

ONLINE PROBLEM GAMBLING: HOW CAN IT BE IDENTIFIED AND WHAT CAN BE DONE ABOUT IT USING TRACKING DATA

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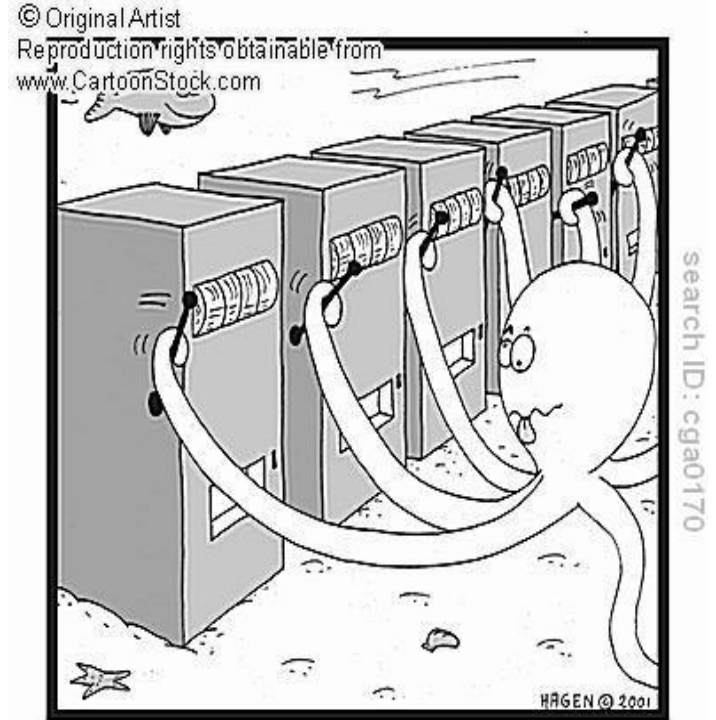
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OVERVIEW OF SESSION

- Key addiction components
- DSM-5 Gambling Disorder
- Implications of behavioural tracking for identifying problem gambling
- Briefly outline some of our evaluations of RG tools using behavioural tracking data
- (Promoting responsible gambling and minimizing gambling harm)
- Conclusions

