



Conceptual Framework of Harmful Gambling:

AN INTERNATIONAL COLLABORATION,
THIRD EDITION

GAMBLING EXPOSURE FACTOR

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**GAMBLING RESEARCH
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DRIVING KNOWLEDGE INTO ACTION

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Gambling Exposure

1 GAMBLING EXPOSURE

Gambling exposure is defined as the extent to which populations or population sectors come into contact with gambling activities.¹ Exposure is strongly influenced by availability, that is, the type, number, distribution, and accessibility of gambling activities. Exposure and participation are closely intertwined. Without opportunities to gamble, people are unable to do so. Gambling participation is measured by involvement in specific gambling activities and includes assessments of frequency (how often), duration (for how long), and expenditure (how much money was spent). Participation can become problematic when the gambler and/or other people experience harm as a consequence of his or her participation.

Gambling types vary in their potency and ability to lead to harm. Some types of gambling (such as lotteries and raffles) are relatively benign. Other types (e.g., Electronic Gaming Machines (EGMs), casino table games, horse race betting, and sports betting) can more easily lead to harm, especially through regular, prolonged participation, because they are continuous in nature and involve an element of skill or perceived skill.²⁻⁵ (Here, the term EGMs is being used interchangeably with slot machines.)

There are also indications that problems develop more rapidly in association with some types of gambling (for example EGMs) than others,⁶ but that these problems may be more short-lived.⁷ Therefore,

it is important to think about exposure levels for different types of gambling and also engagement in multiple forms of gambling (see Binde, Romild, and Volberg⁸). It is also important to develop better ways to assess the risk potential and harm associated with different gambling types and closely analyze the settings within which they are provided.⁹

In this section, the following factors related to gambling exposure are discussed in greater detail: gambling setting, accessibility, adaptation, marketing and messaging, and the convergence of gaming and gambling. There is a large body of research on gambling participation and harmful gambling, their associations with the availability of particular gambling forms, and changes in participation and problems over time. These studies are predominantly from a single time point and do not establish the direction of relationships, or distinguish between a cause and its effect.

Further work is needed to develop more refined measures of gambling exposure and the contextual and environmental factors that influence gambling participation and problems. Until recently there has been a lack of high quality studies that assess participants over time (i.e., longitudinal studies). Such studies could assess the onset of at-risk and harmful gambling, and identify factors related to harmful gambling development, including recovery, remission, and relapse.

Studies of this type and natural experiments allow a better understanding of potential causes of harmful gambling. Recent meta-analyses and reviews have provided support for both the exposure and adaptation hypotheses (see below). However, research examining factors responsible for adaptation, including the possible impacts of policy and regulatory measures, is in its infancy. A number of longitudinal studies that began in the mid-2000s, and/or are currently underway, will improve evidence in this area (see Section 5 Longitudinal Cohort Studies).

The context of gambling is of great importance to gambling exposure and to social factors discussed in Section 3.2 Social Factors. Apart from jurisdictions, communities, and localities, there are additional, more local contexts within which gambling exposures can vary. These contexts include families and workplaces, as well as peer, cultural, and religious groups. Typically, most people report being introduced to gambling within their family of origin. Starting to gamble at an early age is a risk factor for harmful gambling. People who begin gambling in late adolescence or adulthood more often report being introduced to gambling by external socializing agents, including friends, advertising, colleagues, and partners/spouses.¹⁰ Those introduced to gambling in their late teens and early adulthood had a very low prevalence of harmful gambling, raising the possibility that initial participation in adulthood may lead to greater long-term risk of harmful gambling.

In the past, increases in gambling have most often been explained by availability of money, availability of gambling options (especially in the case of people with gambling problems), and advertising.¹¹ One study found that adults who reported gambling before they were 13 years old were more likely to have current gambling problems. The same was true of people who reported starting to gamble at age 25 or older.¹²

In a 2006 study, Turner et al. found that there was no linear relationship between age of gambling onset and problem behaviour.¹³ Most people without gambling problems began to gamble between the ages of 18 and 23, while people with gambling problems began to gamble either before 18 or after 23. In both studies, it is possible that the higher risk for later onset gamblers could have been due to the relatively recent introduction of EGMs and casinos.

Spouses or partners, and other family members, are most often mentioned as gambling companions, although this varies across venues, gambling forms, and population sectors.¹¹ Teens and adults who gamble often—particularly those with gambling problems—report much higher levels of gambling participation in both their current families and households, and in their family of origin.

