Internet Gambling: Issues, Concerns, and Recommendations

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ABSTRACT

The influence of technology in the field of gambling innovation continues to grow at a rapid pace. After a brief overview of gambling technologies and deregulation issues, this review examines the impact of technology on gambling by highlighting salient factors in the rise of Internet gambling (i.e., accessibility, affordability, anonymity, convenience, escape immersion/dissociation, disinhibition, event frequency, asociability, interactivity, and simulation). The paper also examines other factors in relation to Internet gambling including the relationship between Internet addiction and Internet gambling addiction. The paper ends by overviewing some of the social issues surrounding Internet gambling (i.e., protection of the vulnerable, Internet gambling in the workplace, electronic cash, and unscrupulous operators). Recommendations for Internet gambling operators are also provided.

INTRODUCTION

THE INFLUENCE OF TECHNOLOGY in the field of gambling innovation continues to grow at a rapid pace. The impact of gambling technology has been widespread, and there are many observed trends around the world that appear to have resulted from technological innovation, for example, gambling coming out of gambling environments, gambling becoming a more asocial activity, widespread deregulation, and increased opportunities to gamble. Furthermore, there are many other factors that form the backdrop to examining the increasing use of technology:

- Governments appear to be fixated on raising revenue.
- Governments and gaming appear to be using every marketing tool to increase revenue.
- Global gambling has grown substantially in the last 10 years, which is particularly noteworthy in the area of Internet gambling.
- There appears to be a global expansion strategy.
- Technology is providing "convenience" gambling.

Griffiths[1] has argued that technology has always played a role in the development of gambling practices. Technology will continue to provide new market opportunities not only in the shape of Internet gambling but also in the shape of more technologically advanced slot machines, video lottery terminals (VLTs), interactive television (i-TV) gambling, and telephone wagering. Furthermore, other established gambling forms are becoming more technologically driven (e.g., bingo, keno).

In many countries, there appears to be a slow shift from gambling being taken out of gambling environments and into the home and the workplace (and in the case of Internet gambling, it has gone

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from being very site specific to being in cyberspace). This trend has been noted by a number of authors.[2–4] Historically, what we have witnessed is a shift from destination resorts (such as Las Vegas and Atlantic City) to individual gaming establishments in most major cities (e.g., betting shops, casinos, amusement arcades, bingo halls). More recently there has been a large increase in single site gambling opportunities (e.g., slot machines in non-gaming venues, lottery tickets sold in mainstream retail outlets), to gambling from home or work (e.g., Internet gambling, i-TV gambling). However, gambling can now be done in a wide variety of retail outlets. It is also clear that the "newer" forms of gambling, such as Internet and i-TV gambling, are activities that are done almost exclusively from non-gambling environments. One major worry about this is that, in general, regulation of gambling all but disappears when gambling is done in non-gambling environments.

TECHNOLOGY AND DEREGULATION

Deregulation is now firmly entrenched within the policy of many governments worldwide. The present situation of stimulating gambling appears to be mirroring the previous initiations of other socially condoned but potentially addictive behaviors like drinking (alcohol) and smoking (nicotine). According to Littler,[5] deregulation of the gambling industry has occurred for a number of reasons. These include the following:

- Highly successful introduction of national and state lotteries that have not only provided strong competition for the "leisure dollar" but have directly challenged the theoretical basis on which other gambling is regulated
- Governments commitment to deregulation in as many areas as possible, resulting in laws being passed that allow the least controversial changes to be introduced more easily
- Worldwide explosion in gambling (particularly casino gaming), which has left many operators feeling they are being left behind in the competition for international players
- Government's desire for more revenue from non-essential forms of expenditure, of which gambling is an obvious candidate.

To some extent, technological innovation is helping make deregulation easier to achieve. Technology has brought gambling into the home and the workplace, and has opened up a legislative minefield.

SITUATIONAL AND STRUCTURAL CHARACTERISTICS OF GAMBLING: TECHNOLOGICAL IMPLICATIONS

In getting people to gamble (and to keep on gambling), the industry uses every marketing method it has at their disposal. These methods mainly fall into two types—situational and structural characteristics.[6,7]

Situational characteristics are those features that facilitate people to gamble in the first place. These are primarily features of the environment and can be considered the situational determinants of gambling. They include such things as the location of the gambling outlet, the number of gambling outlets in a specified area, and the use of advertising in stimulating people to gamble. These variables may be very important in the initial decision to gamble.[8] Structural characteristics are those features that are responsible for reinforcement, may satisfy gamblers' needs, and may actually facilitate excessive gambling. They include such things as the event frequency of the activity, the payout interval, and light, color, and sound effects.[6]

Technological advance can (and will) have a potentially large impact on the development and maintenance of gambling behavior. By identifying particular situational and structural characteristics, it may be possible to see how needs are identified, to see how information about gambling is presented (or perhaps misrepresented), and to see how thoughts about gambling are influenced and distorted. Showing the existence of such relationships has great practical importance. Not only could potentially "dangerous" forms of gambling be identified, but effective and selective legislation could be formulated.

It is useful to examine these characteristics and dimensions among all types of gambling activity so that they can be described, compared, and contrasted using the same parameters. This may help in pinpointing where technology has a role (either directly or indirectly) in gambling acquisition, development, and maintenance. For instance, from a technological standpoint, activities such as Internet gambling are changing the nature of situational determinants to gamble and could have a large impact in uptake of gambling services (i.e., technology's role in the situational determinants of gambling will have most impact on acquisition of behavior).

