how such activities might differentially influence users' well-being, owing to the fact that social interaction is becoming an increasing part of everyday internet activity.

Extreme communities

One feature that has garnered relatively little attention in the clinical research literature is the existence of what might be termed ''extreme communities''. Owing to the difficulty with which material can be effectively censored or suppressed online, views considered extreme or unacceptable to the mainstream can be expressed relatively freely, with online communities often formed by those who share similar opinions. Some of these are of particular interest to mental health professionals, as they attempt to reframe what would otherwise be classified as ''mental disorder'' in an entirely different light.

The ''pro-anorexia'' or ''pro-ana'' movement (also ''pro-bulimia'' or ''pro-mia'') has been one of the most publicized examples where websites and online communities promote anorexia and related eating disorders as a ''lifestyle choice'' rather than a medical disorder (Davies & Lipsey, 2003). On some websites, participants upload pictures of particularly thin celebrities or particularly obese people as ''thinspiration'', or even pictures of themselves for others to comment on and encourage. Tips on effective dieting, including the use of weight-loss drugs and advice on how to avoid detection by professionals and family members when skipping meals, are swapped between participants. The existence of ''pro-ana'' websites was the subject of intense press attention during 2000–2001 (even meriting a feature article in *Time*; Reaves, 2001) that suggested that these sites might be promote or maintain eating disorders in vulnerable adolescents. As anorexia has one of the highest mortality rates of any psychiatric disorder (Birmingham et al., 2005) an obvious concern might be that such communities would provide high-levels of social support for an anti-medical explanatory model that would decrease recovery rates and potentially lead to the death or injury of its participants.

Recent research on ''pro-ana'' websites, however, has uncovered a more complex and nuanced account of such communities that suggests that they exist for more than the reinforcement of restricted eating behaviour. A recent linguistic study on the self-presentation of pro-anorexics by Lyons et al. (2006) reported that ''compared with recovering anorexics, the word use of pro-anorexics indicated a more pronounced hedonic focus on positive emotions and the here and now, reduced level of cognitive processing, and a lower degree of self-preoccupation'' suggesting that participation may have significant anxiety managing effects for the individuals concerned. An online ethnographic study by Fox et al. (2005) came to similar conclusions and suggested that the community offered its participants a safe and positive place to gain further insight into their condition, away from the judgement, gaze and scrutiny of parents, boyfriends, husbands and the medical profession, findings similarly echoed by Mulveen and Hepworth (2006).

Of particular interest to those familiar with cognitive behavioural approaches to treating compulsive behaviour might be the personification of anorexia or bulimia as ''Ana'' or ''Mia'', with some pro-anorexics even going as far as referring to Ana as a ''Goddess'' or ''Friend'' (Dias, 2003). Personifying obsessions and compulsions as (for example) a ''bully'' has proved a successful technique for empowering clients to resist intrusive thoughts (Clark, 2003) and it is interesting that this community has used an almost identical technique to personify such behaviour as a companion or ideal. Therapists may need to be aware that such constructs may provide strong psychological motivation to maintain pathological behaviour and be ready to detect and counter them.

This process of building and reinforcing an alternative framework for behaviour pathologized by mainstream medicine and society is not solely restricted to those who might otherwise be considered to have an eating disorder. Bell et al. (2006) used hyperlink network analysis to examine the social network of a likely-psychotic group of individuals who form a cohesive and dynamic online community. The participants reject any medical explanation of their experiences and instead argue that they are the subject to ''mind control'' technology (such as top secret ''thought control'' weapons), collectively gathering and referencing a significant amount of online material in support of their assertions. Again, therapists should be aware of the amount of information available on the internet that aims to justify almost any sort of conspiracy theory, fringe belief or anomalous experience. The definition of a delusion as a belief not adequately justified by supporting evidence may have to take into account that anyone who spends 30 minutes online can find plenty of ''justifying evidence'', regardless of its validity or source. It is notable, however, that the internet can also be used as a data-gathering tool for use in ''reality testing experiments''. Both Bell et al. (2005) and Duggal et al. (2002) reported the use of web searches for testing predictions, as part of a successful cognitive behaviour therapy (CBT) programme for two individuals who had delusions about the internet.