Substantial variation in gambling participation is found across occupational and religious groups. Walker,⁵ among others, has cited sociological studies dating back to the 1950s that suggest ways in which work and other reference groups can encourage and discourage gambling. For instance, people working in the gambling industry may be at more risk for harmful gambling. Shaffer and Hall found high rates of harmful gambling among casino employees, especially younger and more recent employees; however, longer-term employees had lower rates.¹⁴ They interpreted this as indicating an elevated risk of gambling problems during early exposure, followed by adaptation as time went by.

1.1 GAMBLING SETTING

Gambling takes place in many different locations. Commercial forms of gambling (including casinos and gambling machines at social clubs and hotels) occur in locations where many people feel safe compared to venues where less legitimate forms of gambling occur. Some research suggests that women, older adults, and some migrant groups prefer to gamble in venues where they feel physically safe and comfortable.¹⁵⁻¹⁷ These feelings of safety and comfort may lead some people to gamble more than they can afford.

Along with the number and distribution of particular gambling types and venues, a variety of other factors have an impact on gambling exposure, gambling participation, and harmful gambling.^{1, 18} Venue entry requirements and the legality, nature, and perceived safety of gambling settings, can influence who will participate and what their gambling behaviour will be like. The purpose of the activity, association with other attractions, alcohol availability, venue layout, as well as light, colour, sound effects, and background odours have also been shown to influence the time and money spent gambling.^{2, 19}

It appears likely that co-locating ATMs and credit facilities with certain gambling types contributes to at-risk and harmful gambling, and this likely extends to proximity and access to loan sharks as well.²⁰ Several gambling activities are only accessible in venues licensed to serve alcohol. Although this helps to restrict access by underage minors, there are indications that drinking alcohol while gambling reduces inhibition, and leads to more intensive and risky gambling behaviour.

A number of measures have been proposed or intentionally introduced in gambling settings to promote moderation in gambling behaviour and to reduce harmful gambling. Some measures include preventing

intoxicated people from gambling: prohibiting credit or cash advances for gambling; training staff in responsible gambling practices; pre-commitment to specified loss and/or time limits; controls on advertising and promotions; not cashing cheques for large sums; self-exclusion programs; closing facilities for a least a few hours each day; and providing clocks and natural lighting in gambling areas. Research evaluating these and other prevention measures is not well-developed and it remains uncertain what effect they have on gambling participation, including at-risk and harmful gambling.²¹⁻²³

Since 1995, gambling on the Internet has grown rapidly—a trend that is likely to continue as access on mobile devices, such as smart phones and tablets, takes different gambling activities directly into homes and workplaces throughout the world. While base rates are low, online gambling has increased significantly despite efforts of governments to control or manage access.²⁴ ²⁵ Online gambling will continue to evolve with ongoing changes and competition among Internet gambling sites, with new demographic groups such as women and older adults entering the market, and with a growing number of jurisdictions legalizing and regulating these activities.

The nature of online gambling makes it an inherently more problematic way of gambling. Greater convenience, easier access, the solitary nature of play, the ability to play when intoxicated, the lack of realistic cash markers, the ability to play with credit, the lack of age verification, and the ability to play multiple sites and/or games simultaneously are all features that contribute to a lessening of players' ability to control their involvement. Another challenge is that people with gambling problems using the Internet have a much more difficult time avoiding gambling venues, which are available at the nearest Internet-enabled device.^{26, 27} Recent empirical studies have tested the relationship between online gambling and gambling harms. Although online gambling

has been associated with gambling problems,²⁸ it is evident that online gamblers often engage in multiple forms of gambling, both online and offline, and that this *diversity* is a strong predictor of problematic gambling.²⁹⁻³¹ It is currently unclear whether online engagement *per se* adds to this risk, after controlling for engagement in multiple forms.³² At the same time,

online gambling allows players to limit the amount of money staked and the hours of play, although only on a given website. Gambling companies may also implement player tracking systems that warn players if their gambling behaviour appears to be risky. The Internet allows for more sophisticated responsible gambling measures than any other way of providing gambling.

