

# THE PSYCHOLOGY OF IN-PLAY SPORTS BETTING: A BRIEF OVERVIEW

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**M**ost people reading this will be aware that in-play betting (also known as ‘live action’ betting or ‘in-running’ betting) refers to the wagering on an event that has started but not yet finished. Here, gamblers have the option to continue to bet once an event has started, and adapt their bets depending on how the event is progressing (e.g., on a sporting event such as a football or cricket match).

In-play betting first appeared towards the end of the 1990s when some bookmakers would take bets over the telephone while a sports event was in progress, and has now evolved into a popular online service in many countries. For example, in the UK, up to 25% of online gamblers have placed a bet in-play (Gambling Commission, 2016). The introduction of in-play betting has allowed bookmakers to increase the number of markets available to bet on during sports events, and gamblers are able to place bets based on many different types of in-game activity during the matches. For example, in football matches it is possible to bet in on in-play markets including the match result, half-time score, number of goals scored in the first or second half of the game, the number of yellow cards during the match, and the name of the goal scorers, etc. The availability of a particular sport and in-play markets varies from bookmaker to bookmaker.

Researchers have previously referred to the role of structural characteristics in the acquisition, maintenance and development of online gambling behaviours (Parke & Griffiths, 2007). Structural characteristics are those features that are inherent within the game itself and include features that are responsible for reinforcement and may in some cases facilitate excessive gambling (Griffiths et al. 2006). These characteristics include, but are not limited to, bet frequency (the number of bets placed within a given time frame), event frequency (the number of

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gambling events that are available to bet on in a given period), and pay-out frequency (the time between the end of the betting event and receiving the winning payment) (Griffiths & Auer, 2013).

In-play sports betting has structural characteristics that have changed the mechanics of gambling for sports bettors, as they are now able to place a larger number of bets during a single sports game (as opposed to a single bet on who is going to win). It has been argued that structural characteristics of an event, including higher event frequency betting, are associated with problem gambling (Griffiths & Auer, 2013; Harris & Griffiths, 2017). One of the most important differences between being able to place an in-running sports bet opposed to a pre-match bet, is that the nature of the market has been turned what was previously a discontinuous form of gambling into a continuous one (Griffiths, 2012; Griffiths & Auer, 2013). The gambling studies literature has suggested that in-play sports betting may offer more of a risk to problem gamblers because it allows the option for high-speed continuous betting and requires rapid and impulsive decisions in absence of time for reflection (Lopez-Gonzalez et al., 2017).

Sports betting is one of the most commonly promoted forms of gambling in many countries and access to this marketing activity has been associated with sports betting problems (Hing et al. 2016; Lopez-Gonzalez, Estévez & Griffiths, 2017a). Advertisements often promote online sports betting as being easily accessible, anywhere at any time, using a mobile or other internet compatible device (Hing et al. 2017; Lopez-Gonzalez, Estévez & Griffiths, 2017a). There has also been a growth in in-play sports betting advertising. For example, within a sample of British and Spanish sports betting advertisements, in-play betting was prevalent in just under half of the adverts (Lopez-Gonzalez, Guerrero-Solé & Griffiths, 2017). One popular form of gambling advertising is the promotion of wagering inducements. These are often inducements that are promoted during a live event, and it has been suggested that doing so may promote impulse betting, where those placing a bet have an immediate chance to place the incentivised bet via a platform (Lamont, Hing & Vitartas, 2016). Inducements promoted during an in-match sporting event have been cited as a practice that may encourage in-play impulse betting intentions (Lamont et al., 2016).

Gambling companies have been known to promote mobile betting over other forms of gambling in their advertisements

(Lopez-Gonzalez, Guerrero-Solé, & Griffiths, 2017) by overstating the illusion of control that gamblers perceive when placing bets via their smartphones (Lopez-Gonzalez, Estévez & Griffiths, 2017b). A main cognitive heuristic involved in the maintenance of gambling behaviour is the illusion of control (Langer 1975). The illusion of control generates an expectancy of success that is inappropriately higher than is objectively warranted (Langer, 1975). In-play sports has the potential to enhance the illusion of control because gamblers are often able to dictate the speed of play, the volume of betting, and amount of money wagered, which may enhance both psychological perception and investments of control over their sports bet placement.

