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### Online Self-guided Interventions for the Treatment of Problem Gambling

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#### Abstract

A minority of problem gamblers access formal treatment. Factors contributing to this low service utilization rate include geographical and time constraints, a desire to self-manage problems, shame, denial and concerns over privacy/confidentiality. The Internet is an effective medium for the delivery of health-related information, self-assessment, counselling, peer-based support and other therapeutic interventions. Consequently, online self-help programs should be offered as an alternative means to access treatment for gamblers reluctant to pursue traditional options. Benefits of the Internet include its capacity to provide a systematic delivery of cognitive-behavioural therapies, practical visual demonstrations of probabilities correcting erroneous beliefs, accessibility, convenience, cost-effectiveness, anonymity and privacy. We conducted a review of the literature to outline the advantages and current status of *self-guided online interventions* for gambling-related problem. Although this is a new field, empirical evidence indicates that online self-guided interventions are efficacious and represent an important treatment adjunct for individuals with gambling-related problems.

**Key words:** Internet, online, intervention, self-help, problem gambling, treatment, review

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### **Online Interventions for the Treatment of Problem Gambling**

Gambling is a multi-billion dollar industry with the potential for substantial expansion in response to proposed legalization of Internet gambling across international jurisdictions including, Canada, European countries and Australia (GBGC, 2011; H2 Gambling Capital, 2011; Productivity Commission, 2010). Current estimates suggest that between 1% and 5% of adults in the general population meet criteria for problem or pathological gambling (Abbott, 2007; Petry, 2005; Productivity Commission, 2010; Reith, 2006; Wardle et al., 2011) with some evidence suggesting that these rates are decreasing in response to responsible gambling strategies, consumer protection policies and/or social adaptation (LaPlante & Shaffer, 2007; Shaffer & Martin, 2011). However, the trend toward legalization and concomitant increased availability, promotion and widespread market penetration of new forms of gambling are anticipated to lead to a resurgent incidence of problem gambling (Abbott, Volberg, Bellringer, & Reith, 2004; Toneatto & Ladouceur, 2003; Welte, Barnes, Tidwell, & Hoffman, 2009).

Given the substantial annual social cost approximating AUD\$4.7 billion coupled with the personal and familial distress associated with problem gambling (Productivity Commission, 2010), the continued implementation of effective public and mental health initiatives remains imperative. From a mental health service-delivery perspective, cost-effective treatment interventions are important to assist problem gamblers in gaining motivation to acquiring and apply the requisite skills and knowledge necessary to control their gambling behaviour, particularly for those failing to utilise traditional face-to-face treatment (Hodgins, Stea, & Grant, 2011; Shaffer & Martin, 2011). Although the development of gambling treatment spans decades there is surprisingly little reliable evidence of what constitutes effective treatment for problem gambling (Hodgins et al., 2011; Petry, 2005; Toneatto & Ladouceur, 2003), or its optimal mode of delivery; for example, individual, group, brief, telephone or self-help resources.

The evolution of the Internet communication network has changed the manner in which individuals access recreational activities and educational and health-related information. Unlimited access to multiple virtual and real forms of card games, stand-alone roulette and slots/poker-machines, sports betting and wagering via the Internet is now easy and convenient (Monaghan 2009). In addition, emerging technologies related to interactive television, mobile phones and 3G wireless devices represents future electronic platforms that will foster increased participation (Phillips & Blaszczynski, 2010). Conversely, interactive platforms represent effective and efficient means of disseminating information and offer self-guided interventions that can be accessed with convenience and privacy (Barak, Hen, Boniel-Nissim, & Shapira, 2008). The present paper outlines the benefits and feasibility of Internet-based interventions for problem gambling. The relevant empirical evidence is reviewed with the objective of informing clinicians and policy decision-makers on the most appropriate approaches to adopt in implementing online therapeutic programs.

### **Internet Usage**

Technological developments and policy changes have resulted in high-speed, low-cost Internet facilities accessible globally; 77% usage in North American, 80% Australian and New Zealand, 71% UK, 58-86% European, 34% Latin America, 30% Middle East, 22% Asia, 11% Africa, and 24% world-wide, respectively (Miniwatts Marketing Group, 2010). Although heavily used by individuals under the age of 34, middle-age and older adults are increasingly accessing the Internet daily; for example, in Canada 83% of 16

to 34 year-olds, followed by 72% of 35 to 54, 69% of 55 to 64, and 66% of 65+ year-olds, with these rates increasing annually (Statistics Canada, 2010).