One of the major concerns relating to the increase in gambling opportunities is the potential rise in the number of problem gamblers (i.e., "gambling addicts"). Addictions always result from an interaction and interplay between many factors, includ-

ing the person's biological and/or genetic predisposition, their psychological constitution, their social environment, and the nature of the activity itself. However, in the case of gambling, it could be argued that technology and technological advance can itself be an important contributory factor, as we shall see below in examining the salient factors in Internet gambling.

THE IMPACT OF TECHNOLOGY ON GAMBLING: SALIENT FACTORS

To what extent does technology facilitate excessiveness? There are a number of factors that make online activities like Internet gambling potentially seductive and/or addictive. Such factors include anonymity, convenience, escape, dissociation/immersion, accessibility, event frequency, interactivity, disinhibition, simulation, and asociability. In general, structural characteristics of gambling appear to be enhanced through technological innovation.

Some researchers have made attempts to explain the Internet's seductiveness. Cooper[9] proposed the Triple A Engine (Access, Affordability, and Anonymity), which he claimed would help to understand the power and attraction of the Internet for sexual pursuits. Young[10] also claimed to have developed a variant of the Triple A Engine, which she called the ACE model (Anonymity, Convenience, Escape). Neither of these are strictly models as neither explains the process of how online use develops. They do, however, provide, in acronym form, the main variables that account for acquisition and maintenance of some online behaviors. The variables that can lead to such activities as virtual adultery outlined by Young and Cooper (i.e., anonymity, access, convenience, affordability, and escape) do appear to provide the explanatory building blocks for the development of other online behaviors such as Internet gambling. These are briefly looked at in turn, as well as other reasons such as interactivity and simulation. It would also appear that virtual environments have the potential to provide short-term comfort, excitement, and/or distraction.

Accessibility

Access to the Internet is now commonplace and widespread, and can be done easily from the home and/or the workplace. Given that prevalence of behaviors is strongly correlated with increased access to the activity, it is not surprising that the development of regular online use is increasing across the population. Increased accessibility may also lead to increased problems. Research into other socially acceptable but potentially addictive behaviors (drinking alcohol, gambling etc.) has demonstrated that increased accessibility leads to increased uptake (i.e., regular use) and that this usually leads to an increase in problems—although the increase may not be proportional.[1] Since technology has played (and will continue to play) a critical role in the development of increased gambling opportunities (e.g., Internet gambling), this will lead to increased accessibility. What has been clearly demonstrated from research evidence in other countries is that where accessibility of gambling is increased there is an increase not only in the number of regular gamblers but also an increase in the number of problem gamblers.[11–16] This obviously means that not everyone is susceptible to developing gambling addictions, but it does mean that, at a societal (rather than individual) level, the more gambling opportunities, the more problems.

Affordability

Given the wide accessibility of the Internet, it is now becoming cheaper and cheaper to use online services. Although very excessive use will still lead to large monthly bills for those who pay by the minute, for most people the cost compares to either a telephone call and/or postage, which is cheap to moderate.

Anonymity

The anonymity of the Internet allows users to privately engage in gambling without the fear of stigma. This anonymity may also provide the user with a greater sense of perceived control over the content, tone, and nature of the online experience.[17] Anonymity may also increase feelings of comfort since there is a decreased ability to look for, and thus detect, signs of insincerity, disapproval, or judgment in facial expression, as would be typical in face-to-face interactions. For activities such as gambling, this may be a positive benefit, particularly when losing, as no one will actually see the face of the loser.

Convenience

Interactive online applications such as e-mail, chat rooms, newsgroups, or role-playing games provide convenient mediums to engage in online behaviors. Online behaviors will usually occur in the familiar and comfortable environment of home or workplace, thus reducing the feeling of risk and allowing

even more adventurous behaviors which may or may not be potentially addictive. For the gambler, not having to move from their home or their workplace may be of great positive benefit.

Escape

For some, the primary reinforcement to engage in Internet gambling is the gratification they experience online. However, the experience of Internet gambling itself, may be reinforced through a subjectively and/or objectively experienced "high." The pursuit of mood-modifying experiences is characteristic of addictions. The mood-modifying experience has the potential to provide an emotional or mental escape and further serves to reinforce the behavior. Excessive involvement in this escapist activity may lead to addiction. Online behavior can provide a potent escape from the stresses and strains of real life. These activities fall on what Cooper et al.[18] describe as a continuum, from life enhancing to pathological and addictive.

Immersion/dissociation

The medium of the Internet can provide feelings of dissociation and immersion and may facilitate feelings of escape. Dissociation and immersion can involve lots of different types of feelings. This can include losing track of time, feeling like your someone else, blacking out, not recalling how you got somewhere or what you did, and being in a trance like state. In extreme forms it may include multipersonality disorders. All of these feelings when gambling on the Internet may lead to longer play either because "time flies when you are having fun" or because the psychological feelings of being in an immersive or dissociative state are reinforced.

Disinhibition

This is clearly one of the Internet's key appeals as there is little doubt that the Internet makes people less inhibited.[19] Online users appear to open up more quickly online and reveal themselves emotionally much faster than in the offline world. For the gambler, being in a disinhibited environment may lead to more money being gambled.

