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Social Influence, Addictions and the Internet: The potential of Web 2.0 technologies in enhancing treatment for alcohol/other drug use problems.

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Abstract

Submitted articles should have a summary/abstract, separate from the main text, of up to 300 words. This summary does not include references, numbers, abbreviations or measurements unless essential. The summary should provide a basic-level introduction to the field; a brief account of the background and principle of the work; a statement of the main conclusions; and 2-3 sentences that place the main findings into a general context. The text may contain a few short subheadings of no more than 40 characters each.

Introduction

In 2011, 78% of the Australian population of almost 22 million were internet users [1], with highest rates of access reported among young people [93%, 2]. Similar rates of internet use are reported in the USA, with current estimates suggesting 77% of the population report internet usage, representing close to 240 million people [3].

The internet has become an important source of health information and support for many people. It is estimated that 80% of internet users in the USA look for health information online, representing 59% of all adults. Among people aged 18-29 these figures rise to 92% of individuals online, and 71% of all individuals, who will seek health information online [4]. After e-mail and the use of search engines, searching for health information is the most popular online activity for adults [5]. People often also engage with online communities to access support for health-related problems [6], using a variety of forums and social networking sites, such as *Facebook* [7, 8].

There is great, but as yet unrealized, potential for the field of addictions in integrating this technology into the treatment environment. In particular, the use of Web 2.0 approaches may provide a solution for the well-documented treatment engagement and access issues encountered by those with alcohol/other drug (AOD) use problems, and those involved in their recovery. However, very little research exists examining the use of these technologies in relation to AOD use problems and their treatment. Thus, this review aims to integrate key learnings from the field of social psychology to explain how social influence, via Web 2.0 applications, can exert a significant impact on health via the treatment of problematic AOD use.

Social influence in Alcohol/Other Drug Use Problems

Social learning and social influence theories suggest that individuals learn within a social context, with changes in thoughts, feelings, attitudes, and behaviors result from interactions with other individuals or groups [9, 10]. Applying these models to alcohol highlights the importance of social

factors in the initiation and maintenance of problematic AOD use, suggesting that misuse is essentially a learned behavior, acquired through a process of observation, modelling, imitation, and social reinforcement.

The onset and development of problematic AOD use, most often in adolescence and young adulthood, is commonly driven by psychosocial factors, including parents and peers, perceived norms, and positive expectancies [11]. These factors have been primarily explored in regards to alcohol use, with twin studies indicating phenomenon such as social contagion overrides genetic predisposition to alcohol misuse in young people [12]. Longitudinal evidence also suggests that social influences are more important than cognitive and behavioural factors in predicting initial involvement with alcohol [13]. Two of the most significant risk factors for problem drinking are social; exposure to a pro-drinking social environment and holding positive expectancies about alcohol use [14, 15], with peer groups being more powerful than parents in this regard [16, 17]. Peers are believed to contribute to adolescent AOD use both directly and indirectly through several complex mechanisms including modelling; interpersonal persuasion; shaping norms, attitudes, and values; and by providing opportunities and support for AOD use [17-20].

It has been demonstrated that social influences can also shape positive alcohol-related expectancies [21]. Positive alcohol-related expectancies (such as, "*drinking helps you relax*") are a more important predictor of alcohol misuse than are negative expectancies [22], and have been associated with initiation and escalation of adolescent alcohol use [23, 24]. In this context, perceptions of alcohol use behaviour, even where they are made in error, can be as influential in the development of drinking norms in young people as actual observation of drinking behaviors. For instance, Prinstein and Wang [25] reported that adolescents' perceptions of peer behaviors related to alcohol strongly predicted their own. However, this perception was an overestimation of their peers' actual

behavior. This ‘false consensus’ effect, has been associated with higher risk of engagement in AOD use behaviors among adolescents [26].

As a result of such findings, social influence theory has also played a major role in AOD prevention and intervention programmes for over three decades [27-30]. Although early use of social influence models in the AOD field were largely limited to smoking prevention in young people, the success of these programs has led to the approach being applied more broadly to the uptake of AOD [31-34]. Similarly, therapists have drawn on social influence theory, particularly in terms of modelling of healthy behaviors, in the fields of both addiction and the treatment of mental health problems [e.g., 35, 36, 37].