High quality and high speed Internet access and associated technologies (computers, smart-phones, iPad and webcams) are not only becoming more affordable but also accessible through computers located in educational institutes, cafes and public libraries (Phillips & Blaszczynski, 2010). This accessibility reduces the potential technology-divide that limits online therapy to those who can afford the necessary hardware as reflected in figures showing 51% of those with less than high school education and 76% of those in the lower income quartile regularly accessing the Internet (Statistics Canada, 2010). In subpopulations suffering substance dependence (alcohol, tobacco, cocaine, and cannabis) and considered socio-economically disadvantaged, one study that found only smoking was associated with limited Internet access (Cunningham, Selby, Kypri, & Humphreys, 2006). Among problem drinkers, 88% of problem drinkers reporting having access to the Internet; 81% gaining access the from home. Given problem gambling is often comorbid with substance abuse and alcohol use (Hodgins et al., 2011; Shaffer & Martin, 2011; Westphal & Johnson, 2007) it is reasonable to suggest that these results imply that problem gamblers also have ready access to the Internet.

Paralleling the increase in Internet use, the proportion of individuals searching for medical or health related information is increasing with 70% of Canadians and 51% of Australians and Americans reporting use of Internet facilities to search for such material (Nielsen Online, 2010; Pew Internet & American Life Project, 2006; Statistics Canada, 2010). Amongst Americans seeking health information online, 9% searched information on quitting smoking, and 8% for drugs or alcohol problems (Pew Internet & American Life Project, 2006). Of those who reported their last health search had an impact, 58% reported information affecting treatment decisions and 44% behavioural change addressing health or lifestyle problem (Pew Internet & American Life Project, 2006).

Although current prevalence rates for Internet gambling are relatively low (1-11% varying by jurisdiction) (Wood & Williams, 2011), growing usage, ease and unrestricted access coupled with facilities for the electronic transfer of funds, has led to concerns over the potential resurgence of excessive and pathological gambling problems (Griffiths, Wardle, Orford, Sproston, & Erens, 2009). This is pertinent given studies reporting that a significant proportion of Internet gamblers meet criteria for problem gambling (Wood & Williams, 2011). Several surveys of undifferentiated samples of Internet and non-Internet gamblers have reported problem gambling rates three or four times higher for Internet gamblers as compared to non-Internet gamblers (Griffiths et al., 2009; South Australian Centre for Economic Studies, 2008; Volberg, Nysse-Carris, & Gerstein, 2006; Wood & Williams, 2011). Although the causal relationship between Internet gambling and problem gambling has not been established, it is predicted that increased accessibility and participation in this form of gambling will result in increased incidence rates of gambling-related problems (Wood & Williams, 2011).

It has been argued that responsible gambling interventions and social adaptation processes appear to be effective in reducing problem gambling (LaPlante & Shaffer, 2007). However, countering this trend are the competing commercial forces and expansion of Internet gambling opportunities. Whether actual rates fluctuate between

0.2% and 5% or higher is, from a public health perspective, irrelevant since the absolute number of individuals requiring treatment is substantial and represents (and is predicted to remain) a major health and social burden. (Monaghan & Blaszczynski, 2010) In this context, the Internet represents an innovative medium through which traditional and novel treatments for problem gambling can be offered to members of the general community.

### **Treatments for Problem Gambling**

Currently, randomised trials and controlled case studies indicate that cognitive, behavioural and cognitive behavioural therapy (CBT) appear to be the most effective psychotherapeutic treatments for problem gambling (Grant & Potenza, 2007; Ladouceur, Sylvain et al., 2001; Petry et al., 2006; Sylvain, Ladouceur, & Boisvert, 1997; Toneatto & Ladouceur, 2003). These appear to be cost-effective, have long-term benefits, and utilise techniques applicable to other conditions. CBT can also be used as an adjunct to other forms of treatment and can be tailored to suit individual client needs. Evidence, however, suggests that less than 10% of pathological gamblers are in treatment at any one time (Cunningham, 2005; Productivity Commission, 2010; Slutske, Blaszczynski, & Martin, 2009) with most seeking treatment only in response to a significant life crisis (Clarke, Abbott, De Souza, & Bellringer, 2007). This finding, combined with relatively high treatment attrition rates ranging between 17-76% (Ladouceur, Sylvain et al., 2001; Westphal, 2006), suggest that significant proportions of problem gamblers remain effectively untreated.

Not all problem gamblers and pathological gamblers require formal interventions; prevalence studies have reported that between one- to two-thirds of problem and pathological gamblers recover without treatment (Cunningham & Hodgins, 2008; Hodgins, Wynne, & Makarchuk, 1999; Slutske, 2006). Research suggests that moderate or mild problem gamblers are able to employ practical, problem-focussed strategies and that such gamblers might benefit from the development of easily accessible intervention, (Toneatto et al., 2008). Although the mechanisms for change remain unknown, extant research has demonstrated the benefits of self-help options (Dickerson, Hinchy, & England, 1990; Hodgins, Currie, & el-Guebaly, 2001).