1.2 ACCESSIBILITY

Historically, some societies had little or no exposure to gambling.³³ Others experienced long-term alternating cycles of liberalization and restriction, with the latter typically linked to rising official and public concern about gambling eroding morals and public order.^{34, 35}

During the past two to three decades, gambling availability, participation, and expenditure have increased significantly around the world. This most recent expansion is unprecedented and is affected by interrelated forces that continue to drive the global evolution of commercial gambling.³⁶

At the same time, there has been a rapid expansion of Internet gambling sites, which allow access from home, work, and portable devices. However, in several populations during the past decade, overall gambling participation has declined considerably despite further increases in availability. In some of these cases, expenditure has continued to rise, and in others to level out, or decline. These changes may be aspects of *adaptation*, which is discussed later in this section.

Accessibility of gambling activities is necessary for gambling participation and, in turn, participation is necessary for the development of harmful gambling. Greater availability of gambling and associated

attitude changes towards gambling are widely believed to have led to both increased participation and an increase in gambling-related harms.

Orford has stated that although the reasons for harm are complex and multifactorial, “the more the product is supplied in an accessible form, the greater the consumption and the greater the incidence and prevalence of harm.”^{37, p1236} Major reviews of relevant literature and official inquiries have generally agreed on this point, with varying degrees of qualification. Research has found that Orford’s argument may hold in the early phases of expansion of the gambling market, but potentially not during the past two decades in most jurisdictions.³⁸ Many aspects of accessibility or exposure have been identified, but only a few have been studied. Some work has been done to create measures of exposure, but these tend to be specific to single gambling activities or jurisdictions. Overall, the conceptualization and measurement of gambling exposure are not well developed.

Many surveys have examined differences in self-reported gambling participation among regions and population sectors. Others have assessed participation changes over time. Some have considered associations between availability of gambling and participation, including participation changes following the introduction of new gambling forms or a significant change in how gambling is provided.²

Regardless of the specific considerations, the findings from most studies are consistent with the view that increased availability of gambling opportunities is associated with an increase in the percentage of the population that participates. In several instances, the introduction and expansion of some forms of gambling and/or gambling settings has been followed by noticeable changes in the demographic mix of people who take part in gambling activities. As noted earlier though, in several jurisdictions, initial increases in participation have been followed by significant decreases, even when availability continued to increase.

Many studies using official data sources show strong relationships between gambling availability and per capita gambling expenditure. Casinos and EGMs have typically dominated markets within a few years after their introduction. Where EGMs are widely distributed outside casinos, strong co-variation is typically found between EGM numbers and EGM expenditure. Strong relationships have also been found between how many EGM venues are located in a specific area, and expenditure at local and regional levels.³⁹ However, there are instances where expenditure continued to rise for a number of years after machine numbers had been capped. In some cases, it may have been an outcome of machines being relocated to communities where financial returns could be maximized.⁴⁰

It is important to note that there are many different types of gambling undertaken in diverse settings, appealing to different sorts of people, and perceived in various ways by participants and observers.¹ These differences, among others, influence whether or not people take part, and whether or not participation becomes frequent or problematic.

Relationships among gambling availability, participation, and problems are complex. The ultimate effects of gambling exposure may also be influenced by other individual and environmental factors, as well as the length of exposure.^{2, 38, 41, 42}

Gambling exposure is also significantly influenced by political decision making. Most gambling activities have many legal and regulatory controls that determine their provision and accessibility. Access to gambling activities, as with other products, services or facilities, is determined by several factors. In addition to legal considerations, spatial distribution and a variety of economic, social, and cultural factors are involved.

Gambling offers unique incentives, such as the potential for financial gains, and also meets other psychological needs, such as that for significant lifestyle changes. In many jurisdictions, gambling is readily available and accessible, particularly in the form of Internet gambling. This increases the attractiveness of gambling participation. Further, gambling outlets are often located in socioeconomically disadvantaged areas where there are high unemployment rates,⁴³ and in venues that offer cheap food, beverages, and entertainment. In these areas, limited income can restrict a person's ability to travel to other parts of their community that may offer other leisure options. Therefore, these individuals tend to access gambling facilities close to their home.

The local geography plays a significant role in the availability of and accessibility to gambling. The types, number, and concentration of venues where gambling is located; opening hours; conditions of entry; availability of transportation; availability of affordable alternative recreational facilities; and the physical visibility/prominence of venues, are contributing factors to the overall gambling opportunities within a defined

geographical region.⁴⁰ Destination gambling venues densely situated in a local geographical area and promoted to tourists attract large numbers of people who are motivated to gamble. Las Vegas, Macau, and Singapore are good examples of such destinations.

Given the mobility of the tourist gamblers, gambling-related harms may be less evident at the local level, once participants leave and return to their place of origin.