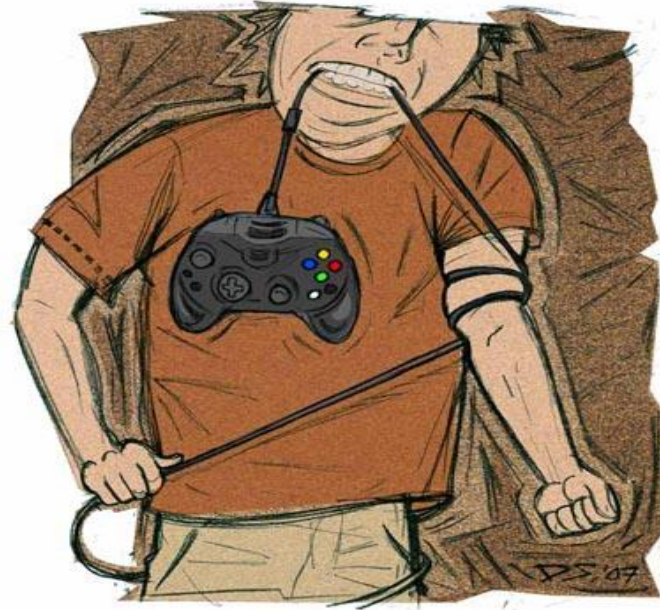


Compulsive gambling

KEY ADDICTION COMPONENTS

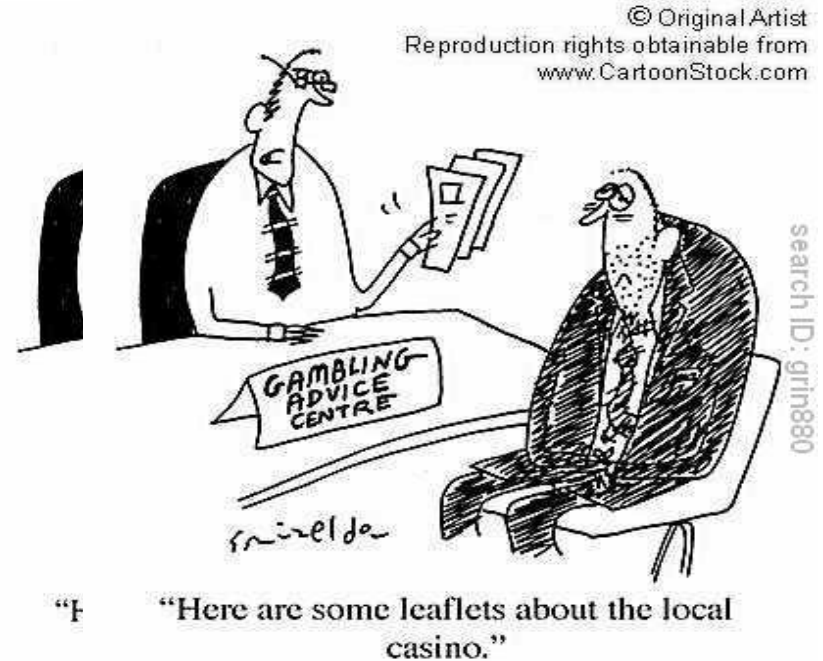
(Griffiths, 1995; 1996; 2005; 2009)

- **Salience**
- **Mood modification**
- **Tolerance**
- **Withdrawal**
- **Conflict**
- **Relapse**



IDENTIFYING PROBLEM GAMBLERS USING BEHAVIOURAL TRACKING DATA

- Various members of the online gambling industry have claimed that problem gambling can be identified online.
- If this is true, it has implications for current problem gambling screening instruments.
- A brief analysis of the extent to which each DSM-5 criterion of problem gambling can be identified online shows that only a few behaviours can be identified



DSM-5 CRITERIA FOR GAMBLING DISORDER

- Is preoccupied with gambling (e.g. reliving past experiences, planning next venture, thinking of ways to get money) **[SALIENCE]**
- Needs to gamble with increasing amounts of money in order to achieve the desired excitement **[TOLERANCE/MOOD MODIFICATION]**
- Repeated unsuccessful efforts to control, cut back, or stop gambling **[RELAPSE]**
- Is restless or irritable when trying to cut down or stop gambling **[WITHDRAWAL]**



- Gambles as a way of escaping from problems or of relieving a dysphoric mood (e.g. helplessness, guilt, anxiety, depression) **[MOOD MODIFICATION]**
- After losing money gambling, often returns another day to get even (“chasing” one’s losses) **[CHASING LOSSES]**
- Lies to family members, therapist, or others to conceal extent of involvement with gambling **[CONFLICT]**
- Has jeopardised or lost a significant relationship, job, or educational or career opportunity because of gambling **[CONFLICT]**
- Relies on others to provide money to relieve a desperate financial situation caused by gambling **[BAIL OUT]**

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CAN BIG DATA ONLINE TRACKING BE IDENTIFIED USING DSM-5 CRITERIA?

- Salience/Preoccupation (good possibility)
- Tolerance (possibly)
- Relapse (possibly)
- Withdrawal (unlikely)
- Escape from reality (unlikely)
- Chasing losses (good possibility)
- Conceal Involvement (unlikely)
- Unsociable Behaviour (unlikely)
- Ruin a Relationship/Opportunity (unlikely)
- Bail-out (slight possibility)

SELF-EXCLUDERS AS A PROXY FOR PG

- Some self-excluders are not PGs
- Some PGs are not self-excluders
- Players exclude for various reasons

Should Voluntary Self Exclusion by Gamblers be used as a Proxy Measure for Problem Gambling?

Abstract

This brief paper critically addresses a recent approach by researchers that use voluntary self-exclusion (VSE) by gamblers as a proxy measure for problem gambling. By using tracking data from online gamblers or data from player cards, such research derives typical behavioral patterns of past voluntary self-excluders and uses their data to predict and identify problem gamblers. We argue that this approach is flawed and is unlikely to help in developing harm-minimization measures. We argue that using personalized feedback is a much better approach to the prevention of problem gambling than using data from those that self-exclude from gambling.