Supporting the argument that self-guided treatment options are useful resources, recovered problem gamblers report preferences for unassisted improvement as one primary reason for not seeking formal treatment (Marotta, 2000). This has led to the development of brief-intervention and self-help problem gambling services as an alternative to more formal interventions (Ontario Ministry of Health and Long-term Care, 2009; Productivity Commission, 2010). Extending brief self-guided strategies, Internet-based interventions offer significant improvements given their capacity to facilitate self-directed learning through the use of multi-media formats, interactive exercises and quizzes, automated tailored feedback, behavioural tools and peer-support forums (Abbott, Klein, & Ciechomski, 2008). These interventions are less expensive compared to traditional face-to-face treatments involving qualified health professionals (Lieberman & Huang, 2008).

### **Internet-Based Interventions**

The effectiveness of Internet-based programs for health and mental health problems appears equal to or greater than face-to-face therapy, brief interventions, educational and self-help options (Barak et al., 2008; Bennett & Glasglow, 2009; Cuijpers, van

Straten, & Andersson, 2008). A review of 24 randomized studies found that Internet-based interventions combining health information with strategies for social or behavioural change significantly improved patient knowledge, perceived social support, and key behavioural and clinical outcomes when compared with non-web-based control programs (Murray, Burns, See, Lai, & Nazareth, 2005).

Internet-based programs can be essentially dichotomized into highly structured self-directed programs with no interactions between consumer and therapist (Ybarra & Eaton, 2005), and those that include regular contact with a therapist through email, live chat, online video-conferencing or telephone exchanges (Abbott et al., 2008). A systematic review of Internet therapy including therapist contact for addictions, including problem gambling, identified nine published studies with sufficient methodological rigour to inform on the effectiveness of this form of intervention (Gainsbury & Blaszczynski, 2010). Analysis of results indicated that Internet-based therapies for addictions are effective in achieving positive behavioural changes.

Meta-analytic studies indicate that interventions incorporating clinical interactive components have better outcomes compared to those without client-therapist interaction (Den Boer, Wiersma, & Van Den Bosh, 2004; Mains & Scogin, 2003; van Boijen et al., 2005). Similarly, a review of Internet-based cognitive therapy for depression and anxiety (Spek et al., 2007) found therapist-supported interventions had larger treatment effect sizes than predominantly self-directed/self-help approaches. In contrast, a large meta-analytic study (Barak et al., 2008) found no significant differences in effectiveness between these approaches. Similarly, a review of technology-assisted self-help and minimal contact therapies for addictions concluded that these interventions are efficacious (Newman, Szkodny, Llera, & Przeworski, 2011). Although, the authors noted that some therapist contact may produce greater and more sustained reductions in addictive behaviour. These disparate results may reflect self-selection biases to certain types of intervention with some clients preferring unassisted, and others, therapist-assisted support. For example, Apadoca and Miller (2003) reported that the addition of therapeutic contact did not improve outcomes for individuals with alcohol problems, at least partially because most refused such assistance.

Self-guided Internet-based interventions for problem gamblers are relatively recent treatment options and therefore lack strong empirical evidence for their effectiveness. However, available research evaluating online interventions for similar disordered behaviours, including problem drinking and smoking cessation, support the potential utility of applying online interventions to problem gambling (e.g., Bewich et al., 2008; Cobb, Graham, Bock, Papandonatos, & Abrams, 2005; Dijkstra, 2005; Etter, 2005; Severson et al., 2008; White et al., 2010). However, relatively high drop-out rates, low client recruitment, or small samples, highlight the need further research. The purpose of this paper is to provide an overview of the advantages, features and difficulties in the implementation of self-guided Internet-based interventions.

### **Advantages of Online Interventions**

Traditionally, individuals seeking help for gambling-related issues obtain treatment from general/family physicians or specialised counselling services. Supplementary brief interventions are available from telephone support services and educational materials received through mail or Internet websites with health professionals increasingly

utilizing this medium to supplement counselling, treatment, support groups and self-directed therapies (Houston, Cooper, & Ford, 2002).

#### *Availability and Convenience*

Benefits associated with Internet interventions include convenience (access is not limited to particular localities or time) and the capacity to overcome barriers preventing face-to-face counselling; geographical remoteness, transport problems, residential factors (frequent relocations or restricted mobility: military and prison inmates, respectively), physical disabilities, work commitments, or childcare problems (Abbott et al., 2008). The convenience of not having to leave home for treatment is an important factor (Klein, Shandley, Austin, & Nordin, 2008). Consistent with this, Rodda (2010) found the majority of contacts to an Australian online gambling help service occurred outside traditional office hours. However, individuals in remote areas may have limited access to high speed Internet, for example Australians living in very remote areas were 24 percent less likely than people living in major cities to have an Internet connection (Australian Communications & Media Authority, 2008). Internet access must be widely available to enable remote populations to access online self-help services.