Nevertheless, extreme communities may also focus on more ''practical'' issues, rather than simply attempting to provide alternative frameworks for explaining mental distress. The phenomenon of internet suicide pacts, where individuals who do not wish to die alone organize a group suicide, has raised concerns that passive individuals may be more likely to take their own lives owing to group conformity effects (Lee et al., 2005; Rajagopal, 2004) and that the availability of information on effective methods might lead to an increase in completed suicides (Alao et al., 1999; Becker et al., 2004; Prior, 2004; Thompson, 1999; 2001).

While these concerns largely centre on people who might already be suicidal, Becker and Schmidt (2004) have highlighted research indicating that media reporting of suicide has been found to have a significant effect on adolescent suicide rate (Schmidtke & Schaller, 2000), something which has been tackled by the implementation of reporting guidelines for professional media outlets. As the internet is not necessarily subject to such regulation, however, Becker and Schmidt voice concerns that suicide or parasuicide could be increased by ''grassroots'' internet publicity of particular suicide cases.

Unfortunately, the majority of research on suicide and the internet is in the form of anecdotal case reports with little in the way of controlled or principled studies. It is difficult, therefore, to determine whether the use of the internet by potentially suicidal people should be considered entirely problematic. Indeed, a report by Barak (in press) on an Israeli web-based suicide prevention initiative (called SAHAR) has noted that a number of suicidal individuals have been attracted to the website and helped, either when intending to commit suicide or actually in the process of trying.

As suicide and parasuicide are tragically common, it is, perhaps, more likely that online interventions will reach potentially suicidal individuals, than in cases of less common but no less destructive behaviours. One curious example in this regard is a case report of a middle-aged male who self-amputated both legs after expressing a life-long desire to be an amputee (a condition named apotemnophilia). The man in question reported that his participation with other members of an online discussion group (for those wanting to be amputees) ''deepened his motivation, developed the means, and finalized his determination to act on his desire'' (Berger et al., 2005). Although the role of the internet in enabling such behaviour remains unclear from a single case study, the fact that such an

eccentric and potentially self-injurious desire has a supportive online community suggests that an individual interested in almost any behaviour, no matter how unconventional, is likely to be able to find like-minded others. Indeed, Wallace (1999, p. 79) has noted that ''on the internet, people who share your interest and lean in the same direction as you are just a few keystrokes away, regardless of the issue's obscurity, social desirability, or bizarreness''.

There are a number of factors that might explain why ''extreme communities'' form on the internet. The majority communicate through text-based mediums, such as email lists, newsgroups or web-based bulletin boards that provide users with visual anonymity. A study by Walther (1995) found that exchanges between participants were rated as more affectionate, more socially oriented (as opposed to task oriented) and more relaxed during text-based than face-to-face communication. Examining similar online exchanges, Spears et al. (1990) found that visual anonymity caused polarisation of attitudes in participants, and a strengthening of group norms when group identity was salient. It is likely, therefore, that participation in such communities in strongly reinforced by both the overt social support for otherwise socially unacceptable beliefs and behaviours, and covertly reinforced by the way in which the medium facilitates the strengthening of group norms and mediation of affect. Joinson (2003) has argued that there is a cyclic process at work, in that users select media based on preferences and communicative agendas (e.g., need for visual anonymity, ease of use) and then experience secondary psychological influences on their behaviour because of the (perhaps unexpected or unnoticed) effect of the media on their interaction with others.

What this does not explain, however, is how individuals come to create or find niche communities centred on potentially pathological desires. One clue is from a seminal article by Anderson (2004; see also Anderson, 2006) who described the ''long tail'' business model (referring to the tail of a power-law distribution) adopted by popular online retailers. It is based on the premise that total demand for non-mainstream products outstrips demand for mainstream products, and that the internet reduces both the costs of distribution for the retailer, and the costs of finding a particular product for the consumer, to the point where a market for even wildly non-mainstream products becomes viable. Applied to people with unpopular, marginalized or pathological desires, the costs of expressing such desires and finding like-minded others in the offline world are very high, as social disapproval, discrimination or even the applications of sanctions are common. On the internet, however, the costs are vastly reduced both in terms of advertising one's preference, and for seeking others with similar preferences. Hence, a ''long tail'' of communities catering for those with anomalous desires and behaviours has emerged (although most are not as extreme as the ones mentioned here).

