



Review

Early exposure to digital simulated gambling: A review and conceptual model

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ABSTRACT

Young people are increasingly exposed to interactive simulated gambling activities and promotions via digital and social media. However, the individual harms and social burdens associated with early exposure to simulated gambling activities currently are not well understood. This review presents a two-pathway model that conceptualizes the potential risks and benefits of early exposure to a variety of digital simulated gambling activities (e.g., 'free-to-play' online casinos, gambling-like video games, and social casino games). The catalyst pathway describes risk factors associated with early exposure to simulated gambling that may increase the risk of problem gambling. The containment pathway describes protective factors that may increase the likelihood of disinterest in gambling, or a tendency to engage in safe and responsible gambling. This model emphasises the interaction between cognitive-behavioral processes and the structural design of simulated gambling activities. This foundational work may support three general aims in gambling addiction research and theory: (1) to assist in identifying young simulated gamblers who may be more vulnerable to developing problem gambling in adulthood, while also accounting for those less likely to be at risk, (2) to guide research agendas on the mental health profiles and natural histories of individuals involved in simulated gambling activities, and (3) to inform clinical and public health interventions for gambling addiction.

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1. Introduction

The advent of online digital technologies has led to significant changes in the scope, sophistication and accessibility of gambling (King, Delfabbro, & Griffiths, 2010; Griffiths, Wardle, Orford, Sproston, & Erens, 2011). Popular gambling activities, such as casino card games and electronic gaming machines, once restricted to individuals of legal age willing to enter a licensed venue, are now abundantly available online (Gainsbury, Wood, Russell, Hing, & Blaszczynski, 2012; Olason, Kristjansdottir, Einarsdottir, Bjarnarson, & Derevensky, 2011). The focus of this paper is on a secondary class of product that has developed as a corollary of the expansion of online gambling: namely, the massive proliferation of non-financial (i.e., 'simulated') gambling activities, such as 'free-to-play' online casinos and social media gambling apps, and other gambling media properties which are often targeted at underage populations (Derevensky, Sklar, Gupta, & Messerlian, 2010; Gainsbury, Hing, Delfabbro, & King, 2014; Seigny, Cloutier, Pelletier, & Ladouceur, 2007). Worldwide participation in free 'social casino games' alone, for example, exceeds participation in online gambling by a factor of 3 to 1, and this activity has been estimated to expand to over 250 million users by 2016 (Morgan Stanley, 2012). Although there is significant interest in these activities in the business sector, current knowledge of the social and psychological impacts of simulated gambling is very limited despite speculation about whether they contribute to the incidence, prevalence, and maintenance of gambling addictions (Kim, Wohl, Salmon, Gupta, & Derevensky, 2014; King, Delfabbro, Kaptsis, & Zwaans, 2014; Gainsbury, Hing, Delfabbro, Dewar, & King, 2015; Griffiths, King, & Delfabbro, 2012).

Simulated gambling has been defined as a "digitally simulated interactive gambling activity that does not directly involve monetary gain but is otherwise structurally identical to the standard format of a gambling activity due to its wagering features and chance-determined outcomes of play" (King et al., 2014, p. 305). Simulated gambling opportunities vary greatly in terms of their design, functionality, and user experiences, across a range of technological platforms, including social media, websites, and apps (see Gainsbury et al., 2014; King, Delfabbro, Derevensky, & Griffiths, 2012). Although there is no legal consensus on whether simulated gambling constitutes a form of gambling (Korn, Norman, & Reynolds, 2010), some activities are known to be 'quasi-financial' in nature by allowing players to purchase virtual currency (e.g., coins in *Slotomania*), and have therefore raised external regulatory concerns in some regions (Rose, 2004). Simulated gambling also falls outside the purview of standard clinical definitions of problem gambling (e.g., *Gambling disorder* in the DSM-5) due to the emphasis on excessive expenditure in defining harm. It has been suggested that simulated gambling may be considered a subtype of Internet video-gaming (Owens, 2013), although this viewpoint has not been substantiated by the gambling research community.