Event frequency

The event frequency of any gambling activity (i.e., the number of opportunities to gamble in a given time period) is a structural characteristic designed and implemented by the gaming operator. The length of time between each gambling event may indeed be critical as to whether some people might develop problems with a particular type of gambling. Obviously gambling activities that offer outcomes every few seconds or minutes (e.g., slot machines) will probably cause greater problems than activities with outcomes less often (e.g., weekly lotteries). The frequency of playing when linked with the two other factors—the result of the gamble (win or loss) and the actual time until winnings are received—exploit certain psychological principles of learning.[20] This process (operant conditioning) conditions habits by rewarding behavior, that is, through presentation of a reward (e.g., money), reinforcement occurs. Rapid event frequency also means that the loss period is brief with little time given over to financial considerations and, more importantly, winnings can be regambled almost immediately. Internet gambling has the potential to offer visually exciting effects similar to slot machines and VLTs (two of the most problematic forms of gambling). Furthermore, the event frequency can be very rapid, particularly if the gambler is subscribed or visits several sites.

Interactivity

The interactivity component of the Internet may also be psychologically rewarding and different from other more passive forms of entertainment (e.g., television). It has been shown that the increased personal involvement in a gambling activity can increase the illusion of control, which in turn may facilitate increased gambling.[21] The interactive nature of the Internet may therefore provide a convenient way of increasing such personal involvement.

Simulation

Simulations provide an ideal way in which to learn about something which tends not to have any of the possible negative consequences. However, Internet gambling simulations may have unthought of effects. Many online gambling sites have a practice mode format, where a potential customer can place a pretend bet in order to see and practice the procedure of gambling on that site. Although this activity cannot be regarded as actual gambling as there is no "real" money involved, it can be accessed by minors and possibly attract an underage player into gambling.

Asociability

One of the consequences of technology and the Internet has been to reduce the fundamentally so-

cial nature of gambling to an activity that is essentially asocial. Both Fisher[22] and Griffiths[23] have carried out observational analyses of slot machine players (particularly adolescents) and have reached similar conclusions. Those who experience problems are more likely to be those playing on their own (e.g., those playing to escape).[24] Retrospectively, most problem gamblers report that at the height of their problem gambling, it is a solitary activity.[7] Gambling in a social setting could potentially provide some kind of "safety net" for overspenders, that is, a form of gambling where the primary orientation of gambling is for social reasons with the possibility of some fun and chance to win some money (e.g., bingo). However, it could be speculated that those individuals whose prime motivation was to constantly play just to win money would possibly experience more problems. One of the major influences of technology appears to be the shift from social to asocial forms of gambling. From this, it could be speculated that as gambling becomes more technological, gambling problems will increase due to its asocial nature.

OTHER FACTORS RELATING TO INTERNET GAMBLING

Another factor that relates to Internet gambling is the changing nature of family entertainment. This could impact adolescents. The increase in and development of home entertainment systems is changing the pattern of many families' leisure activities.[25] The need to seek entertainment leisure outside the home is greatly reduced as digital television and home cinema systems offer a multitude of interactive entertainment services and information. The result of this is that many families adopt a leisure pattern known as "cocooning" where the family or individual concentrates their leisure time around in-house entertainment systems.[25] Rather than going out, the entertainment comes to them direct via digital television and Internet services. In the not-to-distant future, part of this entertainment for many families may be Internet gambling.

A logical question to ask is whether Internet gambling will take off? Although there are some still some technical and regulatory problems, over time, the Internet will become technologically more sophisticated allowing faster speeds and better graphics, and issues surrounding security and marketing will be tightened up. It would appear that Internet gambling will take off for several reasons. For instance, it is easy to access and participate in an activity that comes into the home via television. Fur-

thermore, there are many other developments that look likely to facilitate uptake of Internet gambling services, including the following:

- Sophisticated gaming software
- Integrated e-cash systems (including multi-currency)
- Multi-lingual sites
- Increased realism (e.g., "real" gambling via web-cams, player and dealer avatars)
- Live remote wagering (for both gambling alone and gambling with others)
- Improving customer care systems

All of these new developments suggest that Internet gambling will be more than a viable business.

INTERNET ADDICTION AND INTERNET GAMBLING ADDICTION

It has been alleged that social pathologies are beginning to surface in cyberspace, that is, "technological addictions".[26–29] Technological addictions can be viewed as a subset of behavioral addictions[30] and feature all the core components of addiction (e.g., salience, euphoria, tolerance, withdrawal, conflict, and relapse.[7,26,27,29,31]). Young[32] claims Internet addiction is a broad term that covers a wide variety of behaviors and impulse control problems, and categorized by five specific subtypes. These are as follows:

- *Cybersexual addiction:* compulsive use of adult websites for cybersex and cyberporn
- *Cyber-relationship addiction:* over-involvement in online relationships
- *Net compulsions:* obsessive online gambling, shopping, or day-trading
- *Information overload:* compulsive web surfing or database searches
- *Computer addiction:* obsessive computer game playing (e.g., *Doom, Myst, Solitaire*)

Griffiths[33,34] has argued that many of these excessive users are not "Internet addicts" but just use the Internet excessively as a medium to fuel other addictions. Put very simply, a gambling addict who engages in their chosen behavior online is not addicted to the Internet. The Internet is just the place where they engage in the behavior. However, in contrast to this, there are case study reports of individuals who appear to be addicted to the Internet itself.[35,36] These are usually people who use Internet chat rooms or play fantasy role-playing games—

activities that they would not engage in except on the Internet itself. These individuals, to some extent, are engaged in text-based virtual realities and take on other social personas and social identities as a way of making themselves feel good about themselves. In these cases, the Internet may provide an alternative reality to the user and allow them feelings of immersion and anonymity that may lead to an altered state of consciousness. This in itself may be highly psychologically and/or physiologically rewarding.