#### *Treatment Flexibility*

Participants are able to progress through treatment programs at their own pace and preferred sequence. Although some programs are structured in a manner that require users to systematically complete a set sequence of steps (for example, completing one module per week), others allow the option of selective choices of modules and tools perceived relevant to personal needs. Given this flexibility, online self-help interventions can be modified to cover all stages of motivation and problem gambling severity increasing a participant's sense of control, comfort, program relevance, effectiveness and decreasing attrition (Andersson et al., 2008; Carlbring & Smit, 2008).

Treatment flexibility and individuality is also particularly important in problem gambling where motivation and stages of change fluctuate commonly resulting in repeated re-scheduling, cancelling and failing to attend sessions (Toneatto, 2005). It is argued that in this context, online interventions allow users to make multiple attempts to modify their gambling without experiencing shame or guilt at failing to previously complete treatment.

#### *Incorporation into Shared and Stepped-Care Treatment Models*

Internet-based self-help interventions are consistent with shared-care models of treatment delivery. For example, online interventions for anxiety have been demonstrated to provide an appropriate adjunct to routine family physician care without substantially increasing consultation times or a requirement to be specially trained (Mataix-Cols & Marks, 2006). Similar interventions are also suited to stepped-care treatment frameworks where clients with less severe problems elect to use Internet interventions as an adjunct to formal sessions, during waitlist periods, or post-discharge for purposes of continued support (Mataix-Cols & Marks, 2006). A study of a therapist-assisted Internet treatment program for panic disorder compared clinical outcomes among patients with the therapeutic assistance of their GP who had received specialist training in CBT, or a clinical psychologist (Shandley et al., 2008). Both treatments led to clinically significant improvements maintained at follow-up; however, the study used a nonrandomized, natural groups design which did not allow for the direct comparison of treatments or control for biased selection of participants. However, the study does

offer evidence supporting the use of online programs, and as the CBT techniques used in the treatment of anxiety disorders are similar to the CBT techniques utilised in problem gambling treatments, these findings suggest that online interventions for problem gambling can be similarly incorporated in shared and stepped-care treatment models.

#### *Cost-Effectiveness*

The cost-effectiveness of Internet interventions compares favourably to face-to-face interventions (Klein, Richards, & Austin, 2006; Smit, Riper, Kramer, Conijn, & Cuijpers, 2006). Costs include the development of specific program modules and capital investments related to registering domain names, obtaining license for databases, and software and hardware purchases (Tate, Finkelstein, Khavjou, & Gustafson, 2009). These are non-recurrent “sunk costs” (Tate et al., 2009). After initial set-up costs are met, programs can be easily, updated, modified and promoted (Andersson et al., 2008; Tate et al., 2009), although this requires ongoing technical support increasing costs for organisations without in-house technicians. As therapist support is not required, online programs can provide services to larger numbers of people without concomitant increases in cost, provided that servers can cope with increased capacities. An evaluation of Australian-based online treatment program for panic disorder found that the cost of hosting treatment and questionnaire website was approximately AUD\$12.12 per participant (N=33) (Klein et al., 2006). In a comparative analysis, a Dutch online problem-drinking program and information brochure produced greater clinical outcomes after 12-months than a non-online information resource (Smit et al., 2006). Furthermore, a comparison of economic costs found the online program resulted in lower direct medical, and direct and indirect non-medical costs for both patients and health services showing investments in the online program to be offset by cost-effective returns (Smit et al., 2006). However, costs associated with advertising and promoting programs may be high and if uptake is low among the target population, this may reduce the cost effectiveness of the program.

#### *Privacy and Anonymity*

Internet interventions meet client needs for privacy, anonymity and comfort when discussing potentially embarrassing or sensitive subjects (Griffiths & Christensen, 2006). In an exploratory study of online support for problem gambling, Cooper (2004) found higher levels of concerns about stigma correlated with low face-to-face treatment utilisation. Internet-based self-help interventions further enhance self-disclosure through the disinhibiting effect of the Internet leading users to offer more, honest and accurate self-portrayals even in respect to sensitive topics (Fullwood, Sheehan, & Nicholls, 2009; Tourangeau, 2004). Written self-disclosures of thoughts and feelings expressed online have been linked to improved social support, interpersonal communication and overall quality of life, allowing individuals to reflect on and communicate topics that are difficult to express in person (Gumbrecht, 2004; Ko & Kuo, 2009). Use of Internet-based self-help and peer-support groups resulted in increased professional help-seeking behaviour in one study of an online Gamblers Anonymous service (Cooper, 2004). This indicates that the privacy and anonymity provided by online self-help assists gamblers motivated to access treatments.