Social Networking and Health

Recent advances in web and mobile technologies offer tremendous opportunities for individuals to connect online and provide a new forum for social influence to occur. No longer are websites merely places that web users visit, rather they are destinations where people interact, contribute, share and actively participate [38-40]. This new epoch of internet use is known as Web 2.0; “*an umbrella term that is used to refer to a new era of web-enabled applications that are built around user-generated or user-manipulated content, such as wikis, blogs, podcasts and social networking sites*” [41]. The term was introduced in 2004 to describe the shift in consumer demand and application functionality, with the main difference from Web 1.0 being interactivity [42]. The terms “social media” and “social networking” are often used to describe the tools, applications, and functions associated with Web 2.0, which make it easier for people to listen, interact, engage and collaborate with each other using the Internet.

The growth of online social networks and their penetration into everyday life has been immense. Most adolescents in the USA have Internet access, and report daily use of social networking sites

[43], while up to 97% of college students report ownership of a social networking profile [44]. Social networking transcends class and cultural groupings in society, with Kontos and colleagues [45] reporting no significant differences in engagement with social networking sites according to race, ethnicity, or socioeconomic status. *Facebook* is the most widely used social networking platform with approximately 800 million users globally [8]. It has been described as “*the most significant advance in persuasion since the radio was invented in the 1890s*” [46; p.22], capturing 97% of social networking users and 60% of all internet users [47]. The majority of social network users do so at least weekly for an average of five hours, and one third report daily use [48].

As social support, integration, influence and social networks appear to play important roles in both behaviour change and emotional health [48], and given the popularity of Web 2.0 applications (particularly among adolescents and young adults) [49, 50], social media offer new opportunities for identification and intervention regarding health behaviours [51]. Use of the growing number of Web 2.0 applications is increasing, particularly for health wikis (e.g., Medpedia); health-focussed social networking sites (e.g., *PatientsLikeMe*, *Trusera*) and support groups (e.g., *Daily Strength*, *Rareshare*); health social bookmarking (e.g., *PeerClip*); ratings and reviews of healthcare providers and organizations (e.g., *iMedix*, *Vivu*); electronic health record repositories (e.g., *CureTogether*); general social networking sites (e.g., *Flu Tweets*), and other data platforms (e.g., *Health-Map*, *SickCity*); health video-sharing websites (e.g., *icyou.com*) and podcasts; health-focused blogs; and health topic-based groups within virtual communities such as *Second Life* [52]. Despite this, only a small body of research has investigated the impacts of participating in these kinds of interactive health-related sites.

Two studies, for example, have found engagement with online communities to be associated with improved social and emotional well-being, improved quality of life and more active coping [53, 54]. These online communities offer users the opportunity to connect with others in similar

circumstances, even if these people are not locally available, and can be more convenient for people than accessing support in person [55]. Web 2.0 sites offering online peer support have been postulated to improve mental health, including depression, through the provision of social support [56], and the use of online social networking has been found to be positively related to increased self-esteem and satisfaction and well-being among college students [57]. Similarly, a web survey of 2,603 randomly selected college students found positive relationships between intensity of *Facebook* use and students' life satisfaction, social trust, civic engagement, and political participation [58]. Furthermore, it has been suggested that 'competition' in maintaining good health in patient-to-patient social media exchanges may also give rise to more positive outcomes. For instance, *PatientsLikeMe.com* allows individuals to display graphs of their health data and other characteristics that are not perceived to be overly private by the patient [59]. However, this theory remains untested.

In a recent meta-analysis of Internet-based interventions, Webb and colleagues [60] found that tailored text messages were highly effective in promoting interaction and engagement with the intervention. Social media allows for this kind of targeting, and this increased level of engagement is associated with more positive health outcomes [61]. Similarly, Chatterjee and Price [62] suggest that social media, particularly when combined with mobile devices, has the potential to more intimately and interactively guide adherence with care plans or behavior modification interventions.