From an addictions perspective, gambling involves not only the dynamics of winning and losing something of value (typically money), but also the satisfaction of psychological motivations of excitement and diversion associated with these experiences (Derevensky, Gupta, & Cioppa, 1996; Walker, Schellink, & Anjoul, 2008). Whether virtual currency meets an accepted definition of 'something of value' is part of an ongoing debate on the socio-economic value of virtual assets and identities (King & Delfabbro, 2014). However, with respect to play dynamics, it may be contended that financial and simulated gambling activities have a high degree of parity as psychological phenomena. Laboratory studies of gambling, for example, have long employed simulated gambling paradigms to examine human factors underlying gambling addiction (e.g., cognitive bias, physiological arousal) (Clark, Crooks,

Clarke, Aitken, & Dunn, 2012; Dixon & Schreiber, 2002; Kushner et al., 2007). This work underscores the observation that a financial element of play is an important aspect, but not the defining factor, in gambling behavior. For this reason, research concerning potential risks and/or benefits associated with simulated gambling is warranted to improve our understanding of the broader practice of gambling as well as gambling addiction.

One proposed risk of simulated gambling is its potential to entice young people to gamble or develop an interest in gambling that will develop over time (Allen, Madden, Brooks, & Najman, 2008; Derevensky & Gupta, 2007; Griffiths, King, & Delfabbro, 2009; Messerlian, Byrne, & Derevensky, 2004). In Australia, the prevalence of simulated gambling via social casino games was 8.8% in 2012 (SuperData Research, 2013), with some preliminary evidence to support the view that youth are actively involved in these activities (Ipsos MORI, 2009; King et al., 2014; Griffiths & Wood, 2007). A study by Volberg, Hedberg, and Moore (2008) suggested that problem gambling careers may progress from gambling on the Internet for free to playing card games for money with friends and family. The long-term impact of simulated gambling on younger users has not yet been examined in detail. However, available research evidence on addiction provides useful insights that may be extrapolated to this newer phenomenon. For example, it has been reported consistently that early exposure to addictive substances or activities (e.g., tobacco, alcohol, gambling) increases lifetime risk and severity of addiction to the particular substance or activity (Eissenberg & Balster, 2000; Johnson, Cloninger, Roache, Bordnick, & Ruiz, 2000; Shaffer, LaBrie, & LaPlante, 2004). Public health interventions for addictions prioritise measures to delay the age of first use, or to ensure that early experiences involve controlled use under responsible supervision (Messerlian, Derevensky, & Gupta, 2005).

Addiction theories also recognise the confluence of protective and vulnerability factors across environmental, psychological, and social domains that impact upon the level of harm associated with early experimentation (Abbott et al., 2013; Griffiths & Parke, 2010; Hardoon, Gupta, & Derevensky, 2004). This includes acknowledgement of factors that 'inoculate' or promote resilience in certain individuals, including those with relatively high levels of exposure (LaPlante & Shaffer, 2007; Oman et al., 2004). At present, it is unclear why young people may become more resilient to exposure to digital forms of gambling, including interactive and promotional content in some circumstances. The study of online problem gambling is a relatively new field of addiction, and therefore lacking a clear framework for conceptualising the range of unique potential impacts associated with emerging activities like simulated gambling. To address this gap in knowledge, this review was designed with three primary aims:

1. To review research on the known risks and benefits of early exposure to simulated gambling.
2. To examine exposure models of gambling to aid in classifying these risks and benefits.
3. To conceptualise identified factors within a comprehensive theoretical account.

2. Method

2.1. Identification of empirical research

The first aim of this review was to identify available research evidence on youth participation in simulated gambling. A computer database search of *Academic Search Premier*, *PubMed*, *PsychINFO*, *ScienceDirect*, *Web of Science*, and *Google Scholar* was conducted,

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