1.3 ADAPTATION

As mentioned, it is widely believed that increased gambling availability has led to a rise in gambling participation and higher rates of gambling-related harm including problem gambling. While there are strong indications that this was the case during the early years of gambling expansion, in many jurisdictions participation and problem gambling rates subsequently declined. The initial increase in participation and harm is consistent with the *availability or exposure hypothesis*. This hypothesis has parallels with the single distribution or total consumption model in the alcohol field. As originally proposed by Ledermann,⁴⁴ it maintains that an increase in average alcohol consumption is associated with an increase in the proportion of heavy and problematic drinkers. This model has been influential in the alcohol field and in some other areas of public health. It supports policies that seek to reduce overall availability and consumption as a means to reduce harm.

While acknowledging findings consistent with the availability hypothesis, Shaffer et al.⁴⁵ and Abbott, Williams, and Volberg⁴⁶ proposed that, over time, populations adapt to gambling exposure and people participate less and experience less harm, even when exposure continues to increase. Shaffer and colleagues⁴⁵ were of the view that this process would probably take decades or generations. Abbott and colleagues⁴⁶ believed it could occur more rapidly. The hypothesis was initially rejected by a number of gambling researchers. For example, in response to invited commentaries from Abbott,⁴⁷ Shaffer,⁴⁸ and others, Orford³⁷ replied:

Complex and multifactorial though causation is, the more the product is supplied in accessible form, the greater the volume of consumption and the greater the incidence and harm. I doubt there would be many who would argue with that basic public health law when it comes to the supply of alcohol, tobacco, and other drugs of various kinds. It would be very surprising indeed if that rule was not also true for gambling, and the onus should be upon those who think gambling might be an exception to the general law to prove their case (p. 1236).

Proponents of *adaptation hypothesis* accept that the availability hypothesis applies in some circumstances but not universally. In other situations, relationships between availability, participation, and harm change and additional factors become more important. For example, Abbott⁴⁹ proposed:

1. During exposure to new forms of gambling, particularly EGMs and other continuous forms, previously unexposed individuals, population sectors, and societies are at high risk for the development of gambling problems.
2. Over time, years rather than decades, adaptation ('host' immunity and protective environmental changes) typically occurs and problem levels reduce, even in the face of increasing exposure.

3. Adaptation can be accelerated by regulatory and public health measures.
4. While strongly associated with problem development (albeit comparable to some other continuous forms when exposure is held constant) EGMs give rise to more transient problems.

Recent reviews have found additional support for the availability hypothesis.⁵⁰⁻⁵³ They have also identified a number of studies with contradictory findings. Methodological variation is a major consideration when comparing the results of surveys across jurisdictions and within jurisdictions over time. Two studies made adjustments for methodological variation to varying degrees and evaluated both the availability and adaptation hypotheses.

Storer et al.⁵⁴ examined 34 Australian and New Zealand gambling surveys conducted since 1990. Their meta-analysis adjusted for the problem gambling measures used. They found that problem gambling prevalence increased with higher EGM density (EGMs per capita) and decreased over time when density was held constant. Over 20 years, the findings were consistent with both the availability and adaptation hypotheses. Of further significance, EGM density and time explained nearly three-quarters of the variance in problem gambling prevalence, strongly suggesting that both play major roles in determining problem gambling and very likely other gambling-related harms.

Williams et al.³⁸ reviewed problem gambling prevalence studies conducted worldwide since the late 1980s. They used weightings to adjust for common methodological variations. In all regions where there was a sufficient number of studies (USA, Canada, and Australia),

problem gambling prevalence rates initially increased and subsequently decreased. These decreases began in the late 1990s in Canada and early 2000s in the United States and Australia. Unlike Storer and colleagues⁵⁴ this study did not examine gambling availability. However, in the jurisdictions included, gambling availability increased throughout the study period. Consequently, the findings are consistent with both the availability and adaptation hypotheses.

Calado and Griffiths⁴⁵² more recent world-wide review of problem gambling prevalence surveys from 2000 to 2015 included a substantial number of European studies. Past year problem gambling prevalence estimates ranged from 0.1% to 5.8%, virtually the same as the range Williams et al.³⁸ reported. Generally, rates were higher in Asia, lower in Europe, and intermediate in Australasia. They noted that in jurisdictions where more than one survey had been undertaken, problem gambling rates typically remained stable. The most notable exception was Estonia where prevalence of problem gambling increased. They suggested that this may have been a consequence of recent exposure to a range of previously prohibited gambling activities. Adjustments were not made for methodological variation, and prevalence rates were not examined in relation to gambling availability. Generally, however, throughout the study period availability continued to increase. While some caution is required in interpreting the findings, they appear to be more in keeping with adaptation than with the availability hypothesis.