To a gambling addict, the Internet could potentially be a very dangerous medium. For instance, it has been speculated[27] that structural characteristics of the software itself might promote addictive tendencies. Structural characteristics promote interactivity and to some extent define alternative realities to the user and allow them feelings of anonymity—features that may be very psychologically rewarding to such individuals. There is no doubt that Internet usage among the general population will continue to increase over the next few years and that if social pathologies exist, then there is a need for further research. This area has particular relevance to the area of gambling in the shape of Internet gambling. This will be examined more closely in the closing sections.

Despite evidence that both gambling and the Internet can be potentially addictive, there is no evidence (to date) that Internet gambling is "doubly addictive," particularly as the Internet appears to be just a medium to engage in the behavior of choice. What the Internet may do is facilitate social gamblers who use the Internet (rather than Internet users per se) to gamble more excessively than they would have done offline.

INTERNET GAMBLING: SOCIAL ISSUES

The uptake of gambling depends on many factors. Internet gambling is provided by a network of networks that span geographical borders and are not discrete. Internet gambling is therefore global and accessible, and has 24-hour availability. Theoretically, people can gamble all day every day of the year. The rise of Internet gambling will provide both marketing opportunities and marketing threats. Many may start to set up their own Internet gambling sites because the initial set-up costs will be minimal in comparison to a casino. This will have implications for the social impact of Internet gambling. These implications have been highlighted by Griffiths and Parke[37] and are summarized below.

Protection of the vulnerable

There are many groups of vulnerable individuals (e.g., adolescents, problem gamblers, drug/alcohol abusers, the learning impaired) who in offline gambling would be prevented from gambling by responsible members of the gaming industry. Internet gambling sites provide little in the way of "gate-keeping." In cyberspace, how can you be sure that adolescents do not have access to Internet gambling by using a parent's credit card? How can you be sure that a person does not have access to Internet gambling while they are under the influence of alcohol? How can you prevent a problem gambler who may have been barred from one Internet gambling site, simply clicking to the next Internet gambling link? These are all serious concerns that both regulatory authorities and Internet gambling service providers will have to take on board.

Internet gambling in the workplace

Internet gambling is one of the newer opportunities for gambling in the workplace. An increasing number of organizations have unlimited Internet access for all employees and many employees have their own computer terminal in their own office which allows such activity to take place without arousing suspicion. Internet gambling is a somewhat solitary activity that can happen without the knowledge of both management and the employee's co-workers. This has potentially large implications for work efficiency and productivity.

Electronic cash

For most gamblers, it is very likely that the psychological value of electronic cash (e-cash) will be less than "real" cash (and similar to the use of chips or tokens in other gambling situations). Gambling with e-cash may lead to what psychologists call a "suspension of judgment." The suspension of judgment refers to a structural characteristic that temporarily disrupts the gambler's financial value system and potentially stimulates further gambling. This is well known by both those in commerce (people typically spend more on credit and debit cards because it is easier to spend money using plastic) and the gaming industry. This is the reason that "chips" are used in casinos and why tokens are used on some slot machines. In essence, chips and tokens "disguise" the money's true value (i.e., decrease the psychological value of the money to be gambled). Tokens and chips are often re-gambled

without hesitation as the psychological value is much less than the real value. Evidence would seem to suggest that people will gamble more using e-cash than they would with real cash.[1,37]

Unscrupulous operators

Many concerns about the rise of Internet gambling involve unscrupulous practices of operations of some Internet gambling sites. A major issue concerns the "trustworthiness" of the site itself. For instance, how can an Internet gambler be sure they will receive any winnings from an unlicensed Internet casino operating out of Antigua or the Dominican Republic? There are also other unscrupulous operating practices that Internet gambling providers can implement.[37]

Embedding. One seemingly common practice is the hidden "embedding" of certain words on an Internet gambling site's webpage through the use of "meta-tags." A meta-tag is a command hidden in the Web page to help search engines categorize sites (i.e., telling the search engine how they want the site indexed). One common way to get extra traffic flowing through a webpage is to embed common words that people might be searching for on the Internet (e.g., "Disney"). Some Internet gambling sites appear to have used the word "compulsive gambling" embedded in their webpage. In essence, what such unscrupulous sites are saying is "index my casino site in with the other compulsive gambling sites" so people will "hit" this site when they are looking for other information related to compulsive gambling. Someone looking for help with a gambling problem will get these sites popping up in front of them.

Circle jerks. Another potentially unscrupulous tactic used by both Internet sex and gambling sites is telescoping windows, often referred to as "circle jerks." If a person accesses a particular type of site (usually gambling or sex-related) and tries to get out of it, another box offering a similar type of service will usually "pop up." Many people find that they cannot get out of the never-ending loop of sites except by shutting down their computer. Obviously, those sites that use "circle jerks" hope that a person will be tempted to access a service they are offering while their site is on the screen.