A typical reaction to the existence of such extreme communities is censorship, as occurred when ''pro-ana'' websites were widely publicized (Reaves, 2001). It is perhaps worth noting that effective censorship on the internet is near impossible, and that such attempts will prevent only technically naïve users from accessing such content and communicating with others. A more viable option is to provide alternative high-quality mental health information that is easily accessible (i.e., ranks highly in internet search engines and is well-presented) so those looking for information about their source of mental distress will encounter this information before sites on the ''long tail''. In light of Joinson's (2003) model that suggests that users with mental health issues may select the internet as a medium that fulfils certain needs, online information and support must be designed specifically to fulfil these needs, and fringe communities need to be understood, as they represented needs that are not currently fulfilled by mainstream sources.

Online therapy

Various therapeutic approaches, largely based on self-help CBT models (Pull, 2006; Ybarra & Eaton, 2005), have been tried online, including human therapists communicating via the internet, computerized therapies with minimal therapist involvement and non-therapist packages that are entirely computerized (although the contact details of administrators are typically made available).

One of the most extensively researched online therapeutic applications is MoodGYM (http://moodgym.anu.edu.au/), a non-therapist web-based CBT package for depression that has generated a large volume of careful research and is open to anyone who wishes to sign up without levying a charge. It has been shown that spontaneous users of the site are typically more depressed than the general population and that depression and anxiety reduces as a result of using the site (Christensen et al., 2002; 2004b). Further controlled trials have also shown MoodGYM to be effective when compared to a suitable comparison treatment (Christensen et al., 2004a; O'Kearney et al., 2006), although in one study, an online non-treatment depression education package had a similar (albeit marginally smaller) effect (Christensen et al., 2004a). It is also clear that outcome is improved as users complete more of the site material (Christensen et al., 2002; 2006; O'Kearney et al., 2006) although dropout rate is high, with one study reporting that only 7% of users progressed past the second "module" (Christensen et al., 2006). As a result, Christensen and colleagues have repeatedly stressed the need to address such high dropout rates in online therapy.

Considering the effects of visual anonymity and text-based communication on group cohesion discussed earlier, the addition of a "community" aspect and perhaps minimal prompts from a therapist might encourage ongoing participation. In fact, minimal prompts have been found to reduce dropout rates, and consequently improve treatment effects, in online therapy for depression (Clarke et al., 2005). A more comprehensive arrangement was used by Andersson et al. (2005b) to augment an online CBT package for depression. Their study compared a combination of online CBT, minimal therapist contact and web-based discussion group participation, with participation in a discussion group only, and reported both a significant positive effect for the treatment group and a completion rate of 84%. Although the numbers in the Andersson study were relatively small, it seems adding some form of "social motivation" might significantly reduce dropout rates. Indeed, participation in a depression support group alone was related to a reduction in depressive symptoms in a recent study by Houston et al. (2002), suggesting that both CBT and social support may be important factors in online treatment.

Online therapy for anxiety has also been extensively researched. This has been recently and comprehensively reviewed by Andersson et al. (2005a) and the reader is directed to their paper for a more detailed coverage of this area. In their review, Andersson et al. note that evidence for online treatments of panic, phobia, social anxiety and post-traumatic symptoms is promising, although evidence is of a relatively low quality as few large-scale randomized controlled trials have been conducted to test efficacy to gold-standard level. Evidence for online treatment of other complaints is similar, with initially promising results from (generally small) randomized controlled trials for stress-management (Zetterqvist et al., 2003), tinnitus (Andersson et al., 2002; Kaldo-Sandstrom et al., 2004), headache (Andersson et al., 2003; Devineni & Blanchard, 2005) chronic back pain (Buhrman et al., 2004) and complicated grief (Wagner et al., 2006).

Several studies have failed to find an effect of internet based therapy when compared to control treatments, however. Cunningham et al. (2005) found no effect of internet intervention alone on problem drinking, and Moore et al. (2005) found no significant difference

in outcome from self-help delivered by the internet or postal mail. Similarly, Strom et al. (2004) found equal improvement for the online therapy condition compared to waiting list controls and Griffiths et al. (2004) actually found a slight increase in perceived personal stigma for depression in the treatment group. In this latter study, there was no associated discussion group for the site, and it is possible that group effects mentioned earlier might be useful in positively influencing some of these self-stigmatizing beliefs.