The *availability hypothesis* predicts that increased gambling availability leads to increased participation and harm. The *adaptation hypothesis* predicts a plateauing and reduction in problem gambling and harm rates in populations that have been exposed to gambling for

moderately long periods of time. It does not explicitly mention the role that gambling participation plays in this. However, Abbott and Volberg¹² proposed that increased awareness of the risk and harm associated with some types of gambling and participation patterns will lead to changes in attitudes towards gambling and reduced gambling participation. They believed that reduced participation, especially in EGMs and other continuous forms, would be a factor in the reduction of problem gambling prevalence rates. In this regard, the availability and adaptation models are the same. Both predict reductions in harm when participation declines. The foregoing reviews did not examine gambling participation rates in relation to problem gambling prevalence. It would have been difficult to do this because there is considerable variation in the way participation is measured, even more so than is the case with problem gambling. However, a number of studies have compared changes in both participation and problem gambling over time in the same jurisdiction. In some case studies they used similar methodologies, including the same or very similar measures of participation and problem gambling.^{50, 55-57}

During the past decade or more it appears that gambling participation has decreased markedly in a number of jurisdictions, despite gambling availability continuing to increase both online and offline. Several studies have found substantial reductions across most or all demographic groups and many gambling activities.^{50, 55} Contrary to the availability, total consumption, and adaptation hypotheses, these participation reductions have not been accompanied by reduced problem gambling prevalence. Reduced participation is most apparent for young adults, yet in some studies problem gambling prevalence increased in this population

sector.^{56, 57} Recent prospective studies indicate that a substantial proportion of people who develop a gambling problem are past problem gamblers who are relapsing (see Abbott, Romild and Volberg;⁵⁸ Abbott et al.;⁵⁹ Billi et al.;⁶⁰ and, Luce, Nadeau, and Kairouz⁶¹). It has been suggested that this, in part, explains plateaued prevalence rates in jurisdictions with declining participation rates. Prospective studies have identified a number of factors additional to gambling exposure and participation that contribute to problem gambling onset, duration, and relapse. As mentioned, they include ethnicity, high levels of deprivation, low income, feelings of marginalisation, experience of multiple major life events, high psychological distress, and substance use/misuse. Their persistence or increase very probably provides a further explanation for plateaued problem gambling prevalence rates. It is likely that the concentration of more 'toxic' forms of gambling in high deprivation neighbourhoods contributed further.

Research is required to increase understanding of the complex and changing relationships between gambling exposure, participation and harm. With respect to prevention and harm reduction, reducing gambling exposure is likely to remain important, especially in the case of more vulnerable and at-risk groups. However, it is likely that significant gambling-related harm reduction will require increased attention to policies and programs that address other risk and protective factors that could be modified, including those that are common to a number of other addiction and mental health disorders (see Section 3.3.6 Comorbid Disorders).

1.4 MARKETING AND MESSAGING

As already discussed, views on gambling are generally positive in some societies, and these positive views make their way into the mass media; for example, in the form of coverage of gambling news, stories about jackpot winners, and advice on how to bet and gamble. Gambling also becomes a common topic in popular culture, such as movies, television series, novels, and urban legends about remarkable stories of good or bad luck that gamblers have supposedly experienced.

Such representations portray gambling in a positive light, and through explicit or implicit symbolic and mythological messages, they root gambling in culture and society.⁶²⁻⁶⁴ Gambling games, which in and of themselves may be rather trivial, are imbued with positive qualities such as having fun, excitement, and companionship. By doing so, gambling may acquire moral, social, and spiritual dimensions. This can make gambling seem like a more interesting and worthwhile activity to pursue.