Online customer tracking. Perhaps the most worrying concerns over Internet gambling is the way sites can collect other sorts of data about the gambler. Customer data is the lifeblood of any company. Internet gamblers can provide tracking data that can be used to compile customer profiles. Such data can tell commercial enterprises (such as those in the gambling industry) exactly how customers are spending their time in any given financial transaction (i.e., which games they are gambling on, for how long, and how much money they are spending). This information can help in the retention of customers, and can also link up with existing customer databases and operating loyalty schemes. Companies who have one central repository for all their customer data have an advantage. It can also be accessed by different parts of the business. Many consumers are unknowingly passing on information about themselves which raises serious questions about the gradual erosion of privacy. Customers are being profiled according to how they transact with service providers. Linked loyalty schemes can then track the account from the opening established date.

The technology to sift and access vast amounts of customer information already exists. Using very sophisticated software, gaming companies can tailor its service to the customer's known interests. When it comes to gambling, there is a very fine line between providing what the customer wants and exploitation. The gaming industry sells products in much the same way that any other business sells things. They are now in the business of brand marketing, direct marketing (via mail with personalized and customized offers) and introducing loyalty schemes (which create the illusion of awareness, recognition and loyalty).

On joining loyalty schemes, players supply lots of information including name, address, telephone number, date of birth, and gender. Those who operate Internet gambling sites will be no different. They will know a gambler's favorite game and the amounts they have wagered. Basically they can track the playing patterns of any gambler. They will know more about the gambler's playing behavior than the gamblers themselves. They will be able to send the gambler offers and redemption vouchers, complimentary accounts, etc. Supposedly all of these things are introduced to enhance customer experience. Benefits and rewards to the customer include cash, food and beverages, entertainment and general retail. However, more unscrupulous operators will be able to entice known or suspected problem gamblers back onto their premises with tailored freebies. The introduction of Internet gambling has come at a price, and that price is an invasion of the gambler's privacy.

INTERNET GAMBLING IN A MULTI-MEDIA WORLD

The rise and challenges of Internet gambling cannot be seen in isolation, particularly as there is ever-increasing multi-media integration between the Internet, wireless application protocol (WAP) cell phones, personal digital assistants (PDA), and interactive television (i-TV). It may be that people are more likely to spend money in particular media. For instance, the Internet can be described as a "lean forward" medium. This means that the user (who is usually alone) takes an active role in determining what they do. Computers are better at displaying text than television and have a wider range of fine-tuning controls through the mouse and keyboards. This makes them more suitable for complex tasks such as obtaining insurance quotations or travel itineraries. In contrast, the television is a "lean back" medium, where the viewer (often as part of a group) is more passive and seeks less control over what is going on. The television is better than the computer at displaying moving images. This may have implications for the types of gambling done in particular media.

Furthermore, i-TV may also help in one other important area—*trust*. People appear to trust their television even though it is accessing the Internet in the same way as a computer. However, as argued above, i-TV is a "lean back" service. If a person is relaxed sitting back on their sofa, it will make television the key to creating a true mass market for online commercial activity (including gambling). In addition, some i-TV services can be linked to actual television programmes (such as betting on horse races). Browsing and buying by i-TV is still in its infancy but look set to expand significantly in the future.

The emerging youth market is also a consideration. There is a whole Internet generation coming through who may be the most positive about purchasing online services. They may be happier to enter credit card details online and/or meet others online. This has the potential to lead to some big changes as the profiles of these people will be radically different from previous users.

The other significant media channel will be the mobile (cell) phone.[38] Although it is the most widely used channel, it is also the most limited in functionality. WAP promised a simplified view of the Internet but has so far proved disappointing. Success in this channel is more likely to come in the form of a hybrid service (e.g., WAP with PC Internet access) that could deliver personally and geographically targeted information to people on the move. Consumers will be able to enter their details and per-

sonal preferences via a PC website, but subsequent information would be delivered via WAP phones. Applications could range from bank statements to personalized travel timetables, but could also include gambling.

So what types of gambling will work best on mobile phones? Internet gambling lends itself most naturally to "casino-style" games like slot machines, blackjack, roulette, and poker. These games require more in the form of graphics, sounds and interactivity. They are not really suitable for mobile devices, which (currently) cannot really support these as well. Basically, mobile phone graphics and technology cannot compete with Internet web browsers. Mobile phone gambling is best suited for race and event betting. With mobile phone betting, all that is required is real-time access to data about the event to be bet on (e.g., a horse race, football match), and the ability to make a bet in a timely fashion. Such facilities are easily provided by the web-enabled third generation (3G) mobile phones, and the appropriate software. At the present time, WAP phones' biggest influence will be on sports betting. The placing of the bet is not the driving motivation in event wagering. Since being the spectator is what sports fans are really interested in, the sports gambler does not need fulfillment from the process of gambling. People betting on sports will use mobile phones because they are easy, convenient and take no time to boot up. Once they have their sports book registered as a bookmark on their phone, they can access it and place a bet within minutes.[38]