Whilst in-play sports betting features (such as the 'cash out' feature) are increasing in popularity amongst online gambling operators (Lopez-Gonzalez & Griffiths, 2016) and despite the growing body of research investigating the psychosocial and individual psychological factors determining gambling behaviour, much less attention has been devoted to understanding these factors in the context of in-play sports betting and the market characteristics of online sports betting. Given that so little research has been carried out, we recently carried out a systematic literature review to summarise all the studies that had examined in-play betting (i.e., Killick & Griffiths, 2018).

Using a wide variety of academic databases, we found only 16 papers which included empirical data or theorised about in-play sports betting in the gambling studies literature. Thirteen of the papers were empirical and three of the papers were theoretical and/or commentary based providing some kind of critique of in-play sports betting (see Table 1).

## Empirical studies on in-play betting

Of the 13 empirical studies published, nine of them analysed actual gambling using behavioural tracking data (provided by the online gambling operator bwin) and four analysed self-report data from surveys.

## Non-empirical studies of in-play betting

A number of scholars in the gambling studies field have argued that structural characteristics of gambling, including activities with higher event frequencies, are associated with problem gambling (Griffiths & Auer, 2013; Harris & Griffiths, 2017). In short, those activities that can be gambled on continuously such as slot machines (which can have event frequencies of up to 30 times a

Table 1: Academic papers that discuss or empirically studied in-play sports betting (in alphabetical order of first author)

STUDY/PAPER	METHODOLOGY	SAMPLE SIZE	MAIN FINDINGS
Braverman and Shaffer (2010)	Behavioural tracking	530	In-play bettors who were categorized by high-intensity, frequency and variability of amount staked during their first month of gambling were more likely to report gambling-related problems when closing their accounts.
Braverman et al. (2013)	Behavioural tracking	4,056	Two groups of internet gamblers were found to have a higher risk of developing gambling-related problems. The first group engaged in three or more different gambling activities and showed high wager variability on casino games in their first month of using the gambling website. The second group participated in two different gambling activities and demonstrated high variability for in-play wagers.
Broda et al. (2008)	Behavioural tracking	160	Bettors who surpassed a self-imposed or default limit demonstrated a higher involvement in sports betting (i.e., bets per day and stake size). After receiving the notification, indicators of unfavourable gambling behaviours did not decline. There were no reported differences in the betting patterns of results for fixed-odds and in-play betting.
Brosowski, Meyer & Hayer (2008)	Behavioural tracking	27,653	Gambling involvement levels, including gambling on multiple game types, were predictive of gambling-related problems. Engaging in in-play betting or poker were significant predictors of at-risk gambling after controlling for multiple game involvement.
Gray et al. (2012)	Behavioural tracking	2,066	Online gamblers who triggered a responsible gambling alert were distinguished from control cases using indices of the intensity of gambling activity (e.g., number of bets per betting day, total number of bets made). Those who triggered the responsible gambling alert were likely to engage in in-play sports betting than those who did not.
Griffiths and Auer (2013)	Theoretical	N/A	The paper argued that structural characteristics, including event frequency, appear to be a contributing factor in problem gambling. It was argued that in-play betting had changed the structural characteristics of sports betting from one that was typically discontinuous (e.g., a weekly bet on the outcome of a football game) to a 'continuous' form of gambling with an increased event frequency that is associated with problem gambling.
Hing et al. (2016)	Self-report	639	The risk of experiencing gambling-related problems was associated with a higher number of bets being placed in-play, before an event has started; and on impulse before or during a match.
Hing et al. (2017)	Self-report	1,816	Impulsive sports bettors (characterised as having higher trait impulsiveness, more frequent sports betting behaviour, higher problem gambling severity and a shorter history of sports betting) were more likely to bet on in-play sporting events than overall match outcomes.