#### *Empirical Evaluation*

Internet interventions are especially suited to monitoring effectiveness in clinical practice, such as tracking processes of change, use of materials, completion of exercises

assessing post-treatment, and long-term functioning (Proudfoot et al., 2011). As all client interactions are electronically recorded and assessments and feedback conducted online, baseline and follow-up data can be readily extracted, monitored and analysed in de-identified form. Process measures, such as drop-out, traffic, and tool utilisation provide useful information on client's behaviours, use of programs and attrition. There appears to be robust support for the use of online questionnaires, although online self-report is likely to be less accurate than the clinical interviews for diagnosis (Andersson & Carlbring, 2003; Emmelkamp, 2005; Proudfoot et al., 2011).

#### *Relevant for Youth Gambling Problems*

International studies have found that problem gambling rates among adolescents (aged 12-17 years) are typically 2-3 times that found in adults (Delfabbro & Thrupp, 2003; Dickson, Derevensky, & Gupta, 2008; Shaffer & Hall, 2001; Welte et al., 2001). Young adults aged 18-24 also appear to have significantly more gambling-related problems than any other adult age cohort (Derevensky, 2009; Productivity Commission, 2010; Welte et al., 2001). Despite high rates of problem gambling, youth rarely recognises problems or seek treatment (Derevensky & Gupta, 2004). Online therapeutic support services have the potential to assist youth in dealing with gambling-related problems given their access to, familiarity with and preference for the media, and the anonymous capabilities of such services (Monaghan & Wood, 2010). Available evidence suggests that Internet-based interventions do already appear to help youth reduce smoking and heavy drinking and that consequently by extrapolation, online problem gambling interventions may also help youth overcome gambling problems (Monaghan & Wood, 2010).

#### **Features of Online Interventions**

Presently there is no 'gold standard' format for the provision of self-guided online interventions (Carlbring & Andersson, 2006; Ragusea & VandeCreek, 2003). Subsequently, the mode, form and content vary substantially ranging from email announcement lists, peer-support forums and discussion boards, interactive exercises and educational tools, automated personalised normative feedback and behavioural tools. Specific programs may include one or multiple components in structured or unstructured formats. Ideally, the online contents should evolve over time based on user feedback and evaluation (Cunningham, 2007) enabling components to be refined. The following section aims to provide guidance on the ideal features, format, and content of an online self-help program for individuals with gambling problems.

#### *Registration*

Online interventions typically feature a home webpage that provides information describing the target audience, the organisation maintaining and sponsoring the site, and type of interventions offered. Requiring user registration to access tools and content has several advantages, including continuity in use of the site and transition through set programmed instructions. For example, registered users can track which modules have been completed and record data and scores on monitoring forms, and encourage active participation in forums. Privacy is protected through the use of anonymous/ email addresses and users are able to opt in or out of research trials during the registration process. This is relevant as participants of online interventions reported concerns about security of personal information (Kerr, Murray, Stevenson, Gore, & Nazareth, 2006). A comparison of online therapy programs permitting any individual to engage in the site with requiring prior screening and approval before accessing programs, found

significantly larger treatment effect sizes for the 'closed' (0.68) than 'open' sites (0.48) (Barak et al., 2008). This finding highlights the important role of registration in ensuring that participants are suitable for the program and have greater motivation and commitment than those simply browsing available services.

#### *Tailored Normative Feedback*

In tailored feedback techniques an individual's behaviour, beliefs and attitudes are compared to those of a large normative peer sample and fed back in a highly individualised health message. Automated tailored normative feedback can be a standalone intervention or the first step in a more comprehensive program. This treatment component has been successfully included in brief treatments for problem gambling (Carlbring, Jonsson, Josephson, & Forsberg, 2010; Petry, Weinstock, Ledgerwood, & Morasco, 2008). The inclusion of motivational enhancement components is based on the conceptualization that behavioural change occurs through identifiable stages (pre-contemplation, contemplation, action and maintenance) and that motivation to change is influenced by stage-specific interventions (Prochaska & DiClemente, 1992).

Tailored feedback has been shown to outperform traditional, static health information strategies and more likely to be read, remembered and viewed as personally relevant (Bennett & Glasgow, 2009). Studies suggest that incorporating social norms information in feedback helps decrease problematic behaviour, such as alcohol consumption and smoking, given that individuals often differentially underestimate their own and overestimate the behaviour of others (Bewick et al., 2008; Etter & Perneger, 2001). An online survey of users of alcohol and other drug websites found that online screening tools were highly valued by respondents (Klein et al., 2010), although the survey respondents were primarily a young, educated, English-speaking and employed Australian sample, limiting the generalisability of results. Interestingly, the provision of personalised feedback is found to be important in motivating change in problem drinkers and problem gamblers, irrespective of whether they commence treatment or not (Cunningham et al., 2001; Wood & Williams, 2009). However, feedback should encourage individuals to utilise online interventions where appropriate; when web-based personalised feedback for problem drinking was compared to web-based feedback with additional self-help materials, results were found to favour the combined intervention (Cunningham et al., 2001).