However, things could well change over time. Some people have compared WAP mobile protocol as the BASIC programming language of wireless Internet. It is predicted that with fourth generation (4G) mobile phones, customers will be able to play typical "casino style" games like blackjack, poker and slots. Within the next few years, the limitational aspects of the technological and protocol demands of mobile gambling—graphics, sound and displays on mobile and PDA devices—will be largely resolved, with the advent of 3G and 4G mobile devices.[39]

Advances will allow users to watch sporting events live on their phones while wagering in real time. Consider the following scenario. A betting service that knows where you are and/or what you are doing has the capacity to suggest something context-related to the mobile user to bet on. For instance, if the mobile phone user bought a ticket for a soccer match using an electronic service, this service may share this information with a betting company. If in that match the referee gives a penalty for one team, a person's mobile could ring and give the user an opportunity (on screen) to bet whether or

not the penalty will be scored. On this type of service, the mobile phone user will only have to decide if they want to bet, and if they do, the amount of money. Two clicks and the bet will be placed. Context, timeliness, simplicity, and above all user involvement look like enough to also convince people that never entered a bet-shop.

So who will be inclined to pay to play? The penetration of wireless gambling will mostly be contingent upon the market penetration of wireless web users in general. The mobile phone market is already large in many parts of the world. According to *International Data Corporation*, there are 100 million mobile phone users in Asia and 60 million in Europe.[39] The United States is behind but catching up fast. By 2004, *International Data Corp.* predicts there will be close to 1.3 billion web-enabled cellular phones globally. *Motorola* predicts that by that same year, more consumers will be accessing the Internet from a wireless device, than a wired one.[39] If these numbers are combined with the popularity of gambling, it could be speculated that there is the basis for a very profitable enterprise.

The expected market share of the mobile gambling industry remains to be seen. At present, casinos that operate out of the Caribbean constitute 75% of the Internet gambling market.[39] The estimated revenues of that market are currently $2.6 billion, with Americans making up 65% of the Internet gaming market (*Merrill Lynch*, 2001, cited in Kriz[39]). If the focus shifts from Internet to mobile phone gambling, the American share of the market will drop as the uptake of mobile phones has been slower there than on other continents.

Mobile phone gambling is being pioneered in some places already. For instance, the Hong Kong Jockey Club has combined forces with a number of local mobile phone companies to create an SMS-based "Telebet" account. Telebet accounts have a facility for placing instant bets. Furthermore, the technology allows money transfer between the customer's bank account and their Telebet accounts. To facilitate and maintain interest, mobile phone gamblers are given wireless broadcasts of racing reports, racing commentaries, betting odds and the latest racing and lottery results. In the first 5 months, the Jockey Club signed up 22,000 users—a number it took 8 years to reach with their previous remote-betting device attempts.[40]

CONCLUSION

As was asserted at the beginning of the paper, technology has always played a role in the development of gambling practices and will continue to do so. Analysis of the technological components of situational and structural characteristics in gambling activities indicate that situational characteristics impact most on acquisition and that structural characteristics impact most on development and maintenance. Furthermore, the most important of these factors appear to be accessibility of the activity and event frequency. It is when these two characteristics combine that the greatest problems could occur. This is well demonstrated by the worldwide proliferation of slot machines (and the associated problems that go with them). It may also give us insight into what might happen concerning the spread of Internet gambling.

It can be argued that games that offer a fast, arousing span of play, frequent wins, and the opportunity for rapid replay are associated with problem gambling.[1] This observation has been made in relation to slot machines by researchers all over the world (e.g., Australia, United States, United Kingdom, Canada, Spain, Holland, Germany). There is no doubt that frequency of opportunities to gamble (i.e., event frequency) is a major contributory factor in the development of gambling problems.[41,42] As argued above, slot machines have an event frequency of every few seconds, whereas many lotteries have an event frequency of once a week. The general rule is that the faster the event frequency, the more likely it is that the activity will cause gambling problems. Addictions are essentially about rewards and the speed of rewards. Therefore, the more potential rewards there are, the more addictive an activity is likely to be.

The most important point to make about event frequency concerns the definition of "rapid replay." In general, the lower the event frequency, the less problems there tends to be—at least based on the empirical evidence (although there are exceptions to the rule). There is little doubt that technological advance could have a large impact on "rapid replay." Given the time, money, and resources, a vast majority of gambling activities are "continuous" in that people have the potential to gamble again and again.

There is no precise frequency level of a gambling game at which people become addicted since addiction will be an integrated mix of factors in which frequency is just one factor in the overall equation. Griffiths[1] has outlined other factors and dimensions (external to the person themselves). These include the following:

- Stake size (including issues around affordability, perceived value for money)

- Event frequency (i.e., time gap between each gamble)
- Amount of money lost in a given time period (important in chasing)
- Prize structures (i.e., number and value of prizes)
- Probability of winning (e.g., 1 in 14 million on the lottery)
- Size of jackpot (e.g., over £1 million on the lottery)
- Skill and pseudo-skill elements (actual or perceived)
- "Near miss" opportunities (i.e., number of near winning situations)
- Light and color effects (e.g., use of red lights on slot machines)
- Sound effects (e.g., use of buzzers or musical tunes to indicate winning)
- Social or asocial nature of the game (individual and/or group activity)
- Accessibility (e.g., opening times, membership rules)
- Accessibility (e.g., number of outlets)
- Location of gambling establishment (e.g., out of town, next to workplace)
- Type of gambling establishment (e.g., betting shop, amusement arcade)
- Advertising (e.g., television commercials)
- The rules of the game (i.e., ease of understanding)

Each of these differences may (and almost certainly does) have implications for the gambler's motivations and, as a consequence, for the social impact of gambling. It is also the case that technological advances could influence almost every one of these characteristics. For instance, on the issue of gambling alone or with others, technology could have a negative impact.