STUDY/PAPER	METHODOLOGY	SAMPLE SIZE	MAIN FINDINGS
LaBrie et al (2007)	Behavioural tracking	40,499	In-play bettors placed on average 2.8 wagers of €4 every fourth day compared with fixed-odds bettors who placed 2.5 bets of €4 every fourth day. Mean net losses were smaller for in-play bets. Those who bet in-play on sports (as opposed to those who bet before matches) were categorized more often as heavily involved gamblers.
LaPlante et al. (2008)	Behavioural tracking	47,603	Most of the sample demonstrated a rapid decrease in the number of bets made and the stake size wagered. Betting frequency was higher for fixed-odds events. However, after three months, the amount wagered on in-play events surpassed wagers placed on fixed-odds events.
LaPlante et al. (2014)	Self-report	1,440	In-play sports betting demonstrated a significant relationship with potential gambling-related problems, after controlling for depth and breadth of gambling involvement.
Lopez-Gonzalez and Griffiths (2017)	Theoretical	N/A	It was theorised that the in-play 'cash-out' feature has structural characteristics that allows bettors to feel more in control of their bets and may make gamblers lose control of their bets.
Lopez-Gonzalez and Griffiths (2018)	Self-report	659	Problem gambling severity was positively associated with (i) how much gamblers talked about betting with other people prior to bet placement, and (ii) how often online betting functions such as 'cash out' were utilized and time spent betting. In-play sports betting was found to be more prevalent among problem gamblers when compared to moderate-risk gamblers, low-risk gambler and non-problem gamblers.
Nelson et al. (2008)	Behavioural tracking	567	Bettors who utilised a self-limit (SL) feature were more likely to prefer in-play betting on match outcomes opposed to betting on fixed-odds events. Bettors who used the SL feature placed more bets per day but wagered less money per bet on in-play betting than non-SL players. After utilising the SL feature, subscribers reduced gambling activity. However, for sports-betting gamblers. The frequency, amount and percentage-loss of wagers did not change.
Parke and Griffiths (2007)	Theoretical	N/A	It was theorised that because of the change in structural characteristics that in-play gambling provided that in-play betting may contribute to problem gambling because of (i) an increase in perceived skill, (ii) within-session chasing on the same match or event, and (iii) by making the sporting events more interesting and/or exciting.
Xuan and Shaffer (2009)	Behavioural tracking	226	Prior to closing their gambling accounts, self-identified in-play betting problem gamblers, whilst experiencing increasing losses, were more likely to try to recoup their losses by increasing their stake per bets on events that had less risky (i.e., shorter) odds. A decrease in gambling frequency in-play problem bettors was observed prior to account closure.

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minute on an online slot machine) tend to have a much higher association with problem gambling than activities such as a bi-weekly lotto game (with an event frequency of twice a week) (Griffiths & Auer, 2013). In relation to in-play-betting, Parke and Griffiths (2007) were the first scholars to speculate that in-play betting may contribute to prolonged, excessive, un-planned, or problem gambling due to: (i) a growth in 'perceived skill' (through studying, analysing or spectating the betting event); (ii) chasing losses/winnings on the same or different sporting event by placing further bets during the event; and (iii) by making the sporting event more stimulating or exciting.

Papers by Griffiths and Auer (2013) and Lopez-Gonzalez and Griffiths (2017) made a number of similar observations. Previously, bet duration (the time from placing the bet, until its settlement) was fixed. However, bet durations can now be amended via in-play 'cash out' features (Lopez-Gonzalez & Griffiths, 2017). In-play betting utilising 'cash out' features have the potential to make sports-bettors more vulnerable to cognitive bias (Lopez-Gonzalez & Griffiths, 2017). In the past, sports betting was typically a discontinuous form of gambling with the vast majority of sports bettors gambling weekly on the outcome of a particular event (e.g., a football match). However, some papers have specifically argued that in-play betting and use of the 'cash out' feature now allows sports betting to be a continuous form of gambling (Griffiths & Auer, 2013; Lopez-Gonzalez & Griffiths, 2017). This has radically changed the traditional sports betting market which was once a discontinuous (low-risk) gambling activity to a more continuous (high-risk) gambling activity. In-play sports bettors who experience gambling-related problems may feel more inclined to engage in less planned, impulsive, and immediate forms of gambling and the time between bet placement and the reward (or lack of) is greatly shortened (Parke & Griffiths, 2007; Griffiths & Auer, 2013).

A paper published by Lopez-Gonzalez and Griffiths (2017) is the only paper that explicitly discusses the implication of in-play 'cash out' sports betting features. They suggested that one of the implications of 'cash out' in relation to problem gambling is that there is a conception of gambling on sports as an investment, like that of trading on the stock market. This was then confirmed empirically showing that sports betting advertisements contribute to self-perceptions of bettors as specialists of sports, promoting game analysis to beat gambling companies (Lopez-Gonzalez, Guerrero-Solé, Estévez & Griffiths, 2017). The notion that the bettor can view themselves as a professional that can improve their probability of winning may serve as a motivating factor to gamble (Lopez-Gonzalez & Griffiths, 2017). Problematic online

bettors have been found to consider themselves to be semi-professional gamblers, and in the case of horse racing bettors, they are more likely to self-report being a professional gambler (Hing, Russell & Browne, 2017).