The marketing messages of commercial gambling and the design of gambling equipment (e.g., EGMs and lottery tickets) may have a similar influence, as they often use images and symbols to convey a message that gambling is fun, exciting, and can make people rich.⁶⁵⁻⁶⁷ Some gambling games may be represented as having qualities that make them especially attractive for specific sociocultural groups (e.g., luxurious casinos for the rich, and unpretentious bingo parlours for low income earners). The design of gambling venues, in particular casinos, may contain symbolic and psychological cues intended to increase gambling involvement by influencing the mood and behaviour of patrons.⁶⁸ Promotions for sports betting typically associate betting with male camaraderie, skill, competition, and love for the sport and/or a team.⁶⁹

The long-term impact of gambling advertising on attitudes towards gambling is difficult to assess. Some argue that advertising in general has a substantial

impact on consumer preferences and attitudes towards the products promoted. Others argue, however, that advertising merely takes advantage of emerging trends in popular culture and changes in values, and that it mostly affects the market shares of various products.

At the individual level there is research evidence that gambling advertising influences how gambling is perceived (e.g., Derevensky et al.;⁷⁰ Hanss et al.⁷¹). Some scholars consider this influence on the individual level to be evidence of advertising contributing to the normalization of gambling in society (e.g., Lopez-Gonzalez, Guerrero-Solé, and Griffiths⁷²). It seems reasonable to assume that such normalization occurred in the early phase of expansion of gambling opportunities. However, there are no longitudinal studies examining the relationship between the extent of gambling promotion and attitudes towards gambling, and thus no empirical evidence for normalization in the current and late phases.

Today, there are examples of jurisdictions (such as Sweden), where public attitudes towards gambling have become much more critical, and the number of people who gamble occasionally and regularly has declined (although those who do gamble spend more than before), despite huge increases in the volume of gambling advertising. This suggests *advertising fatigue* among consumers, as well as a growing perception that gambling has become excessive. Gambling advertising in the mass media is often one of the most disliked forms of advertising. Although it certainly encourages some people to gamble and view gambling more favourably, massive advertising may cause an even larger number of people to view gambling in an increasingly negative light.

In general, advertising and other forms of promotion are very important for gambling companies in a competitive market. Advertising helps them to attract new customers and inspire more gambling among existing ones. This is especially important

for online gambling companies. Having no physical venues, these companies need to make themselves visible to potential customers and keep in close touch with existing ones, so as not to lose customers to other companies and to maintain their gambling involvement through incentives and various offers.

The prime objective of gambling marketing is to increase or maintain the sales of one's own company. There is usually a strong emphasis on the Unique Selling Point/ Proposition (USP) of a company or particular gambling offer that differentiates it from other companies. No company promotes gambling for its own sake, which could potentially benefit any company in the market. Therefore, much of gambling advertising has an impact primarily on the market shares of specific companies – i.e., a gambler is motivated to choose one company or offer rather than another. However, total consumption of gambling also increases because with more USPs, there is a greater appeal to more people, especially in a growing market, and every advertising message is intended as an incitement to gamble. The extent to which total consumption might be stimulated is difficult to measure, while the effectiveness of specific advertising campaigns is relatively easy to judge from their impact on sales.

Assessing the impact of gambling advertising on the extent of harmful gambling is difficult—more so than its impact on attitudes and on consumption. There is no empirical research on the extent of the advertising impact at a population level (with the exception of one cross-sectional panel study with numerous methodological limitations: Planzer, Gray, and Shaffer⁷³). On the basis of the available knowledge about how advertising works and the prevalence of harmful gambling, the effect of gambling advertising is generally considered small compared to other factors that contribute to harmful gambling.^{74, 75} However, in certain circumstances, such as when a

risky form of gambling is introduced into an immature market and heavily promoted, advertising is likely to contribute more prominently to harmful gambling.

Although it may be impossible to estimate exactly how much advertising contributes to the prevalence of problem gambling, it is possible to study the relative impact of different kinds of advertising on various groups of people.⁷⁶ For example, studies have shown that the repeated cues to gamble from gambling advertising are especially problematic for people who already have a gambling problem or are recovering from one (e.g., Binde,⁷⁷ Binde and Romild,⁷⁸ Grant and Kim,⁷⁹ and Hing et al.⁸⁰).

Youth who scored high on a “vulnerability index” reported that they sometimes or often gambled after having seen an advertisement, more so than those who scored low.⁷⁰ Perceptions of gambling advertising vary across ethnic groups, and people with gambling problems report that some advertising messages influence them more than others.^{78, 81-83} Results from these studies are valuable in identifying forms of advertising and messages that may be especially likely to contribute to harmful gambling, and therefore should only be used by gambling providers with caution or not at all.

