'Internet Delusions': A Case Series and Theoretical Integration

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Abstract

Background: Delusions involving the internet have been reported as examples of the influence of cultural innovations on delusion formation, although there has been some debate as to whether such innovations simply affect surface content, or whether they have more substantial clinical or psychopathological implications. **Sampling and Methods:** Four cases of patients with delusions involving the internet were identified following a general request to local consultant psychiatrists for referrals. **Results:** The internet had a specific effect on aetiology in one case, and knowledge of the internet seemed to constrain the type of delusion formed in two others. The presence of an internet-related delusion in the final case was used to frame a successful clinical intervention based on the 'collaborative empiricism' method, using cognitive behavioural therapy and collaborative use of the internet to resolve the delusional belief. **Conclusions:** Cultural technical innovations may have specific influences on the form, origin and content of delusional beliefs. For some patients the presence of internet-themed delusions may be a good prognostic indicator since, giv-en the rich sources of information available, they may be well suited to treatment with cognitive behavioural therapy.

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Introduction

The widespread public availability of the internet has brought about significant changes to commerce and social communication. It is now a standard method of communication for many and is regularly referenced in commercials, news stories and academic study. It is not surprising therefore, that delusions have been reported in the psychiatric literature in which the internet has featured as a central theme (see table 1). Broad sociocultural influences on delusional beliefs are well known and previous research has shown an influence on the presentation of delusions depending on country [9–12], gender and social class [13] and social environment [14]. Considering that the DSM-IV diagnostic criteria for a belief to be considered delusional are culturally relative (one of the criterion being that the belief 'is not one ordinarily accepted by other members of the person's culture or subculture' [15]), it is perhaps unsurprising that cultural factors might cause differences in the prevalence of certain themes between localised populations.

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Table 1. Previous reports of delusions about the internet from the psychiatric literature

Reference	Age	Sex	Psychiatric history	Reported delusions
Tan et al. [1]	27	M	Body dysmorphic disorder	Feeling that his life was being controlled by the internet, concern about 'double-talk on the internet', neighbour putting information about his life online.
Catalano et al. [2]				
Case 1	40	M	None reported	Sexual photographs and video of him/girlfriend on internet, mind and body control by 'internet bugs' and 'links' from a web page.
Case 2	41	M	None reported	Believed he was a witch and ran an online service for witches and could 'surf the net using only his mind'. Received 'magnetism' from the internet each day.
Podoll et al. [3]				
Case 1	32	M	1st presentation	Receiving messages over the internet threatening to expose his use of internet pornography.
Case 2	19	M	1st presentation	Bill Gates was destroying his files, spying and following him. Personal files were duplicating themselves and being broadcast over the internet beyond his control.
Kobayashi et al. [4]	57	F	Schizoaffective disorder	Heard commanding voices from two men, sent via radio waves originally emanating from a satellite and transmitted through the internet.
Duggal et al. [5]	31	M	Paranoid schizophrenia	Sister-in-law was controlling his thoughts and actions, sending voices and reading his thoughts through the internet.
Margolese et al. [6]	26	M	Schizophrenia	People follow his activities via internet chat-rooms devoted to him and several well-known web sites are dedicated to him because of similarities with his name and theirs.
Compton [7]				
Case 1	53	F	'Previous hospitalisation'	Internet controlling her (via implanted microchips) and home appliances for past 3 years.
Case 2	21	F	1st presentation	Photographs and recordings of her were being broadcast on the internet.
Case 3	64	F	1st presentation	Being followed by 'www' (World Wide Web) people.
Schmid-Siegel et al. [8]	36	F	Paranoid schizophrenia	Activities were being broadcast via webcam to the internet. Chip implanted in her brain broadcasts everything she saw on the internet.

More intriguing have been reports of people whose delusions have incorporated recent cultural and/or technical innovations. Several reports of 'rock and roll' delusions have been reported, where patients have believed themselves to be owed money by, persecuted by, or in a romantic relationship with specific and recently popular musicians or singers [16–18]. More specific still, Forsyth, Harland et al. [19] reported on a patient with the delusional belief that he was a character in a particular computer game. Notably, the game in question was released only a short time before the report was published. There is no clear understanding of how long it takes for cultural innovations to influence delusional beliefs, although as can be seen from figure 1, delusions about the internet were not reported until the internet was discussed quite widely in national publications, suggesting, not surprisingly, that a level of cultural salience (or perhaps social concern) has to be achieved before such concepts typically become incorporated into paranoid or psychotic experiences.