## So what do these studies tell us?

As can be seen from this brief review, the most commonly used empirical method of investigating in-play gambling behaviours has been via the use of behavioural tracking data (although all of this has come from the same bwin dataset). Research published using the bwin dataset has reported that engaging in in-play gambling appears to be an important marker for gambling-related problems (LaBrie et al. 2007; LaPlante et al. 2008; Nelson et al. 2008). These studies described gambling-related behavioural factors associated with highly involved sports bettors (e.g., number of bets and the total amount wagered) and identified a sub-group of bettors who maintained a high involvement in online gambling via in-play betting (LaBrie et al. 2007; LaPlante et al. 2008). Other studies found that participation in in-play sports betting is an independent predictor of problem gambling severity when gambling involvement is controlled for (Brosowski, Meyer & Hayer, 2008; Xuan & Shaffer, 2009). It was also found that gamblers who utilised an online provider's limit setting tool were more likely to engage in in-play betting than other forms of gambling (Gray et al. 2012; Nelson et al. 2008). After setting a voluntary limit, those who previously participated in fixed-odds and in-play sports betting were more likely to stop betting in-play than to stop betting on fixed-odds selections (Nelson et al. 2008). Nelson et al. (2008) suggest that this could indicate that the players consider in-play betting to be more of a risk. Overall, the reviewed studies suggest that multiple, frequent and larger in-play bets appeared likely indicators that differentiated high-risk sports bettors from lower risk sports bettors.

Although the results described using the bwin dataset allow for real life gambling behaviour to be studied, they are not without limitations. Firstly, studies that utilise these datasets did not describe the gamblers' perceptions, clinical characteristics or the social consequences associated with their betting behaviour (Griffiths, 2014; Shaffer et al. 2010). There was no information provided about users' income (Shaffer et al. 2010) and previous research has indicated that the impact of gambling is partially dependent upon the gambler's financial status, therefore, it is necessary to consider the amount spent gambling in relation to the amount of money that is available (Gray et al. 2012). Due the lack of psychosocial information about the meaning and consequences of gamblers, it is not possible to infer any clinical

characteristics regarding the impact of internet gambling on the lives of individual subscribers (Griffiths, 2014; Shaffer et al. 2010). One disadvantage of using online behavioural tracking is that internet gamblers may also gamble both online and in person, for example, at casinos or other gambling venues, and are unlikely to gamble at just one site (Wardle et al., 2011). Therefore, estimates of Internet gambling usage may not be an accurate representation of how much Internet subscribers gamble (Shaffer et al. 2010).

In relation to the self-report studies and non-empirical studies concerning in-play sports betting, researchers have constantly referred to the role of structural characteristics in the acquisition, maintenance and development of online gambling behaviour (Parke & Griffiths, 2007) and have demonstrated an association between problem gambling and such features as event frequency, bet frequency, and the speed of rewards (Griffiths, 2012; Harris & Griffiths, 2017). The gambling studies literature has suggested that in-play sports betting may offer more of a risk to problem gamblers because it allows the option for high-speed continuous betting and requires rapid and impulsive decisions in absence of time for reflection (Hing et al. 2014a, 2014b; Lopez-Gonzalez et al., 2017; Nelson et al. 2008). Therefore, in relation to problem gambling, in-play betting offers structural factors that may contribute to the development of gambling-related problems. These characteristics include, but are not limited to bet frequency, event frequency, event duration, and pay-out frequency.

Research has found in-play betting to be associated with people who were categorised as problem gamblers (Lopez-Gonzalez and Griffiths, 2018). Lopez-Gonzalez and Griffiths (2018) offered a potential explanation for this. More specifically, gamblers who are experiencing gambling-related problems may be inclined to place impulsive, less planned, and readily available forms of gambling such as in-play. However, using the data from the present studies is not possible to identify a causal link between problem gambling and the use of different gambling types due to the correlational and cross-sectional nature of the few studies that have been carried out to date (Lopez-Gonzalez and Griffiths, 2018). Understanding factors that determine in-play betting behaviour, including understanding the risk factors for problem gambling amongst in-play sports bettors, is an important area of research given the continuing growth of the online sports betting industry. Overall, research to date suggests that this way of gambling has the potential to be more harmful than other ways of gambling (e.g., gambling on fixed odds) because of the inherent structural characteristics. **CGI**

**References**

Braverman, J., LaPlante, D. A., Nelson, S. E. & Shaffer, H. J. (2013). Using cross-game behavioral markers for early identification of high-Risk internet gamblers. *Psychology of Addictive Behaviors*, 27(3), 868–877.