Commentary

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Voluntary Self Exclusion

Self-exclusion practices typically refer to the possibility for gamblers to voluntarily ban themselves from playing all (a selection of) games over a predetermined period. The period of exclusion can typically be chosen by the gambler although some operators have non-negotiable self-exclusion periods. Self-exclusion in both online sites and offline venues has become an important responsible gambling practice that is widely used by socially responsible operators [1]. Briefly overviewed self-exclusion practices in both online and land-based environments. They argued that empirical research on the effectiveness of VSE in online gambling is rare [2], investigated a sample of 256 online gamblers who self-excluded who were then surveyed six & twelve months later. They found that VSE can have favourable psychosocial effects for the gambler. For instance, players showed a marked decrease in the willingness to gamble online shortly after they self-excluded [3], tried to predict future self-exclusion by analyzing written player correspondence with a gaming company from 150 self-excluders (compared to 150 controls). They were able to correctly predict 76.6% of future self-exclusions based on written communications. Important indicators extracted from customer emails were increasing amount of interaction with customer services over a six-month period prior to self-exclusion, doubts about the results of games, and issues concerning account administration and financial transactions. Self-excluders were also different from controls with respect to the tonality of the email (i.e. they used threats and were more abusive in written communications). Based in previous empirical research [4], claimed that VSE programs are under-utilized by problem gamblers. In general, it is known that individuals do not seek help for problem gambling until they reach serious crisis [5].

Why do Players Self Exclude and who are they?

Reasons for players to self-exclude are manifold. In a study by

[2], players frequently reported excluding as a preventive measure and annoyance with the operator as reasons for VSE. Furthermore, about one-fifth of self-excluders reported to be problem gamblers (21.2%). Using the DSM-IV criteria for pathological gambling [6,7], reported that in a study of three Swiss Casinos, 29% of self-excluders were pathological gamblers, 33% were problem gamblers, and 38% were recreational gamblers. Given that many voluntary self-excluders do not exclude themselves for gambling-related problems [7], concluded that self-exclusion is not a good indicator of gambling-related problems. In line with these results [8], compared self-excluders with other online players and reported no differences in the (1) mean number of gambling hours per month or (4) minutes per gambling session. Similar to [2], who report self-exclusion to be rather spontaneous [8], reported that 25% of players self-excluded within one day of their registration with the online operator. This could also be due to the fact that online players can self-exclude with just a few mouse-clicks.

Self Exclusion as a Predictor of Problem Gambling

The aforementioned studies report that the majority of voluntary self-excluders tend to be non-problem gamblers. Additionally [9], reported 15,000 active voluntary self-exclusions from 2002 to 2009 and that this represented only 19.20% of the population of problem gamblers. This means that in addition to most self-excluders being non-problem gamblers, that most problem gamblers are not self-excluders. This leads to the conclusion that there is little overlap between problem gambling and self-excluding.

Over the decade, analytical approaches to harm minimization have become popular. This has led to the development of various tracking tools such as Play Scan (developed by Svenska Spel), Observer (developed by 888.com), and mentor (developed by nexton). Furthermore, regulators are increasingly recognizing the importance of early risk detection via behavioral tracking

EVIDENCE BASE FOR IDENTIFYING PROBLEM GAMBLING ONLINE

SOCIAL RESPONSIBILITY

THE IMPLICATIONS OF REAL-TIME BEHAVIOURAL TRACKING

BY MARK GRIFFITHS

In contrast to offline gambling, behavioural tracking presents an opportunity for gaming operators and researchers to examine the actual and real-time behaviour engaged in by gamblers. To date, almost all diagnostic screening instruments contain criteria that are a mixture of statements about actual problem gambling behaviour, accompanied by criteria relating to the negative associated consequences of gambling. If problem gambling can be identified online without the use of diagnostic gambling screens, then this may have implications for the development of problem gambling screening instruments in the future.



For a number of years gambling researchers have been recommending to gaming companies (especially online gaming companies and those companies who offer loyalty cards), that they should start using their large data sets to help identify problem gamblers rather than target them for extra revenue (e.g., Griffiths & Parke, 2002; Griffiths, 2003; Smeaton & Griffiths, 2004; Griffiths, Parke, Wood & Parke, 2006; Griffiths, Wood, Parke & Parke, 2007; Wood & Griffiths, 2008).

There are two routes that gaming companies can take in identifying and helping online problem gamblers. Firstly, they could use a social responsibility tool that has already been developed, the most obvious example being PlayScan (Gensia Spiel; see Griffiths, Wood, Parke & Parke, 2007; Griffiths, Wood & Parke, 2009). The second is to develop a bespoke identification scheme such as the Observer system designed by SRS.com.