Commenting on the case of 'computer game delusions', Spence [20] argued that such themes, however, are simply a surface change to the same 'underlying biological signal', echoing Jaspers' [21] distinction between form
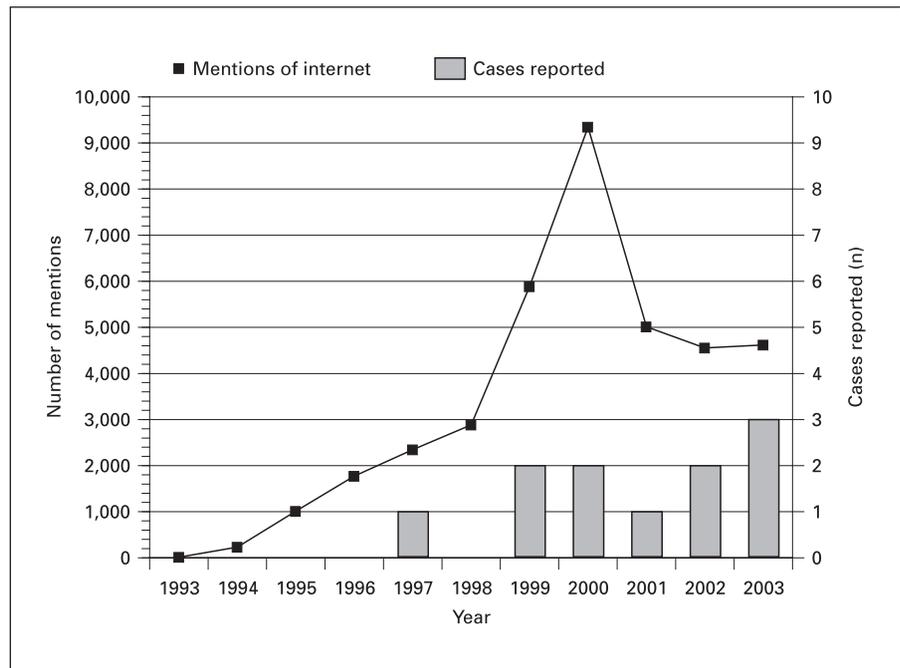
Fig. 1. Mentions of the Internet in *The Times* and *Sunday Times* from 1993 to 2003 and number of cases of reported 'internet delusions' in the medical literature.

and content in psychopathology [Spence, pers. communic.]. In this formulation, an influence on the psychopathological form would entail a change to the phenomenological structure of an experienced symptom, including the type of psychological constructs involved (e.g. beliefs, perceptions, thoughts). Conversely, an influence on psychopathological content suggests a difference in the colouring of experience, for example, affecting exactly what is delusionally believed or hallucinated. The psychopathological form is the basis upon which psychiatric diagnosis is made, having implications for prognosis and treatment, whereas the content is largely considered irrelevant in deciding upon such matters [22].

Reports of delusions about the internet, however, may suggest that cultural and environmental influences can represent more than superficial substitutions in content, with the internet in particular having an influence on psychopathological form and aetiology, and being important for decisions on treatment methodology.

As can be seen from a review of published cases (table 1), delusions involving the internet can vary considerably in presentation. It is notable that the role of the internet in such delusional beliefs is largely restricted to two major themes. The first is the use of the internet as an explanatory tool to account for unusual experiences, such as experiences of control, voice hearing or having one's thoughts read. This phenomenon was first noted by Tausk [23] in his seminal paper 'On the Origin of the Influencing Machine in Schizophrenia', where he noted that technology is often present as an explanatory device in psychosis and takes the form of a diabolical machine, just outside the technical understanding of the subject, usually claimed to be operated by enemies or persecutors of the affected person. Catalano et al. [2] have argued that a lack of knowledge about the relevant technology may fuel internet-themed delusions, perhaps leading to the internet increasingly appearing as a modern-day incarnation of Tausk's 'influencing machine'.