Braverman, J., LaPlante, D. A., Nelson, S. E. & Shaffer, H. J. (2013). Using cross-game behavioral markers for early identification of high-Risk internet gamblers. *Psychology of Addictive Behaviors*, 27(3), 868–877.

Braverman, J., & Shaffer, H. J. (2010). How do gamblers start gambling: Identifying behavioural markers for high-risk internet gambling. *European Journal of Public Health*, 22(2), 273–278.

Broda, A., LaPlante, D. A., Nelson, S. E., LaBrie, A. R., Bosworth, L. B. &

Shaffer, H. J. (2008). Virtual harm reduction efforts for Internet gambling: effects of deposit limits on actual Internet sports gambling behavior. *Harm Reduction Journal*, 5, 12.

Gambling Commission (2016). In-play (in-running) betting: Position paper. Retrieved November 21, 2017, from: <http://www.gamblingcommission.gov.uk/pdf/In-running-betting-position-paper.pdf>

Gray, H. M., LaPlante, D. A., & Shaffer, H. J. (2012). Behavioral characteristics of Internet gamblers who trigger corporate responsible gambling interventions. *Psychology of Addictive Behaviors*, 26(3), 527–535.

Griffiths, M. D. (2012). Mind games (A brief psychosocial overview of in-play betting). *i-Gaming Business Affiliate*, June/July, 44

Griffiths, M. D. (2014). The use of behavioural tracking methodologies in the study of online gambling. *SAGE Research Methods Cases*. London: Sage. doi: 10.4135/978144627305013517480

Griffiths, M. D., & Auer, M. (2013). The irrelevancy of game-type in the acquisition, development, and maintenance of problem gambling. *Frontiers in Psychology*, 3, 621.

Griffiths, M. D., Parke, A., Wood, R., & Parke, J. (2006). Internet gambling: An overview of psychosocial impacts. *UNLV Gaming Research & Review Journal*, 10, 27–39

Harris, A. & Griffiths, M.D. (2017). The impact of speed of play in gambling on psychological and behavioural factors: A critical review. *Journal of Gambling Studies*. Epub ahead of print. doi: 10.1007/s10899-017-9701-7

Hing, N., Li, E., Vitartas, P., & Russell, A. M. T. (2017). On the spur of the moment: Intrinsic predictors of impulse sports betting. *Journal of Gambling Studies*. Epub ahead of print. doi: 10.1007/s10899-017-9719-x

Hing, N., Chorney, L., Gainsbury, S., Lubman, D., Wood, R., & Blaszczynski, A. (2014a). Maintaining and losing control during Internet gambling: A qualitative study of gamblers' experiences. *New Media and Society*, 17(7), 1075–1095.

Hing, N., Gainsbury, S., Blaszczynski, A., Wood, R., Lubman, D., & Russell, A. (2014b). *Interactive gambling*. Melbourne: Gambling Research Australia.

Hing, N., Lamont, M., Vitartas, P., & Fink, E. (2015). Sports-embedded gambling promotions: A study of exposure, sports betting intention and problem gambling amongst adults. *International Journal of Mental Health and Addiction*, 68, 2057–2066. doi: 10.1007/s11469-014-9519-9

Hing, N., Russell, A, M.T. & Browne, M (2017). Risk factors for gambling problems on online electronic gaming machines, race betting and sports betting. *Frontiers in Psychology*, 8, 779. doi:10.3389/fpsyg.2017.00779

Hing, N., Russell, A.M.T., Vitartas, P., & Lamont, M. (2016). Demographic, behavioural and normative risk factors for gambling problems amongst sports bettors. *Journal of Gambling Studies*, 32(2), 625-641. doi:

10.1007/s10899-015-9571-9

Hing, N., Russell, A.M.T., Lamont, M & Vitartas (2017). Bet anywhere, anytime: An analysis of internet sports bettors' responses to gambling promotions during sports broadcasts by problem gambling severity. *Journal of Gambling Studies*, 33(4), 1051-1065. doi: 10.1007/s10899-017-9671-9