Further examination of structural characteristics in the list above demonstrates that, for many of the categorizations (e.g., the near miss, light and color effects, sound effects, skill levels), it is difficult to separate the gambler's individual psychology from the situation. For instance, the success of a slot machine's structural characteristics (where success is defined as an increase in gambling due to the structural characteristic) depends upon the psycho-structural interaction. The importance of a structural characteristic approach to gambling is the possibility to pinpoint more accurately where an individual's psychological constitution is influencing gambling behavior. Such an approach also allows for psychologically context-specific explanations of gambling behavior rather than global explanations such as "addictive personality." Although many of the gambling-inducing structural characteristics are dependent on individual psychological factors (e.g., reinforce-

ment), they are a direct result of the structural characteristics and could not have influenced gambling behavior independently. It is for this reason above all others that a structural approach could be potentially useful.

Much of this paper has discussed the potential downside of technological innovation. However, technology also needs to be used in the prevention, intervention, and treatment of problem gambling. For instance, technology could be used for health promotion using both the Web and video games/CD-ROMs. Internet gambling sites could feature links to relevant gambling awareness sites. For those sites which analyze their online tracking data, it may be the case that such data could be used to identify problem gamblers and help them rather than exploit them. Help in the form of online therapy may be an option for some problem gamblers.[43,44]

Finally, Internet gambling service providers must be socially responsible on the Web and should adhere to the following guidelines (adapted from Smeaton and Griffiths[45]):

- *Implement age checks*—There needs to be a system built into debit and credit card transactions that proves an effective check on age.
- *Implement age verification checks*—Any customer wishing to register should have their age verified before their application is accepted. This procedure should be clearly displayed in the registration page, thus ensuring that no one under age is able to access the member's pages on the site, and have the opportunity to set up an account.
- *Restrict methods of payments*—If age verification checks cannot be carried out on new customers, then methods of payment should be restricted to credit cards only. All other forms of payment such as debit cards, personal and bankers' cheques, wire transfers, and postal orders are available to individuals under the age of 18, and therefore could lead to underage online gambling.
- *Set credit limits*—In addition to credit worthiness checks on account holders, limits should be placed on how much they can commit. This can either be a financial limit per session or per day.
- *Include options for self-exclusion*—Customers should have the opportunity to self-exclude themselves from an Internet gambling site. A system that enables them to do this should be in place, and clearly explained. Any self-exclusion scheme should be easy to carry out, and run for at least 6 months.
- *Include references to controlled gambling*—There should be references to the need to keep gambling under control (i.e., a risks of the game message)

that is a cautionary note rather than a health warning, and these should be sited where they will be read.

- *Include references to helping agencies/helplines*— The homepage should carry the logo of the preferred social responsibility partner. This notice should be accompanied with a link to the website of the preferred social responsibility partner.
- *Provide help information*—A notice as to where a gambler who is concerned with their own, or someone else's gambling can get help should appear at least twice. Once prominently mentioned in the text of the site, and alongside the menu box on the page where an online customer transfers money into their gambling account.
- *Accreditation by external organization*—Before launching a new product or developing an existing one the company should consult, commercially in confidence, with the lead body involved with the social impact of gambling.
- *Confirmation of bets/right to change mind*—When a bet is placed there should be a confirmation message of the details of the bet just placed, with the option to either confirm or decline the bet, giving the customer the chance to change their mind.
- *Built-in pauses*—All gambling opportunities, but especially the rapid and interactive games should have a pause built in at predetermined intervals allowing the gambler to reflect on their desire to continue or withdraw. This is particularly important for those who may find it more difficult to stick to self-imposed limits.
- *No encouragement to re-gamble*—Whilst it is good commercial practice to promote products and provide the customer with information, there should be no encouragement to either re-invest winnings or chase losses. Gamblers should not be enticed to play on, the decision must be their own.
- *Restrict "practice modes"*—Any free practice mode that is offered to the customer must have an appropriate message regarding responsible gambling. Access to practice modes should be prevented for those under the legal age to gamble. Giving access to such simulators could encourage someone underage to seek opportunities to gamble for real money.