The evidence presented above suggests that online therapy is a viable option that has the potential to treat large numbers of individuals in a cost-effective manner. Considering the current shortfall in qualified therapists for psychological treatments, this is an area that looks clinically promising. However, there is still a lack of large-scale randomized controlled trials on which to estimate confidently treatment efficacy and effective retention strategies might need to be implemented. Despite some proposed guidelines for online therapy (Childress & Asamen, 1998), the ethical implications of conducting treatment online have not been fully explored. Despite appearances, the internet rarely affords privacy or adequate anonymity (Bell, 2003), and it is unlikely that the majority of clinicians are either aware or technically able enough to judge and ameliorate the risks and should, therefore, seek advice from suitably qualified computer professionals when designing online clinical interventions. Patient privacy and confidentiality are important values in the health care system and online interaction needs to be carefully thought out if these values are to be maintained.

Conclusions

One of the difficulties with writing about the internet is that it moves so quickly. New applications can become popular and adopted by millions in a matter of months, each of which may enable new (and, perhaps, unpredicted) activities. With each new activity, comes a potentially unique psychological effect (Joinson, 2003; Wallace, 1999), making potential influences on mental health equally difficult to predict.

The majority of psychological studies are on text-mediated communication that provides visual anonymity to users. In recent years, graphically rich massively multi-player online role-playing games (MMORGs) have become popular, with millions of subscribers now playing regularly. These games allow players to chose and visually design their own characters in immersive virtual-reality-like environments, and so provide a vastly different experience to the previously studied methods of communication, and early research is suggesting that they may have unique psychological features (e.g., Bailenson & Yee, 2005). Similarly, the increase in affordable high-speed internet connections and video sharing sites (e.g., *YouTube*, *Google Video*) has led to online communities being mediated by recorded video messages. The interaction between such new developments and existing or latent psychopathology is unknown, and it is likely that novel and previously unknown phenomena will emerge.

If current trends continue, the majority of clinicians are likely to remain ignorant of such phenomena until they present problems in the consulting room. It can only be recommended that clinicians become familiar with the *technology, culture and content of the internet*, as patients are increasingly using online resources as part of their own self-directed distress management. Professionals who are unable to evaluate internet resources or advise in this process might find much of their good work undone.

It is also worth noting that clinicians should be competent with internet technology for the management of their own practice. Stalking of mental health professional has been cited as an under-recognized problem (McIvor & Petch, 2006) and most clinicians are unaware of either how much personal information is available online, or how to check the internet for

personal information about themselves. Similarly, a recent study by Bauer and McCaffrey (2006) reported that information related to tests of malingering was available online, potentially threatening test validity. Therefore, clinicians should take steps to reduce the chances of restricted test material being disseminated, and attempt to design tests that are less likely to be comprised if they are distributed. Attempting to remove information from the internet once it has appeared online is likely to be futile.

Nevertheless, the internet has the potential to revolutionize mental health care, both in terms of service delivery, and in terms of affecting the presentation of psychopathology in novel ways. Both of these will undoubtedly present new challenges. Clinicians should be prepared to be leaders in online mental health care and information provision, as they will undoubtedly be looked to for leadership by their clients, whether they volunteer for such duties or not.

References

Alao, A. O., Yolles, J. C., & Armenta, W. (1999). Cybersuicide: The Internet and suicide (letter). *American Journal of Psychiatry*, *156*, 1836–1837.

Anderson, C. (2004). The long tail. *Wired*, *12* (1). Retrieved 7 May 2006 from: http://www.wired.com/wired/archive/12.10/tail.html

Anderson, C. (2006). *The long tail: How endless choice is creating unlimited demand.* London: Random House.

Andersson, G., Bergstrom, J., Carlbring, P., & Lindefors, N. (2005a). The use of the Internet in the treatment of anxiety disorders. *Current Opinion in Psychiatry*, *18*, 73–77.

Andersson, G., Bergstrom, J., Hollandare, F., Carlbring, P., Kaldo, V., & Ekselius, L. (2005b). Internet-based self-help for depression: randomised controlled trial. *British Journal of Psychiatry*, *187*, 456–461.

Andersson, G., Lundstrom, P., & Strom, L. (2003). Internet-based treatment of headache: Does telephone contact add anything? *Headache*, *43*, 353–361.