Killick, E.A. & Griffiths, M.D. (2018). In-play sports betting: A scoping study. *International Journal of Mental Health and Addictions*. <https://doi.org/10.1007/s11469-018-9896-6>

LaBrie, R. A., Laplante, D. A., Nelson, S. E., Schumann, A. E., & Shaffer, H. J. (2007). Assessing the playing field: A prospective longitudinal study of internet sports gambling behavior. *Journal of Gambling Studies*, 23(3), 347–362. doi: 10.1007/s10899-007-9067-3

Lamont, M., Hing, N., & Virtartas, P. (2016). Affective responses to gambling promotions during televised sport: A qualitative analysis. *Sport Management Review*, 19(3), 319-331. doi: 10.1016/j.smr.2015.06.002

Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 31(2), 311–328. doi:10.1037/0022-3514.32.2.311

LaPlante, D. A., Nelson, S. E., & Gray, H. M. (2014). Breadth and depth involvement: Understanding Internet gambling involvement and its relationship to gambling problems. *Psychology of Addictive Behaviors*, 28(2), 396–403. doi: 10.1037/a0033810

LaPlante, D. A., Schumann, A., LaBrie, R. A., & Shaffer, H. J. (2008). Population trends in Internet sports gambling. *Computers in Human Behavior*, 24, 2399–2414. <https://doi.org/10.1016/j.chb.2008.02.015>

Lopez-Gonzalez, H, Estévez, A., & Griffiths, M. D (2017a). Marketing and advertising online sports betting: A problem gambling perspective. *Journal of Sport and Social Issues*, 41(3), 256-272. doi: 10.1177/0193723517705545

Lopez-Gonzalez, H., Estévez, A. & Griffiths, M.D. (2017b). Controlling the illusion of control: A grounded theory of sports betting advertising in the UK. *International Gambling Studies*. Epub ahead of print. doi: 10.1080/14459795.2017.1377747

Lopez-Gonzalez, H., Estévez, A. & Griffiths, M. D. (2018). Internet-based structural characteristics of sports betting and problem gambling severity: Is there a relationship? *International Journal of Mental Health Addiction*. Epub ahead of print. doi.org/10.1007/s11469-018-9876-x

Lopez-Gonzalez, H. & Griffiths, M.D. (2016). Is European online gambling regulation adequately addressing in-play betting advertising? *Gaming Law Review and Economics*, 20, 495-503.

Lopez-Gonzalez, H., & Griffiths, M. D. (2017). “Cashing out” in sports betting: Implications for problem gambling and regulation. *Gaming Law Review*, 21(4), 323–326.

Lopez-Gonzalez, H. Guerrero-Solé, F., Estévez, A. & Griffiths, M.D. (2017). Betting is loving and bettors are predators: A Conceptual Metaphor Approach to online sports betting advertising. *Journal of Gambling*

*Studies*. Epub ahead of print doi: 10.1007/s10899-017-9727-x

Lopez-Gonzalez, H., Guerrero-Solé, F., & Griffiths, M. D. (2017). A content analysis of how ‘normal’ sports betting behaviour is represented in gambling advertising. *Addiction Research & Theory*. Epub ahead of print. doi:10.1080/16066359.2017.1353082

Nelson, S. E., Laplante, D. A., Peller, A. J., Schumann, A., Labrie, R. A., & Shaffer, H. J. (2008) Real limits in the virtual world: Self-limiting behavior of internet gamblers. *Journal of Gambling Studies*, 24(4), 463–477.

Parke, J. & Griffiths, M. D. (2007). The role of structural characteristics in gambling. In Smith, G., Hodgins, D. & Williams, R. (Eds.), *Research and measurement issues in gambling studies* (pp.211-243). New York: Elsevier.

Shaffer, H. J., Allyson, J. P., LaPlante, D. A., Nelson, S. E., & Labrie, R. A. (2010). Toward a paradigm shift in Internet gambling research: From opinion and self-report to actual behavior. *Addiction Research & Theory*, 18, 270–283.

Wardle, H., Moody, A., Griffiths, M. D., Orford, J. & Volberg, R. (2011). Defining the online gambler and patterns of behaviour integration: Evidence from the British Gambling Prevalence Survey 2010. *International Gambling Studies*, 11, 339-356.

Xuan, Z., & Shaffer, H. (2009). How do gamblers end gambling: Longitudinal analysis of internet gambling behaviors prior to account closure due to gambling related problems. *Journal of Gambling Studies*, 25, 239–252.



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