Due to the recency of tailored normative feedback for problem gambling, only two studies providing preliminary support for the efficacy of this type of intervention have been conducted. In an online survey of an international sample of gamblers (n=12,521), participants were provided with personalised feedback on how their gambling behaviour and beliefs compared to other individuals completing the survey (Wood & Williams, 2009). The majority (65.2%) reported that the interactive feedback was 'somewhat' or 'very useful', with this percentage being significantly higher for problem gamblers (70.6%) than non-problem gamblers. Furthermore, 33.5% of problem gamblers reported that they expected their gambling behaviour would decrease subsequent to receiving the feedback. In a similar study, a sample of Canadian problem gamblers (n=61) were mailed personalised feedback based on completed self-assessment instruments providing a detailed summary of their behaviour and beliefs compared to Canadians their age and gender (Cunningham, Hodgins, Toneatto, Rai, & Cordingley, 2009). Almost all (96%) respondents felt that the feedback materials should be made available

to other people motivated to modify or evaluate their gambling; however, results may be potentially biased as participants self-selected to give feedback.

#### *Tailored Content*

As with face-to-face therapy, online interventions can be modified to suit individual client needs based on responses to assessment tools. Registered users can be directed to appropriate modules based on responses to prompts evaluating motivation, stages of change, current gambling behaviours and beliefs. Importantly, the content and pace of modules can be presented consistent with responses given by users. Emerging evidence supports the use of such tailored Internet interventions for behavioural change in alcohol and tobacco consumption (Bewich et al., 2008; Dijkstra, 2005; Swartz, Noell, Schroeder, & Ary, 2006). A systematic review of the treatment literature for problem gambling concluded that future treatment should focus on subtypes of pathological gambling (Toneatto & Ladouceur, 2003) rather than considering problem gamblers to be a homogeneous population. By automatically tailoring the content of online interventions to suit the individual client, this is expected to increase treatment success.

The importance of tailoring content is particularly evident for online interventions designed for gamblers presenting with a range of disparate forms (e.g., electronic gaming machines, sports wagering, and Internet gambling) and motivations for gambling (e.g., emotional regulation, risk-taking and sensation-seeking). Automatically personalizing programs enhances ease of use as participants are directed to the most relevant and appropriate content, provide choices for levels of prompts and reminders, and reduces distraction by excluding irrelevant material (Bennett & Glasglow, 2009). Evaluative studies have shown tailored online interventions for smoking to be more effective than non-customised linear sites in reducing tobacco consumption and increasing user satisfaction (Severson et al., 2008; Strecher et al., 2008; Swartz et al., 2006). The increased effectiveness appears to be related to exposure, with users spending more time on customised sites than static, linear programs, and the interactive programs increasing salience and engagement (Severson et al., 2008). Although there is growing support for the use of tailored messaging, few trials have systematically determined the type, or extent of tailoring necessary. As tailoring complexity may increase program development costs, guidance on best practice is needed.

#### *Cognitive Behavioural Therapy Techniques*

Therapist-delivered CBT has been shown to be effective in the treatment of problem gambling (Carlbring et al., 2010; Ladouceur, Gosselin, Laberge, & Blaszczynski, 2001; Oakley-Browne, Adams, & Mobberley, 2000) as have self-help manuals (Hodgins et al., 2001; Hodgins, Currie, el-Guebaly, & Peden, 2004). Recent studies are now reporting positive preliminary results for online therapy programs for problem gambling based on CBT principles (Carlbring, 2005; Carlbring & Smit, 2008; Eidem, 2010; Peltoniemi & Bothas, 2007).

Internet interventions allow simple, structured behavioural monitoring of several gambling-related variables that can be calculated rapidly to provide graphical representation and descriptive summaries. Visual representations depicting the relationship between amounts (time and money) gambled, strength of urges (visual analogue scales) and situational variables contribute to increased awareness and motivation, while behavioural diaries track performance, prompt displays of congratulatory or warning and relapse-oriented emails, and evaluate outcomes (Raylu,

Oei, & Loo, 2008). In a study of an Internet-based tobacco cessation program, interactive behavioural tools were found to be the most popular resource (An et al., 2008). Nearly 80% of participants in the trial used the interactive quit planning tools at least once and nearly two-thirds used these more than four times. Similarly, a qualitative study with focus groups of users of online interventions for long-term conditions, found that users wanted practical information to help with daily experiences as well as planning for potentially difficult situations (Kerr et al., 2006).