A second theme is the supposed use of the internet by people who are thought to be conspiring against the affected person. Note here that the internet is not represented as having a direct malign influence, but typically is thought as a means of hosting chat rooms, photos or recordings about the person concerned. Although delusional 'bizarreness' is not a concept without difficulties [24], the difference between these two themes perhaps reflects the distinction between bizarre (impossible) and non-bizarre (possible but false) delusions, although perhaps further technological breakthrough might render delusions previously considered bizarre as simply false.

Whether such differences account for more than the trivial incorporation of themes into an otherwise well established psychopathological process remains a matter of debate. Stompe et al. [25] argued that sociocultural influ-

ences on delusional presentation can be broken down into a number of levels all of which, in different ways, could be susceptible to the influences of cultural and social setting. They argue that technological innovations only affect the final stages ('concretization') of a multi-stage pathological process that culminates in the formation of a delusion; therefore, like Spence, they suggest that the influence of a technology such as the internet is relatively unimportant as an aetiological factor in psychosis.

In contrast, Catalano et al. [9] suggest that 'internet delusions' may represent a 'new subtype of previously reported psychiatric illnesses', echoing similar ideas that internet addiction may be a novel form of psychopathology, due to the internet having unique features which may lead people into heavy or even compulsive overuse [26, 27]. Other authors have taken somewhat of the middle ground. Eytan et al. [28] presented two cases of delusions where patients complained of being implanted with a microchip and further suggested that such technological delusions may be a form of western culture-bound syndrome. The arguments put forward by Catalano et al. [9] and Eytan et al. [28] seem difficult to defend in light of the fact that they produce little persuasive evidence for a significant effect of technological innovation on the form, aetiology or prognosis of the delusions they report. However, one recent case has suggested that technological themes may be involved in the development of novel forms of psychopathology, where previous symptom definitions and diagnostic criteria do not fully capture the obviously aberrant experience.

Schmid-Siegel et al. [8] reported the case of a woman diagnosed with paranoid schizophrenia who believed that everything she saw was being broadcast over the internet. The authors labelled this as 'perception broadcast' and noted that, although seeming similar to thought broadcast, it involved visual perceptions and not thoughts, and did not involve the direct participation of others, as the internet was believed to be a mediating technology and, therefore, did not fulfil Schneider's [29] thought broadcast criteria. In this case, a technological innovation seems to have influenced the psychopathological form of a psychotic symptom, rather than content alone.

Furthermore, a case reported by Duggal et al. [5] suggests that the presence of internet-themed delusions may be a specific prognostic indicator. They noted particular success with using cognitive therapy to treat the delusional belief, largely because of the ease by which reality testing by 'collaborative empiricism' [30] can be used in therapy. The authors reported that they were able both to educate their client as to how the internet works (by using a widely available book) and collaboratively to draw-up criteria which would potentially disprove the reality of the client's delusions. Crucially, they were then able to directly test these criteria by using the internet to gather evidence with the client, leading to the rejection of the delusional belief. The ubiquity of the internet makes it possible to easily engage in these sorts of reality-testing tasks, whereas doing the same for delusions concerning (for example) spirits, magical forces or even microchips or radio waves, may be difficult, if not impossible, to implement practically.

Such cases suggest that technological concepts may have specific influences on the aetiology, form and implications for the clinical management of people with such delusional beliefs. Wishing to further explore these issues, we sought to examine locally-occurring cases of internet-themed delusions.

Patients and Methods

A letter was written to consultant psychiatrists (n = 21) in the South Wales area, asking for any cases of 'delusions involving the internet' or other recent technological developments. Over a period of 1 year, 4 such cases were reported to us, which are described below. One further case was reported to us but rejected for inclusion in this case series as the patient's initial clinical presentation was put in doubt after further psychiatric assessment.