In contrast to offline gambling, behavioural tracking presents an opportunity for gaming operators and researchers to examine the actual and real-time behaviour engaged in by gamblers. Furthermore, such tracking technologies may provide implications for future diagnostic criteria for problem gambling if it can be shown that problem gambling can be reliably identified online without the use of established problem gambling screening instruments. In short, it could eliminate all the inherent weaknesses of the self-report methods that dominate traditional problem gambling research (such as gamblers lying, being economical with the truth, and/or providing socially desirable responses during questionnaires or interviews).

To date, almost all diagnostic screening instruments contain criteria that are a mixture of statements about actual

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Behavioural profiling of problem gamblers: a summary and review
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In many countries, there is increasing interest in early intervention strategies to assist people who are experiencing gambling-related problems. Central to these discussions is whether it is possible to identify problem gambling and/or risky behaviour in situ before gamblers formally seek assistance. This paper provides a review and critique of the small amount of published literature relating specifically to behavioural indicators and their practical application. It concludes that, while there is general agreement concerning the range of indicators that could be used, the process of identification remains difficult in practice. Multiple indicators are usually required to make reliable identifications; the nature of indicators will vary depending on the mode of gambling (land-based vs online), and venue staff employees usually have insufficient opportunity to obtain enough information to make judgments. The potential value of combining behavioural information with electronically monitored gambling data is discussed as a possible future strategy for enhancing the effectiveness of identification processes.

Keywords: addictive behaviour; data collection; venue; interactive gambling; intervention

Introduction

In many countries, problem or pathological gambling has been recognized as a significant public health concern (Brown, 2000; Brown & Raeburn, 2001; Griffiths, 2004; Korn & Shaffer, 1999). Although generally less prevalent than other recognized addictive behaviours (e.g. alcoholism), problem gambling is known to affect at least 1–2% of the population at any given time, with significant impacts on individuals, their families and communities (Neal, Delfabbro, & O'Neil, 2005; Productivity Commission, 2010). Despite this, it is known that only a small proportion of people potentially affected by gambling seek formal help. Usually this occurs when legal, financial and/or personal pressures leave people with little choice (Evans & Delfabbro, 2005). Accordingly, there is interest in whether interventions might be more effectively targeted towards gamblers before they reach a point of crisis where many harmful consequences may already have been incurred.

Approaches of this nature are consistent with both harm minimization and responsible gambling approaches. In public health terms, such interventions are often referred to as *secondary* because the focus is on assisting people who may be negatively affected by the gambling before they seek formal assistance. At the same time, these approaches are consistent with the growing emphasis on so-called responsible gambling policies (Griffiths, Wood, Parke, & Parke, 2007; Independent Pricing & Regulatory Tribunal,

EVALUATING RESPONSIBLE GAMBLING TOOLS USING BEHAVIOURAL TRACKING DATA



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Customer data is the lifeblood of any company and online gamblers provide tracking data that can be used to compile customer profiles. Such data can tell gambling operators which games their customers are gambling on, for how long, how much money they are spending, and what games are the profitable. This information can help in the retention of customers, and can also link up with existing customer databases and operating loyalty schemes. Consequently, gaming companies can tailor its service to the customer's known interests.