Andersson, G., Stromgren, T., Strom, L., & Lyttkens, L. (2002). Randomized controlled trial of internet-based cognitive behavior therapy for distress associated with tinnitus. *Psychosomatic Medicine*, *64*, 810–816.

Bailenson, J. N., & Yee, N. (2005). Digital chameleons: Automatic assimilation of nonverbal gestures in immersive virtual environments. *Psychological Science*, *16*, 814–819.

Barak, A. (2007). Emotional support and suicide prevention through the Internet: A field project report. *Computers in Human Behavior*, *23*, 971–984.

Bauer, L., & McCaffrey, R. J. (2006). Coverage of the Test of Memory Malingering, Victoria Symptom Validity Test, and Word Memory Test on the Internet: Is test security threatened? *Archives of Clinical Neuropsychology*, *21*, 121–126.

Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology and Behavior*, *4*, 377–383.

Becker, K., Mayer, M., Nagenborg, M., El-Faddagh, M., & Schmidt, M. H. (2004). Parasuicide online: Can suicide websites trigger suicidal behaviour in predisposed adolescents? *Nordic Journal of Psychiatry*, *58*, 111–114.

Becker, K., & Schmidt, M. (2004). Internet chat rooms and suicide. *Journal of the American Academy of Child and Adolescent Psychiatry*, *43*(3), 246–247.

Bell, V. (2003). The internet and clinical neuropsychology. In P. Halligan, U. Kischka & J. C. Marshall (Eds.), *Handbook of clinical neuropsychology.* Oxford: Oxford University Press.

Bell, V., Grech, E., Maiden, C., Halligan, P. W., & Ellis, H. D. (2005). ''Internet delusions'': A case series and theoretical integration. *Psychopathology*, *38*, 144–150.

Bell, V., Maiden, C., Muñoz-Solomando, A., & Reddy, V. (2006). ''Mind control experiences'' on the internet: Implications for the psychiatric diagnosis of delusions. *Psychopathology*, *39*, 87–91.

Berger, B. D., Lehrmann, J. A., Larson, G., Alverno, L., & Tsao, C. I. (2005). Nonpsychotic, nonparaphilic self-amputation and the internet. *Comprehensive Psychiatry*, *46*, 380–383.

Berland, G. K., Elliott, M. N., Morales, L. S., Algazy, J. I., Kravitz, R. L., Broder, M. S., Kanouse, D. E., Munoz, J. A., Puyol, J. A., Lara, M., Watkins, K. E., Yang, H., & McGlynn, E. A. (2001). Health information on the Internet: Accessibility, quality, and readability in English and Spanish. *Journal of the American Medical Association*, *285*(20), 2612–2621.

Birmingham, C. L., Su, J., Hlynsky, J. A., Goldner, E. M., & Gao, M. (2005). The mortality rate from anorexia nervosa. *International Journal of Eating Disorders*, *38*, 143–146.

Buhrman, M., Faltenhag, S., Strom, L., & Andersson, G. (2004). Controlled trial of Internet-based treatment with telephone support for chronic back pain. *Pain*, *111*, 368–377.

Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of internet addiction and internet use. *Cyberpsychology and Behavior*, *7*, 559–570.

Childress, C. A., & Asamen, J. K. (1998). The emerging relationship of psychology and the internet: Proposed guidelines for conducting internet intervention research. *Ethics and Behavior*, *8*, 19–35.

Chou, C., & Hsiao, M. C. (2000). Internet addiction, usage, gratification, and pleasure experience: The Taiwan college students' case. *Computers and Education*, *35*, 65–80.

Christensen, H., & Griffiths, K. (2000). The Internet and mental health literacy. *Australian and New Zealand Journal of Psychiatry*, *34*, 975–979.

Christensen, H., Griffiths, K., Groves, C., & Korten, A. (2006). Free range users and one hit wonders: Community users of an internet-based cognitive behaviour therapy program. *Australian and New Zealand Journal of Psychiatry*, *40*, 59–62.

Christensen, H., Griffiths, K. M., & Jorm, A. F. (2004a). Delivering interventions for depression by using the internet: randomised controlled trial. *British Medical Journal*, *328*(7434), 265–268.

Christensen, H., Griffiths, K. M., & Korten, A. (2002). Web-based cognitive behavior therapy: Analysis of site usage and changes in depression and anxiety scores. *Journal of Medical Internet Research*, *4*(1), e3.