Traditional forms of advertising are increasingly being replaced or complemented by sponsorship^{84, 85} and new promotional approaches, such as marketing in social media on the Internet, viral marketing, and consumer-generated advertising.⁸⁶ Research on gambling advertising and promotion has grown in the past years,^{76, 87} but there are still areas that are just beginning to be chartered, such as the impact of promotion via SMS and in-app notifications to customers of gambling companies.⁸⁸

1.5 CONVERGENCE OF GAMING AND GAMBLING

Traditional gambling and gaming activities have migrated to the internet and digital media. In this context they have grown rapidly, and digital gaming and gambling have converged in various ways. Gambling activities increasingly include gaming themes, and online games often include gambling and gambling-like elements. This convergence is accelerating.

Gaming is differentiated from gambling in that outcomes, which may include prizes of value, are entirely or primarily achieved by skill. While this differentiation is commonly made, gaming is also used as a synonym for gambling, particularly by gambling industry groups.⁵⁰ This practice may stem from an interest in avoiding negative connotations associated with gambling. Convergence is adding to this linguistic confusion and challenging legislators and regulators.

A number of games enable participants to place bets on their outcomes and receive monetary payments. Mini-games featuring gambling activities such as casino games and *wagering* on sporting events feature increasingly in video games. Loot boxes have also become commonplace in digital games, where participants pay money to access items within games. These items vary in value and item receipt is driven by chance. Loot boxes have been classified as gambling in some jurisdictions, but not in others. This is an important issue, among other things determining whether or not age and other restrictions are applied. (More information is provided in the Gambling-like gaming sub-section that follows.)

Furthermore, there are sites where virtual items can be traded for money. The incorporation of gambling and gambling-like elements within games is intended to make them profitable and more exciting to participants.⁸⁹ It may also contribute to players transitioning to online and land-based gambling activities.

Convergence is also strongly evident in online social casino games⁹⁰ and sports events/activities. Online and in-venue betting on sports events have rapidly extended to include virtual and eSports, immersive reality, and fantasy sports.⁹¹ There has also been rapid growth in betting on the outcomes of video games and tournaments. Not only is the content between gaming and gambling converging, but the media that they are based on is converging as well. While gaming used to be confined to computers and video game consoles, people are now able to gamble on their computer, and even in virtual reality.⁹² There are numerous and increasing crossovers in gambling and gaming networks, platforms, and products. Among other things, this convergence allows gambling operators to reach a much larger market.⁹³ Participation in games with gambling themes may also help sustain brand loyalty when participants are not gambling.

King et al.⁹⁴ and Gainsbury et al.⁸⁹ provide comprehensive reviews of the gaming-gambling convergence and a framework to classify gambling, gaming, and gambling-like game hybrids. Key elements include interactivity, monetization, betting/wagering mechanics, role of skill versus luck in determining outcomes, the nature of outcomes, structural fidelity, context, centrality, and advertising.

Gambling-type games not for money have long been featured on gambling and other internet sites and are increasingly present on social networking sites. Many online gambling operators provide free-play versions of online gambling. They are also frequently offered on different sites from their gambling products. This allows them to advertise with fewer age and other restrictions. Gambling-type games not for money appear to be more popular than online gambling for money. The New Zealand National Gambling Survey (NGS) re-assessed a nationally representative sample annually from 2012 to 2015.⁵⁵ Between 13-17% of adults participated in one or

more of these games during the past 12 months. This included fantasy football (3-5%), internet poker (2-4%), online casino games (2%), and internet bingo (1%). During this period only 1-2% took part in gambling activities of this type online. Somewhat more, 8-10%, accessed lottery products or wagered on track or sports events online.

Some studies report that youth and adults who take part in games with gambling themes, including social casino games, more often engage in gambling activities and experience gambling-related problems.^{86, 90, 95-97} Given the cross-sectional nature of this research it is unclear what these associations mean. There appear to be only two relevant long-term studies. Dussault et al.⁹⁸ tracked adolescents who had not previously gambled for money. They found that simulated poker participation predicted playing poker for money 12 months later. The NGS found that participation in gambling-type games not for money predicted future onset of at-risk and problem gambling – even when gambling participation and other factors commonly found to be associated with problem gambling were included in the analysis.⁵⁵ These results suggest that participation in this type of activity may make an independent contribution to the development of at-risk and problem gambling.