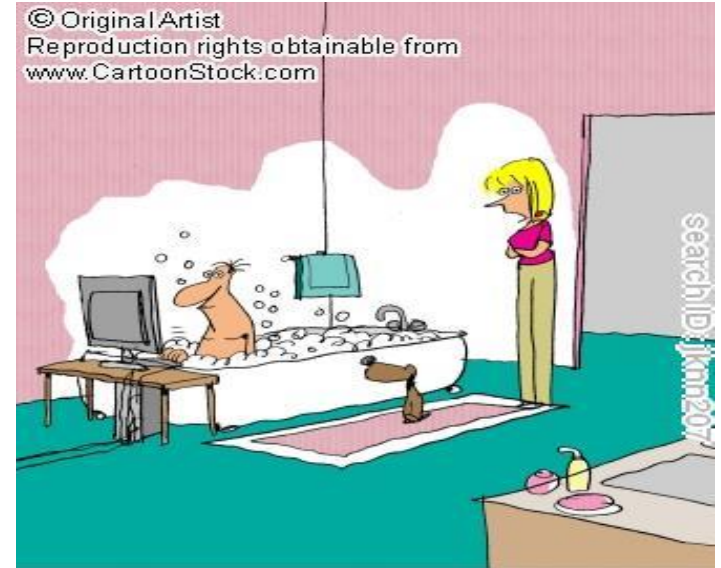
On joining loyalty schemes, players supply lots of information including name, address, telephone number, date of birth, and gender. Those who operate online gambling sites are no different. Basically gambling operators can track the playing patterns of any gambler. They arguably know more about the gambler's playing behaviour than the gamblers themselves. They are able to send the gambler offers and redemption vouchers, complimentary accounts, etc. These are done to enhance customer experience (Griffiths & Wood, 2008a). However, more unscrupulous operators have the means to entice known problem gamblers back onto their premises with tailored freebies (such as the inducement of "free" bets in the case of internet gambling). However, it has been long argued that behavioural tracking data can potentially be used to help identify problem gamblers rather than exploit them, and to use behavioural tracking data for research purposes (Griffiths & Wood, 2008b; Griffiths, Wood, Parke & Parke, 2007).

Over the past decade, behavioural tracking has increasingly been used in innovative ways by researchers. For instance, the use of behavioural tracking data has been used to examine the influence of structural characteristics in slot machine gambling (Leno et al., 2015), examine the amount of gambling behaviour

SOCIAL RESPONSIBILITY

PROBLEM GAMBLING BEHAVIOUR ONLINE USING TRACKING DATA (1)

- Chasing losses
- Total preoccupation with gambling
- Increase of gambling behaviour (time & money) over time
- Playing a variety of stakes
- Playing a variety of games
- Player 'reload' within gambling session



“Gambling while taking a bath? Have you lost your mind?”

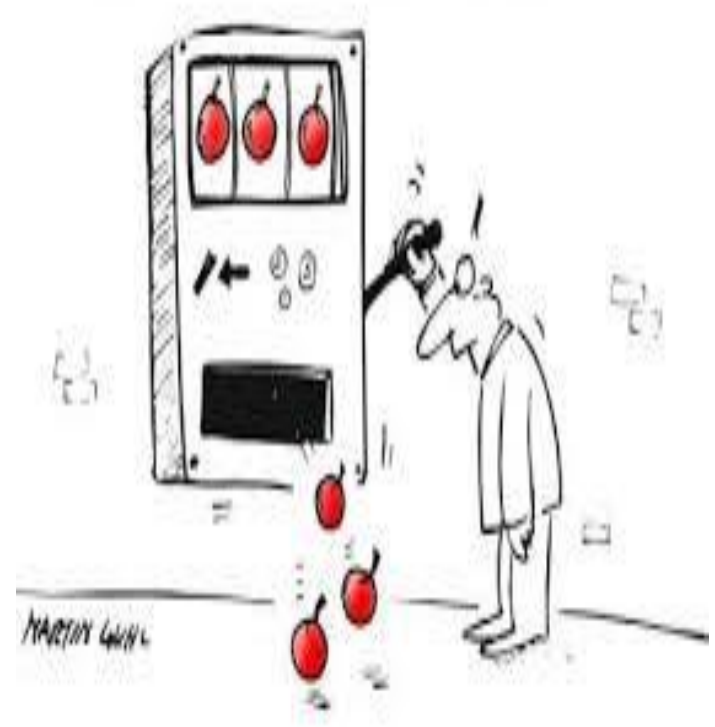
PROBLEM GAMBLING BEHAVIOUR ONLINE USING TRACKING DATA (2)

- Not collecting winnings
- Constantly hits limits
- Frequent payment method changes
- [Verbal aggression in chat rooms]
- [Constant complaints to customer services]
- Most importantly it is *change in usual behaviour*



Griffiths and Auer (2011; 2015) note that behavioural tracking data:

- Always come from unrepresentative samples (i.e., the players that use one particular internet gambling site)
- Does not tell us anything about a gambler's overall gambling (as gamblers are rarely loyal to one site)
- Does not account for the fact that more than one person can use a particular account



- "Tell us nothing" about why people gamble or develop problem
- Cannot be used for comparing online and offline gambling as data are only collected on one group of people (i.e., online gamblers)
- Are less likely to provide insights into the relationships between gambling and other co-morbid behaviours
- Cannot examine problem gambling using current diagnostic criteria.