Christensen, H., Griffiths, K. M., Korten, A. E., Brittliffe, K., & Groves, C. (2004b). A comparison of changes in anxiety and depression symptoms of spontaneous users and trial participants of a cognitive behavior therapy website. *Journal of Medical Internet Research*, *6*(4), e46.

Clark, D. (2003). *Cognitive-behavioral therapy for OCD.* London: Guildford Press.

Clarke, G., Eubanks, D., Reid, E., Kelleher, C., O'Connor, E., DeBar, L. L., Lynch, F., Nunley, S., & Gullion, C. (2005). Overcoming depression on the internet (ODIN) (2): A randomized trial of a self-help depression skills program with reminders. *Journal of Medical Internet Research*, *7*(2), e16.

Cunningham, J. A., Humphreys, K., Koski-Jannes, A., & Cordingley, J. (2005). Internet and paper self-help materials for problem drinking: Is there an additive effect? *Addictive Behaviors*, *30*, 1517–1523.

Davies, P., & Lipsey, Z. (2003). Ana's gone surfing. *The Psychologist*, *16*, 424–425.

Devineni, T., & Blanchard, E. B. (2005). A randomized controlled trial of an internet-based treatment for chronic headache. *Behaviour Research and Therapy*, *43*, 277–292.

Dias, K. (2003). The Ana Sanctuary: Women's pro-anorexia narratives in cyberspace. *Journal of International Women's Studies*, *4*, 31–45.

Duggal, H. S., Jagadheedshan, K., & Nizamie, H. (2002). 'Internet Delusion' responsive to cognitive therapy. *Indian Journal of Psychiatry*, *44*, 293–296.

Eysenbach, G., Powell, J., Englesakis, M., Rizo, C., & Stern, A. (2004). Health related virtual communities and electronic support groups: Systematic review of the effects of online peer to peer interactions. *British Medical Journal*, *328*(7449), 1166.

Eysenbach, G., & Kohler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *British Medical Journal*, *324*(7337), 573–577.

Eysenbach, G., & Kohler, C. (2004). Health-related searches on the Internet. *Journal of the American Medical Association*, *291*(24), 2946.

Finfgeld, D. L. (2000). Therapeutic groups online: The good, the bad, and the unknown. *Issues Ment Health Nursing*, *21*, 241–255.

Fox, N., Ward, K., & O'Rourke, A. (2005). Pro-anorexia, weight-loss drugs and the internet: An ''anti-recovery'' explanatory model of anorexia. *Sociology of Health and Illness*, *27*, 944–971.

Graber, M. A., & Weckmann, M. (2002). Pharmaceutical company internet sites as sources of information about antidepressant medications. *CNS Drugs*, *16*, 419–423.

Griffiths, K. M., & Christensen, H. (2000). Quality of web based information on treatment of depression: Cross sectional survey. *British Medical Journal*, *321*(7275), 1511–1515.

Griffiths, K. M., & Christensen, H. (2002). The quality and accessibility of Australian depression sites on the World Wide Web. *Medical Journal of Australia*, *176*(Suppl.), S97–S104.

Griffiths, K. M., & Christensen, H. (2005). Website quality indicators for consumers. *Journal of Medical Internet Research*, *7*, e55.

Griffiths, K. M., Christensen, H., Jorm, A. F., Evans, K., & Groves, C. (2004). Effect of web-based depression literacy and cognitive-behavioural therapy interventions on stigmatising attitudes to depression: Randomised controlled trial. *British Journal of Psychiatry*, *185*, 342–349.

Griffiths, M. (1996). Nicotine, tobacco and addiction. *Nature*, *384*(6604), 18.

Griffiths, M. (1998). Internet addiction: Does it really exist? In J. Gackenbach (Ed.), *Psychology and the Internet.* New York: Academic Press.

Griffiths, M. (1999). Internet addiction: Fact or fiction? *The Psychologist*, *12*, 246–251.

Haker, H., Lauber, C., & Rossler, W. (2005). Internet forums: A self-help approach for individuals with schizophrenia? *Acta Psychiatrica Scandinavica*, *112*, 474–477.

Houston, T. K., Cooper, L. A., & Ford, D. E. (2002). Internet support groups for depression: A 1-year prospective cohort study. *American Journal of Psychiatry*, *159*, 2062–2068.