Case Reports

Case 1. W.L., a 31-year-old woman with a previous diagnosis of bipolar affective disorder, was admitted to hospital after being found in the street in a distressed state. On admission, she recounted how she first felt unwell 6 weeks earlier and became suspicious when her credit card was refused in a shop, leading to a sense of unease and increasingly intrusive thoughts. Subsequently, while examining the packaging of a breath freshening product she noticed the ingredient 'phenylalanine', which she proceeded to use as a search term on an internet search engine. Her search resulted in finding a webpage, containing many numbers, which outlined experimental studies on the chemical. Using the most personally significant numbers from the initial page as search terms she further found a website explaining an Aramaic system for divining special meaning from numbers. She suspected this was significant and came to believe that she had found secret information about the 'Al-Qaeda' terrorist network. During the following days she believed that, because of her discovery of terrorist secrets, her computer and telephone had been tapped in order to monitor her internet activity and phone calls, and that she was being bugged by microphones and concealed cameras. W.L. was subsequently diagnosed as having a manic episode with psychotic symptoms. She has had extensive experience using the internet over the previous 10 years and when asked how the internet worked, replied: 'by linking computers all over the world using energy and digital technology'.

Case 2. K.D., a 42-year-old man, had consulted his GP 5 weeks earlier for low mood and suspiciousness although he had no previous contact with mental health services. At interview K.D. claimed that the websites of several international companies had a 'darker side' and hidden sections that were being used by a secret organisation. K.D. believed the organisation had blackmailed his wife and possibly his daughter into involvement with pornography and indecent images of them were being distributed across the internet, partly as a 'personal vendetta' against him waged by the two leaders of the organisation. He first suspected that this might be the case when he saw his wife turn their computer off in a hurry, but believed that his wife had left a trail of clues for him to find so he could protect her from danger. The clues were concealed in the names of the websites which he believed were involved in the conspiracy against him and his family. A diagnosis of schizophrenia was made during admission to hospital. K.D. is a competent internet user and had regularly used email and the web at home over the previous 2 years for leisure and communicating with friends and family.

Case 3. A.Q., a 36-year-old woman with a previous diagnosis of bipolar affective disorder, was admitted to hospital concerned that she was being 'tracked by cameras' that had been placed around her house that were transmitting images of her across radio, television and the internet. She was particularly concerned that the internet was involved as she claimed her daughter had mentioned that she had seen photographs and videos of her online. A.Q. had also experienced 'beams of light' coming into her house, which she believed were being controlled via the internet and were involved in her surveillance. After admission to the hospital ward, she voiced concerns about being watched by beams of light and was suspicious of the electric lights in her room. A.Q. was subsequently diagnosed as having a manic episode with psychotic symptoms. She denied ever having used the internet before, and when questioned about how she believed the internet worked she said it operated using 'beams of light'. When asked in reference to a specific example (sending an email), she said that cables might also be involved.

Case 4. D.S., a 19-year-old male with a previous diagnosis of schizophrenia and a history of alcohol and substance abuse, was seen while resident in a hostel shortly after discharge from hospital. D.S. reported that he believed that the internet was being used to tell others about a past 'offence' (a practical joke he had carried out on a friend), and that he was followed by 'thirty to forty' people who were disgusted at his past behaviour and wanted to see him back in hospital. One of the authors of this study (E.G.) engaged D.S. in cognitive-behavioural therapy to lessen his distress and conviction in his delusional beliefs. D.S. rated his conviction that he was being followed at 90% and his conviction that the internet was involved was 70–80%. In collaboration with the client, the therapist used a popular book about the internet and World Wide Web to explore how they worked, including the use of search engines. It was established that the minimum information needed to find out about someone on the internet would be a name and geographical location. Subsequently, a reality-testing exercise was undertaken where people of a similar name and location to D.S. were identified via search engines and the information about them was examined on-screen, all of which could be confirmed as being unrelated to D.S. in any way. His conviction about the internet being involved in his supposed persecution dropped to 0%, causing him to report significantly less anxiety and guilt, with the number of people he supposed were involved in his persecution reduced to 'ten to twenty'.

Discussion

The 4 case studies reported here are notable as differing presentations of internet-themed delusions, or as with Case 4, an example of how a delusional belief involving the internet may be resolved in light of Chadwick and Lowe's [30] method of reality testing by collaborative empiricism.