Richardson and colleagues [6] conducted one of the only randomized controlled trials to test the effect of online social networking on health outcomes, adding a social network component to an Internet-mediated walking program among 324 adults at risk of cardiovascular disease. Participants randomized to the 'online social networking' condition could post and read messages on the intervention website, while those in the 'no social networking' condition could not. Both conditions increased their average daily steps and there were no significant differences between the groups.

However, online social networking participants remained engaged in the program significantly longer than their counterparts and were more likely to complete the program. This suggests Web 2.0 technologies and social networking applications in particular, may help improve patient engagement, a frequent challenge among people with AOD use problems. For instance, despite the success of e-health interventions for behaviour change and emotion regulation [63, 64], attrition remains a significant problem [65-67]. Eysenbach [68] suggests that online social networking may increase engagement with existing online self-monitoring and health improvement programs.

Social networking sites such as *Facebook* may be an ideal way in which to engage people with a view to influencing problematic AOD use behaviors. These sites have the potential to function as a platform for promoting and establishing (positive and negative) norms of behaviour, particularly among young people who are the most prolific users of these applications [69]. For instance, in a sample of 500 18-year-olds on *MySpace*, 41% displayed references to alcohol use in a two and half month period [70]. A subsequent qualitative study suggested that adolescents often viewed alcohol references displayed on other individuals' profiles as accurate and influential representations of alcohol use [71].

Currently, with the exception of online forums which remain unevaluated, there have been few reports of the use of Web 2.0 applications in the treatment of AOD use. Those that do exist have focused exclusively on with the exception of smoking cessation [72-74]. For instance, an automated, Internet-based smoking cessation program was developed, and emulated a personal counselling experience using a variety of information materials and videos that were targeted at the individual user. After three months of online support, the cessation rate was 24% in the group that had online support, compared to 8% for the waitlist control [75].

Conclusion

The ability of online social networks to offer round-the-clock access to vast numbers of people overcomes many of the problems involved with offline support (e.g., time, availability and geographical constraints). Such interactions could alter motivation, assist in buffering stressors and enhancing coping skills [76]. In the education sector, the use of Web 2.0 technologies that expand interactivity and collaborative content sharing, such as *Facebook*, are being used to engage and motivate students to become more active learners [77-80]. The health sector is also beginning to explore the potential of these applications for improved health outcomes [56], with studies indicating that *Facebook* is already frequently used by patients, carers and healthcare professionals to share their experiences with one another [81].

Despite these potential advantages, there are obvious quality of information, confidentiality and technological safety concerns of using social networking sites for health purposes [82]. For instance, recent attempts to explore these variables among diabetes-specific social networking sites found much variability in the quality and technological safety of the most popular of these sites [83]. This is a concern, considering the high volume of use these sites attract and highlights an area in need of further development and improvement. Similarly, a qualitative evaluation of the content of communication in 15 *Facebook* communities dedicated to diabetes management support found users employed the site to share personal clinical information, to request disease-specific guidance and feedback, and to receive emotional support. However, promotional activity and personal data collection presented a concern [84]. Finally, Prochaska and colleagues [85] concluded that although current attempts to establish “quit smoking” *Twitter* accounts had been inconsistent and unsustainable, but that “*Twitter and other social networking platforms offer tremendous and yet unrealised potential in engaging users who want to quit smoking*” (p. e3).

Although in its infancy, there is growing evidence to suggest that social media can provide a cost-effective and engaging way of delivering interventions aimed at behavioural, cognitive and emotional modification[86]. The combination of personalization, interactivity, and engagement offered by Web 2.0 technologies suggests there is potential for social media to be used for more than merely socialising. The major role played by social factors in initiation, maintenance and escalation of AOD use presents an opportunity for this potential to be realised.

Like any new tool, social networking cannot be considered a “silver bullet” to the challenges and complexity of an issue such as AOD use. Furthermore, the incorporation of such technology into current practice is not as simple as creating a website or a *Facebook* page or generating an online version of a treatment manual. There are both benefits and risks associated with the use of social media, which need to be explored. Significantly more controlled research is required, as this area represents an exciting new opportunity in the treatment of addiction.

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