Gaming-like Gambling: In addition to the inclusion of gambling elements within gaming, there has also been increased incorporation of gaming elements and themes within gambling. For example, some EGMs now incorporate an element of skill and others include features that increase the impression that skill is involved. While yet to be assessed, this could increase their already high addictive properties. EGMs also increasingly include themes from social video games and television game shows. These developments may help attract and retain younger participants.⁸⁹

Gambling-like Gaming: Video games are increasingly displaying elements and phenomena we would traditionally associate with gambling. As such, some people are concerned that there may be links between video games and harmful gambling. With this in mind, two developments stand out: the presence of gambling “mini-games” within video games (a game within a game), and the rapid rise and acceptance of “loot boxes” as a form of game monetization.

In the past several decades a growing number of video games have included *mini-games* within them that mirror gambling systems, contexts, or forms of play. For example, a game set in the Wild West might include a poker game (not for real money) with other digital characters in saloons; a game set in a large city might include buildings that contain slot machines (again, purely for in-game currency); others might contain the ability to wager virtual money on digital races, or sporting events, or the like. In each case, the gambling game is not the core of the gameplay, but rather a side attraction, a mini-game that players can choose to engage in or not. It is rare for such mini-games to be essential to progression, although in many cases they can help the player advance if tackled correctly. As such, many of the surrounding elements of gambling – its aesthetics, spaces and contexts of play, and often mechanics – are reproduced in digital games without real-world financial consequences. Although no data currently exists on this, it seems reasonable to assume that many non-gamblers can claim a familiarity with gambling activities that would be surprisingly detailed, given a lack of direct (wagering) engagement in such play. This is not to suggest any kind of slippery slope argument about supposed risks of including such fictional elements in digital play—we can usefully contrast this with the moral panic over video game violence, now entirely debunked^{99, 100}—but it is one element of the increasing convergence of digital games and certain aspects of gambling.

In the second and more striking case, the last five or so years has seen the emergence of *loot boxes* in digital games. These are virtual containers that house a number of items whose properties are unknown at the moment of purchase. In this regard, they are comparable to buying a pack of baseball cards or trading cards, except that the precise odds of each item can be set at the moment of purchase (in a digital storefront), rather than at the point of manufacture (in a real-world factory). Given that these entail the purchase of something for “real-world” money with an unknown outcome that might, or might not, seem to *justify* the initial investment, loot boxes have been popularly branded as a “gambling” system that has found its way into video games. In general, response from policymakers has been hostile: some nations have banned or partly banned loot boxes,^{51, 101} while others are currently conducting extensive enquiries into the topic. Gamer response has been more mixed;^{102, 103} some players and game critics seem to be comfortable with these purchases, given the significant profits in this area that many games companies report, while others have been highly critical of loot boxes’ emergence. Loot boxes are certainly the focus of gambling in video games at the present point, with researchers now beginning to ask a number of central questions. Which game developers use them and why? How are they implemented? How do players respond? Loot boxes are fundamentally interwoven with many additional complex elements, including the political economy of the video game industry and video game culture more broadly,^{104, 105} which will be crucial for understanding any potential harms in a gaming context that loot boxes might bring.

Overall, however, there is presently no data on whether or not either of these phenomena contributes to harmful gambling. Nevertheless, the expansion of gambling aesthetics through mini-games, and the expansion of gambling mechanics through loot boxes,

should not be overlooked: in all aspects except the actual wagering of real-world money, and in loot boxes through spending real-world money, video games have become increasingly conversant with gambling in recent years.¹⁰⁶ To summarize, these are the main ways in which this has occurred:

- › Video games have adopted many of the structural elements of gambling and monetized these elements (loot boxes);
- › Open source monetized video game content (skins) has enabled unregulated gambling;
- › Gambling markets on competitive gaming events (Esports) have emerged and become integrated among other gambling offerings;
- › Gambling brands and products are promoted on the same channels used to promote gaming; and,
- › Online gaming social influencers (e.g., Twitch gaming entertainers) may promote monetized gaming activities (e.g., skin gambling).

Given the ease with which video games become a subject of public outcry,¹⁰⁷⁻¹⁰⁹ such phenomena should be approached cautiously and with an open mind; with the apparent dangers of video game violence debunked,^{99, 100} for example, we should not assume the worst over video game gambling. And yet with tens or hundreds of millions of players playing games with loot boxes, and large numbers enjoying gambling mini-games without a second thought, the appearance of gambling within video games marks a significant new trend for both gambling studies and game studies to fully examine both as an emerging phenomenon and in the context of the possibility of harmful gambling.

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