#### *Interactive Psychoeducation Tools*

In addition to behavioural tools, online interventions include interactive educational material designed to correct any irrational beliefs. Such information are presented in interesting graphical, dynamic/animated and interactive formats to increase salience and relevance (Raylu et al., 2008). Multimedia CBT programs that include video, audio, graphics, and checklists have been shown to have better outcomes in comparison to computer programs that predominantly use CBT written text (Bowers, Stuart, MacFarlane, & Gorman, 1993) and to increase client self-management and motivation (International Society for Mental Health Online, n.d.; Kerr et al., 2006; Manhal-Baugus, 2001). Dynamic visual aids can effectively explain operations of electronic gaming machines demonstrating independence of chance events and probabilities. Participants' interest can be captured through online quizzes and learning activities for a variety of important and relevant material based on successful CBT programs. An analysis of self-help literature found that participants preferred therapy delivered via a combination of different formats including multimedia (Griffiths & Christensen, 2006; Wright et al., 2005) and presentation including interesting website, mixed formats and interactive websites have been shown to enhance treatment effectiveness (Barak et al., 2008; Mains & Scogin, 2003; Klein et al., 2010). However, it should be noted that interactive websites are more typical of CBT, whereas static sites are more typical of psychoeducational approaches and this confounds treatment effects found. Furthermore, although pictures, graphics, videos, quizzes and animations were rated as somewhat important by users of alcohol and other drug websites, being able to print and download information was the most highly rated interactive website feature (Klein et al., 2010), indicating that a balance must be retained between simple and complex presentation methods for information.

#### *Motivational Enhancement*

An important component is the inclusion of suitable motivational components for participants at various stages of readiness for change. Two studies have demonstrated that incorporating motivational enhancement in problem gambling interventions reduced attrition and increased positive treatment outcomes (Milton, Crino, Hunt, & Prosser, 2002; Wulfert, Blanchard, Freidenberg, & Martell, 2006). Furthermore, a telephone-administered motivational enhancement therapy added to a self-help problem gambling workbook treatment had significant advantages compared to only receiving the self-help workbook, with changes retained at 24-month follow-up (Hodgins et al., 2001; Hodgins et al., 2004). In a study of non-treatment seeking problem gamblers, participants receiving 10 minutes of brief advice about gambling incorporating personal feedback and motivational techniques coupled with concrete steps for reducing gambling were compared to a control (no intervention) sample (Petry et al., 2008). After 6 weeks, those in the brief advice condition significantly decreased gambling relative to the control condition and after 9 months participants had continued gambling at significantly lower levels than pre-treatment. Although these studies are limited by

small sample sizes, they provide preliminary evidence of the potential usefulness of increasing client's motivation and commitment to CBT.

Many online self-help interventions for addictions incorporate Prochaska and DiClemente's (1992) stages of change theory. For example, an online problem drinking intervention, "Down Your Drink", includes three phases that assist participants in increasing motivation for change, provide support during early quit phases, and assistance in maintaining changes and avoiding relapses (Linke, McCambridge, Khadjesari, Wallace, & Murray, 2008). An enabling, non-confrontational and reflective manner can be achieved through online self-help tools in the style of writing (tone) in the text and construction of interactive exercises encouraging reflection and individual choice (Linke et al., 2008). Carlbring and Smit (2008) also included a motivational enhancement approach in their Internet program for problem gambling with positive effects; however the specific contributions of motivational enhancement were not separated from overall treatment effects. In Internet self-help programs clients may be prompted to choose their level of readiness to start a program, or be automatically directed to appropriate content based on screening responses (e.g., motivational interviewing exercises for those in the pre-contemplation stage and relapse prevention for those in the maintenance phase. Denial is a common barrier for problem gamblers seeking treatment (Evans & Delfabbro, 2005) and self-help interventions have been shown to assist individuals who are ambivalent or resistant towards seeking professionally administered treatments (Papworth, 2006). Online interventions for problem gambling have been found to increase the likelihood of users seeking professional help (Cooper, 2004; Peltoniemi & Bothas, 2007; Wood, 2009) indicating that this form of treatment can assist individuals in increasing motivation to seek treatment for gambling-related problems.

### **Implementation Issues for Online Interventions**

Problem gambling is associated with financial difficulties, and comorbid alcohol and substance use problems, and psychological disorders that require interventions (Petry, 2005; Hodgins et al., 2011; Shaffer & Martin, 2011). Self-help programs are generally intended for those with less severe gambling or co-morbid problems (Toneatto et al., 2008). Consequently, it is important that online interventions incorporate assessment procedures that allow individuals to determine which treatment components are appropriate to their needs (Raylu et al., 2008) and additional services to access where necessary.