Howard, P., Rainie, L., & Jones, S. (2001). Days and nights on the Internet: The impact of a diffusing technology. *American Behavioral Scientist*, *45*, 383–404.

Inch, R., & Merali, N. (2006). A content analysis of popular magazine articles on eating disorders. *Eating Disorders*, *14*, 109–120.

Joinson, A. N. (2003). *Understanding the psychology of internet behaviour: Virtual worlds, real lives.* Basingstoke: Palgrave Macmillan.

Kaldo-Sandstrom, V., Larsen, H. C., & Andersson, G. (2004). Internet-based cognitive-behavioral self-help treatment of tinnitus: Clinical effectiveness and predictors of outcome. *American Journal of Audiology*, *13*, 185–192.

Kim, K., Ryu, E., Chon, M. Y., Yeun, E. J., Choi, S. Y., Seo, J. S., & Nam, B. W. (2006). Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: A questionnaire survey. *International Journal of Nursing Studies*, *43*, 185–192.

Kisely, S., Ong, G., & Takyar, A. (2003). A survey of the quality of web based information on the treatment of schizophrenia and Attention Deficit Hyperactivity Disorder. *Australian and New Zealand Journal of Psychiatry*, *37*, 85–91.

Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., & Yen, C. F. (2005). Proposed diagnostic criteria of Internet addiction for adolescents. *Journal of Nervous and Mental Disease*, *193*, 728–733.

Kraut, R., Kiesler, S., Boneva, B., Cummings, J. N., Helgeson, V., & Crawford, A. M. (2002). Internet paradox revisited. *Journal of Social Issues*, *58*, 49–74.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox. A social technology that reduces social involvement and psychological well-being? *American Psychologist*, *53*, 1017–1031.

Kummervold, P. E., Gammon, D., Bergvik, S., Johnsen, J. K., Hasvold, T., & Rosenvinge, J. H. (2002). Social support in a wired world. Use of online mental health forums in Norway. *Nordic Journal of Psychiatry*, *65*, 56–59.

Lee, D. T., Chan, K. P., & Yip, P. S. (2005). Charcoal burning is also popular for suicide pacts made on the internet. *British Medical Journal*, *330* (7491), 602.

Leung, L. (2004). Net-generation attributes and seductive properties of the internet as predictors of online activities and internet addiction. *Cyberpsychology and Behavior*, *7*, 333–348.

Lissman, T. L., & Boehnlein, J. K. (2001). A critical review of internet information about depression. *Psychiatric Services*, *52*, 1046–1050.

Lyons, E. J., Mehl, M. R., & Pennebaker, J. W. (2006). Pro-anorexics and recovering anorexics differ in their linguistic Internet self-presentation. *Journal of Psychosomatic Research*, *60*, 253–256.

McIvor, R. J., & Petch, E. (2006). Stalking of mental health professionals: An underrecognised problem. *British Journal of Psychiatry*, *188*, 403–404.

Meerkerk, G. J., Van Den Eijnden, R. J., & Garretsen, H. F. (2006). Predicting compulsive Internet use: it's all about sex! *Cyberpsychology and Behavior*, *9*, 95–103.

Menon, A. M., Deshpande, A. D., Perri, M., & Zinkhan, G. M. (2002). Trust in online prescription drug information among internet users: The impact on information search behavior after exposure to direct-to-consumer advertising. *Health Mark Quarterly*, *20*, 17–35.

Moody, E. (2001). Internet use and its relationship to loneliness. *Cyberpsychology and Behavior*, *4*, 393–401.

Moore, M. J., Soderquist, J., & Werch, C. (2005). Feasibility and efficacy of a binge drinking prevention intervention for college students delivered via the Internet versus postal mail. *Journal of American College Health*, *54*, 38–44.

Morahan-Martin, J. M. (2004). How internet users find, evaluate, and use online health information: A cross-cultural review. *Cyberpsychology and Behavior*, *7*, 497–510.

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior*, *16*, 13–29.

Mulveen, R., & Hepworth, J. (2006). An interpretative phenomenological analysis of participation in a pro-anorexia internet site and its relationship with disordered eating. *Journal of Health Psychology*, *11*, 283–296.

Murphy, R., Frost, S., Webster, P., & Schmidt, U. (2004). An evaluation of web-based information. *International Journal of Eating Disorders*, *35*, 145–154.