REFERENCES

1. Griffiths, M.D. (1999). Gambling technologies: prospects for problem gambling. *Journal of Gambling Studies* 15:265–283.
2. Eadington, W. (1998). The spread of gaming devices outside of casinos: benefit-cost considerations and political backlash. Presented at the Third European Association for the Study of Gambling Conference, Munich.
3. Griffiths, M.D. (1998). Gambling in the 1990s: issues of concern. Presented at the GamCare National Conference, London.
4. McMillen, J. (1998). Interactive gambling and society: trends and issues. Presented at the Third European Association for the Study of Gambling Conference, Munich.
5. Littler, S. (1996). Regulation and the political perception of gambling. *UK Forum on Young People and Gambling Newsletter* 19:4–5.
6. Griffiths, M.D. (1993). Fruit machine gambling: the importance of structural characteristics. *Journal of Gambling Studies* 9:133–152.
7. Griffiths, M.D. (1995). *Adolescent gambling.* London: Routledge.
8. Cornish, D.B. (1978). *Gambling: a review of the literature and its implications for policy and research.* London: HMSO.
9. Cooper, A. (1998). Sexuality and the Internet: surfing into the new millennium. *CyberPsychology & Behavior* 1:181–187.
10. Young, K. (1999). Cyber-disorders: the mental illness concern for the millennium. Presented at the 108th Annual Meeting of the American Psychological Association, Boston.
11. Custer, R.L. (1982). An overview of compulsive gambling. In: Carone, P., Yoles, S., Keiffer, S., et al. (eds.), *Addictive disorders update.* New York: Human Sciences Press, pp. 107–124.
12. Dielman, T.E. (1979). Gambling: a social problem? *Journal of Social Issues* 35:36–42.
13. Kallick-Kaufmann, M. (1979). The micro and macro dimensions of gambling in the United States. *Journal of Social Issues* 35:7–26.
14. Marcum, J., & Rowen, H. (1974). How many games in town?—the pros and cons of legalized gambling. *Public Interest* 36:26–52.
15. Rosecrance, J. (1985). Compulsive gambling and the medicalization of deviance. *Social Problems* 32:275–284.
16. Skolnick, J. (1978). *House of cards.* Boston: Little, Brown.
17. Young, K., Griffin-Shelley, E., Cooper, A., et al. (2000). Online infidelity: a new dimension in couple relationships with implications for evaluation and treatment. In: Cooper, A. (ed.), *Cybersex: the dark side of the force.* Philadelphia: Brunner Routledge, pp. 59–74.
18. Cooper, A., Putnam, D.E., Planchon, L.A., et al. (1999). Online sexual compulsivity: getting tangled in the net. *Sexual Addiction & Compulsivity: The Journal of Treatment and Prevention* 6:79–104.
19. Joinson, A. (1998). Causes and implications of disinhibited behavior on the Internet. In: Gackenback, J. (ed.), *Psychology and the Internet: intrapersonal, interpersonal, and transpersonal implications.* New York: Academic Press, pp. 43–60.

20. Moran, E. (1987). *Gambling among schoolchildren: The impact of the fruit machine.* London: National Council on Gambling.

21. Langer, E.J. (1975). The illusion of control. *Journal of Personality and Social Psychology* 32:311–328.

22. Fisher, S. (1993). The pull of the fruit machine: a sociological typology of young players. *Sociological Review* 41:446–474.

23. Griffiths, M.D. (1991). The observational analysis of adolescent gambling in UK amusement arcades. *Journal of Community and Applied Social Psychology* 1:309–320.

24. Griffiths, M.D. (1990). The acquisition, development and maintenance of fruit machine gambling in adolescence. *Journal of Gambling Studies* 6:193–204.

25. Griffiths, M.D., & Wood, R.T.A. (2000). Risk factors in adolescence: the case of gambling, video-game playing and the internet. *Journal of Gambling Studies* 16:199–225.

26. Griffiths, M.D. (1995). Technological addictions. *Clinical Psychology Forum* 76:14–19.

27. Griffiths, M.D. (1995). Netties anonymous. *Times Higher Education Supplement* April 7:18.

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

29. Griffiths, M.D. (1996). Behavioral addictions: an issue for everybody. *Journal of Workplace Learning* 8:19–25.

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

31. Griffiths, M.D. (1998). Internet addiction: does it really exist? In: Gackenback, J. (ed.), *Psychology and the Internet: intrapersonal, interpersonal and transpersonal applications.* New York: Academic Press, pp. 61–75.

32. Young, K. (1999). Internet addiction: evaluation and treatment. *Student British Medical Journal* 7:351–352.

33. Griffiths, M.D. (1999). Internet addiction: Internet fuels other addictions. *Student British Medical Journal* 7:428–429.

34. Griffiths, M.D. (2000). Internet addiction—time to be taken seriously? *Addiction Research* 8:413–418.

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

36. Griffiths, M.D. (2000). Does internet and computer "addiction" exist? Some case study evidence. *CyberPsychology & Behavior* 3:211–218.

37. Griffiths, M.D., & Parke, J. (2002). The social impact of internet gambling. *Social Science Computer Review* 20:312–320.

38. Griffiths, M.D. (2002). The rise of mobile phone gambling. *Society for the Study of Gambling Newsletter* 35:2–6.

39. Kriz, H. (2001). Betting on wireless gambling: are we ready for mobile gambling to make money through mobile devices? *The Feature.Com* April 17.

40. Longino, C. (2001). The beautiful game. *The Feature.Com* Jan 22.

41. Griffiths, M.D. (1997). The National Lottery and Scratchcards. *The Psychologist: Bulletin of the British Psychological Society* 10:23–26.

42. Griffiths, M.D., & Wood, R.T.A. (2001). The psychology of lottery gambling. *International Gambling Studies* 1:27–44.

43. Griffiths, M.D. (2001). Online therapy: a cause for concern? *The Psychologist: Bulletin of the British Psychological Society* 14:244–248.

44. Griffiths, M.D., & Cooper, G. (2003). Online therapy: implications for problem gamblers and clinicians. *British Journal of Guidance and Counselling* 13:113–135.

45. Smeaton, M., & Griffiths, M.D. (2001). Social responsibility on the Internet. Unpublished manuscript.

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