None of the cases reported here suggests a novel form of psychotic symptom, as in the case of 'perception broadcast' reported by Schmid-Siegel et al. [15]. However, Case 1 is of interest because of the individual's self-reported use of an internet search engine during the initial stages of delusion formation. It is quite possible that the content of the delusion would have been different had another search engine or method been used as different results might have been returned, leading to the establishment of different associations. In this way, the use of the internet may affect the aetiology of delusion formation and may promote the loosening of associations when used during a psychotic episode. A jumping-to-conclusions probabilistic reasoning style has been identified as a factor in delusion formation [31, 32], suggesting that even relatively small amounts of tangential information, which would not otherwise be encountered, might form the basis or provide a conducive framework for the formation of delusional beliefs. K.D. (Case 1) is perhaps a striking example of this tangential process as she managed to get from a query about 'phenylalanine' to a belief concerning a terrorist network after only a short period of time. From this case alone it is not clear whether an effect on the loosening of associations caused by using the internet in this way would cause the resulting delusion to be any more or less aberrant, leading to more extreme or, alternatively, more benign beliefs as a result.

However, it has been noted [33] that people who are likely to be psychotic may use the internet to form online communities based around their delusional beliefs and archive a large corpus of online information to support their conjectures. Research on the social psychology of the internet has suggested that people who strongly identify with a group identity or cause are more likely to have their attitudes influenced to polar extremes if they are not in the same physical location [34]. Combined with the increasing availability of domestic internet access and the fact 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' [35], people undergoing the initial stages of psychosis may have delusional beliefs

primed, strengthened or deepened by using the internet, where previously they might have encountered very few people (if any) who would agree with their interpretations.

One way of countering potentially disabling delusional beliefs may be through the use of cognitive behavioural therapy. Both Duggal et al. [12] and the therapist involved in Case 4 used remarkably similar techniques (although the therapist reported here was unaware of the work of Duggal et al. at the time) to implement Chadwick and Lowe's [30] collaborative empiricism, with remarkable success in both cases. The educational aspect of the therapy, where the technological limits of the internet are explored so the client becomes aware of what the internet can and cannot do, seems important in shaking the delusional conviction that the internet is involved in their experience in this case. For example, A.Q. (Case 3) reported both that the internet was responsible for 'beams of light' entering her house, and that the internet relies on beams of light for its operation. Although this is not entirely inaccurate (fibre optic cables provide much of the infrastructure for large computer networks) it seems in these cases that an understanding of the technology (or rather, a lack of understanding) and the delusional explanation are linked. Scientist and science fiction author Arthur C. Clarke [36] noted that for people who do not understand it, 'any sufficiently advanced technology is indistinguishable from magic', implying that poor understanding of a technology provides greater degrees of freedom in how it can be used in an 'explanation' for an experience or event. Dispelling 'magical' notions about internet technology would seem to be something which could be easily and powerfully demonstrated in a therapeutic situation by a combination of both didactic and interactive exploration of the internet. This suggests that in cases that involve the internet as part of a delusional explanation for unusual experiences, the prognosis may be more hopeful if such therapeutic techniques are used.

However, as reported in Case 2, not all delusional beliefs about the internet may be as easily swayed in this way if they are not based on a misunderstanding of the technology. K.D. is notable for having a delusion about the internet which is not practically falsifiable by education about the internet's workings or by practical use of the internet. His assertion that there are hidden sections to major websites is almost certainly accurate, as system administrators need to be able to log into restricted areas to administrate the website. In cases such as these, therapy may need to focus on the unlikely nature of the conspiracy theory (the likelihood of a sinister organisation trying to persecute him), rather than the role of technology in his delusional explanation. It was notable that K.D. and W.L. (Case 1) were already competent users and therefore perhaps less likely to incorporate 'magical' explanations of internet function into their concerns. This suggests that the assertion of Catalano et al. [9] that ignorance about the internet may fuel 'internet delusions' per se may be wrong, although an understanding of internet technology may affect the type of delusional presentation.

The cases presented here, combined with the previous reports in the literature, suggest that the internet may not simply affect a surface change to the same 'underlying biological signal' as Spence [20] claimed, but may influence aetiology and form, and have implications for the clinical management of the resulting symptomatology. The extent of influence may not be equal for all aspects of society and culture, although the fact that there is an influence at all suggests that psychosis is only fully understandable in light of the wider social context. Clinicians should be aware of the influence of the internet on delusional beliefs, as it may occur as a factor in the aetiology of delusion formation, as a feature of delusion content, and have implications for the way in which therapy is framed.

Acknowledgement

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