Online interventions should be provided and maintained by reputable organisation to increase credibility and acceptability of programs (Eysenbach & Köhler, 2002). In a survey of users of drug and alcohol websites, over 80% of respondents identified claims and statements made on websites describing the source of information provided as important factors influencing their judgement on website trustworthiness (Klein et al., 2010). Other important factors were recommendations by professionals, government affiliated websites, and objective and unbiased content. It is important for the homepage to include information about the organisation, contact telephone contact details, email and a physical address for technical support and additional information and referrals (Kerr et al., 2006; Klein et al., 2010). Sponsoring organisations must specify jurisdictions from which they are willing to accept clients and procedures for verifying personal details, and take into account cross-cultural sensitivities.

It is essential that online interventions are promoted through appropriate channels to maximise their reach for target population. For example, online smoking cessation programs have been successfully promoted in workplaces and through health insurance providers (Graham, Cobb, Raymond, Sill, & Yong, 2007; Strecher et al., 2008). An evaluation of participant recruitment strategies for an online tobacco cessation program found that 50% of participants were recruited through media coverage, including newspaper articles, radio interviews and television stories and 35% from Google advertisements or via search engines or links on another website (Gordon, Akers, Severson, Danaher, & Boles 2006). Paid media advertising and direct mailings were unsuccessful and only 5% of participants reported that they had heard about the intervention through health care professionals (Gordon et al., 2006). Similar results have been found for other online interventions (Andersson et al., 2008; Linke, Brown, & Wallace, 2004). These results highlight the importance of media coverage and online presence as well as appropriate marketing to health care providers. Simply providing program information may be insufficient to drive recommendations and referrals. Health care professionals, telephone support staff, and problem gambling treatment providers should be actively informed of the benefits of online interventions to encourage appropriate referrals. A French smoking cessation site found that only 2% of the 5,000 monthly site visitors actually utilised the online intervention (Etter, 2005) demonstrating the high volume of traffic required to acquire registered participants and the importance of adequate promotion.

Similar to face-to-face problem gambling therapy, online interventions appear to have relatively high attrition rates. The low barriers to entering an online intervention (simple registration and completing of initial assessment) inflate attrition rates by including individuals exploring options but not ready to enter programs, or deciding programs are not suitable at time of registration. An evaluation of an online program for problem drinking found that of 10,000 users over a 27 month period approximately one-third of users dropped out after the first week and usage declined each week with only 17% of users completing the six week program (Linke et al., 2007). Reasons for dropping out appeared to vary with some participants finding programs too time-consuming, too challenging or disengaging after early successful behavioural change (Linke, Murray, Butler, & Wallace, 2007; Strecher, Shiffman, & West, 2005). Client feedback from a Norwegian online therapy program for problem gambling found that a proportion had reached goals and reported diminished urges despite early attrition (Eidem, 2010). Despite dropping out, evidence indicates that benefits are associated with partial program completion (Couper, 2005). Individuals using an online Gamblers Anonymous forum reported benefits from reading posts made by others (Cooper, 2004).

Additionally, the anonymous and convenient nature of online interventions allow individuals to trial programs multiple times before they successfully make changes without experiencing shame or guilt in failing to complete a treatment. However, as research suggests that there is a dose-response relationship for the use of Internet interventions (Cobb et al., 2005; Graham et al., 2007), further efforts should be directed toward increasing maintaining interest and compliance to increase the efficacy of such interventions.

## **Conclusions**

There is a growing demand from consumers, treatment providers, policy makers and funding bodies to develop and utilise brief online self-guided programs to address

gambling-related problems. Internet-based treatments appear to be successful and cost-effective while offering a convenient, accessible and private service to a wide range of individuals. Online interventions are not intended to replace face-to-face counselling services, but serve as an alternative for those who prefer to help themselves and an adjunct for individuals using other forms of treatment, waiting to enter therapy or when exiting a face-to-face treatment program. Internet treatment programs can incorporate many elements of successful CBT in a dynamic and interactive format that can be tailored to individual users to increase relevance and effectiveness. Such programs appear to be cost-effective for treatment providers and users and can be empirically evaluated and updated in an ongoing fashion based on user feedback and analysis.

A significant challenge for this field is that research to date is limited by use of non-representative samples and non-randomised controlled designs. If implemented, online interventions should be based on a strong empirical foundation and include an ongoing program of evaluation to ensure the treatment is effective and meets the needs of the target population. Future research should also assess factors that affect treatment effectiveness of online self-help interventions for gambling problems and determine which clients would benefit most from this form of treatment. Therefore, more research is required to provide further support for the effectiveness of treatment programs, identify which elements of online interventions are most effective, how to improve features and tools offered and tailor programs to suit the needs of potential clients. Guidelines for standardized Internet-based treatment evaluations have been defined by a group of leading Internet treatment researchers (Proudfoot et al., 2011). These provide a framework of facets, elements and guidelines of best practice in assessing and reporting effectiveness of Internet interventions to allow results across studies to be replicated, extended, compared and contrasted with greater ease and clarity.

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