Nalwa, K., & Anand, A. P. (2003). Internet addiction in students: A cause of concern. *Cyberpsychology and Behavior*, *6*, 653–656.

Nichols, L. A., & Nicki, R. (2004). Development of a psychometrically sound internet addiction scale: A preliminary step. *Psychology of Addictive Behaviors*, *18*, 381–384.

Niemz, K., Griffiths, M., & Banyard, P. (2005). Prevalence of pathological Internet use among university students and correlations with self-esteem, the General Health Questionnaire (GHQ), and disinhibition. *Cyberpsychology and Behavior*, *8*, 562–570.

O'Kearney, R., Gibson, M., Christensen, H., & Griffiths, K. M. (2006). Effects of a cognitive-behavioural internet program on depression, vulnerability to depression and stigma in adolescent males: a school-based controlled trial. *Cognitive Behaviour Therapy*, *35*, 43–54.

O'Reilly, T. (2005). What is Web 2.0? Design patterns and business models for the next generation of software. Retrieved 7 May 2005 from: http://www.oreillynet.com/lpt/a/6228

Perron, B. (2002). Online support for caregivers of people with a mental illness. *Psychiatric Rehabilitation Journal*, *26*, 70–77.

Prior, T. I. (2004). Suicide methods from the internet. *American Journal of Psychiatry*, *161*, 1500–1501.

Pull, C. B. (2006). Self-help Internet interventions for mental disorders. *Current Opinion in Psychiatry*, *19*, 50–53.

Rajagopal, S. (2004). Suicide pacts and the internet. *British Medical Journal*, *329*(7478), 1298–1299.

Reaves, J. (2001). Anorexia goes high tech. *Time* (July). Retrieved 7 May 2005 from: http://www.time.com/time/health/article/0,8599,169660,00.html

Scharer, K. (2005). An Internet discussion board for parents of mentally ill young children. *Journal of Child & Adolescent Psychiatric Nursing*, *18*, 17–25.

Schmidtke, A., & Schaller, S. (2000). The role of mass media in suicide prevention. In K. Hawton & K. van Heeringen (Eds.), *The international handbook of suicide and attempted suicide.* New York: Wiley.

Schwartz, K. L., Roe, T., Northrup, J., Meza, J., Seifeldin, R., & Neale, A. V. (2006). Family medicine patients' use of the Internet for health information: A MetroNet study. *Journal of the American Board of Family Medicine*, *19*, 39–45.

Simkova, B., & Cincera, J. (2004). Internet addiction disorder and chatting in the Czech Republic. *Cyberpsychology and Behavior*, *7*, 536–539.

Spears, R., Lea, M., & Lee, S. (1990). De-individuation and group polarization in computer-mediated communication. *British Journal of Social Psychology*, *29*, 121–134.

Strom, L., Pettersson, R., & Andersson, G. (2004). Internet-based treatment for insomnia: A controlled evaluation. *Journal of Consulting and Clinical Psychology*, *72*, 113–120.

Thompson, S. (1999). The internet and its potential influence on suicide. *Psychiatric Bulletin*, *23*, 449–451.

Thompson, S. (2001). Suicide and the internet. *Psychiatric Bulletin*, *25*, 400.

Wagner, B., Knaevelsrud, C., & Maercker, A. (2006). Internet-based cognitive-behavioral therapy for complicated grief: a randomized controlled trial. *Death Studies*, *30*, 429–453.

Wallace, P. (1999). *The psychology of the internet.* Cambridge: Cambridge University Press.

Walther, J. B. (1995). Relational aspects of computer-mediated communication: Experimental observations over time. *Organizational Science*, *6*, 186–203.

Wastlund, E., Norlander, T., & Archer, T. (2001). Internet blues revisited: Replication and extension of an Internet paradox study. *Cyberpsychology and Behavior*, *4*, 385–391.

Ybarra, M. L., & Eaton, W. W. (2005). Internet-based mental health interventions. *Mental Health Services Research*, *7*, 75–87.

Young, K. (1998). *Caught in the net: How to recognize the signs of internet addiction – and a winning strategy for recovery.* New York: John Wiley.

Zetterqvist, K., Maanmies, J., Strom, L., & Andersson, G. (2003). Randomized controlled trial of internet-based stress management. *Cognitive Behaviour Therapy*, *32*, 151–160.