EFFICACY OF ONLINE RG TOOLS

(Harris & Griffiths, 2017)

- Breaks in play
- Limit setting
- Messaging (static vs dynamic)
- Pop-up messaging
- Personalized messaging
- Behavioural tracking tools
- (Temporary self-exclusion)

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REVIEW PAPER

A Critical Review of the Harm-Minimisation Tools Available for Electronic Gambling

Andrew Harris¹ · Mark D. Griffiths¹

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Abstract The increasing sophistication of gambling products afforded by electronic technologies facilitates increased accessibility to gambling, as well as encouraging rapid and continuous play. This poses several challenges from a responsible gambling perspective, in terms of facilitating player self-awareness and self-control. The same technological advancements in gambling that may facilitate a loss of control may also be used to provide responsible gambling tools and solutions to reduce gambling-related harm. Indeed, several harm-minimisation strategies have been devised that aim to facilitate self-awareness and self-control within a gambling session. Such strategies include the use of breaks in play, 'pop-up' messaging, limit setting, and behavioural tracking. The present paper reviews the theoretical argument underpinning the application of specific harm-minimisation tools, as well as providing one of the first critical reviews of the empirical research assessing their efficacy, in terms of influencing gambling cognitions and behaviour.

LIMIT SETTING EMPIRICAL STUDY

(Auer & Griffiths, 2013)

- Data collected from a representative random sample of 100,000 players who gambled on the *win2day* gambling website
- During a three-month period, all voluntary time and/or money limit setting behaviour by a subsample of online gamblers (n=5000) within this mandatory framework was tracked and recorded for subsequent data analysis.
- From the 5,000 gamblers, the 10% most intense players (as measured by theoretical loss) were further investigated.

J Gambl Stud
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ORIGINAL PAPER

Voluntary Limit Setting and Player Choice in Most Intense Online Gamblers: An Empirical Study of Gambling Behaviour

Michael Auer · Mark D. Griffiths

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Abstract Social responsibility in gambling has become a major issue for the gaming industry. The possibility for online gamblers to set voluntary time and money limits are a social responsibility practice that is now widespread among online gaming operators. The main issue concerns whether the voluntary setting of such limits has any positive impact on subsequent gambling behaviour and whether such measures are of help to problem gamblers. In this paper, this issue is examined through data collected from a representative random sample of 100,000 players who gambled on the *win2day* gambling website. When opening an account at the *win2day* site, there is a mandatory requirement for all players to set time and cash-in limits (that cannot exceed 800 € per week). During a 3-month period, all voluntary time and/or money limit setting behaviour by a subsample of online gamblers ($n = 5,000$) within this mandatory framework was tracked and recorded for subsequent data analysis. From the 5,000 gamblers, the 10 % most intense players (as measured by theoretical loss) were further investigated. Voluntary spending limits had the highest significant effect on subsequent monetary spending among casino and lottery gamblers. Monetary spending among poker players significantly decreased after setting a voluntary time limit. The highest significant decrease in playing duration was among poker players after setting a voluntary playing duration limit. The results of the study demonstrated that voluntary limit setting had a specific and significant effect on the studied gamblers. Therefore, voluntary limits appear to show an appropriate effect in the desired target group (i.e., the most gaming intense players).

Keywords Online gambling · Responsible gambling · Social responsibility in gambling · Limit setting · Online lotteries · Online poker · Online casinos

- Voluntary spending limits had the highest significant effect on subsequent monetary spending among casino and lottery gamblers.
- Monetary spending among poker players significantly decreased after setting a voluntary time limit.
- The highest significant decrease in playing duration was among poker players after setting a voluntary playing duration limit.



SLOTS POP-UP EMPIRICAL STUDY 1

(Auer, Malischnig & Griffiths, 2014)

- This study investigated the effects of a slot machine pop-up message in a real gambling environment
- Compared the behavioural tracking data of two representative random samples of 400,000 gambling sessions before and after the pop-up message was introduced
- Pop-up appeared after 1000 consecutive plays

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Is “pop-up” messaging in online slot machine gambling effective as a responsible gambling strategy?

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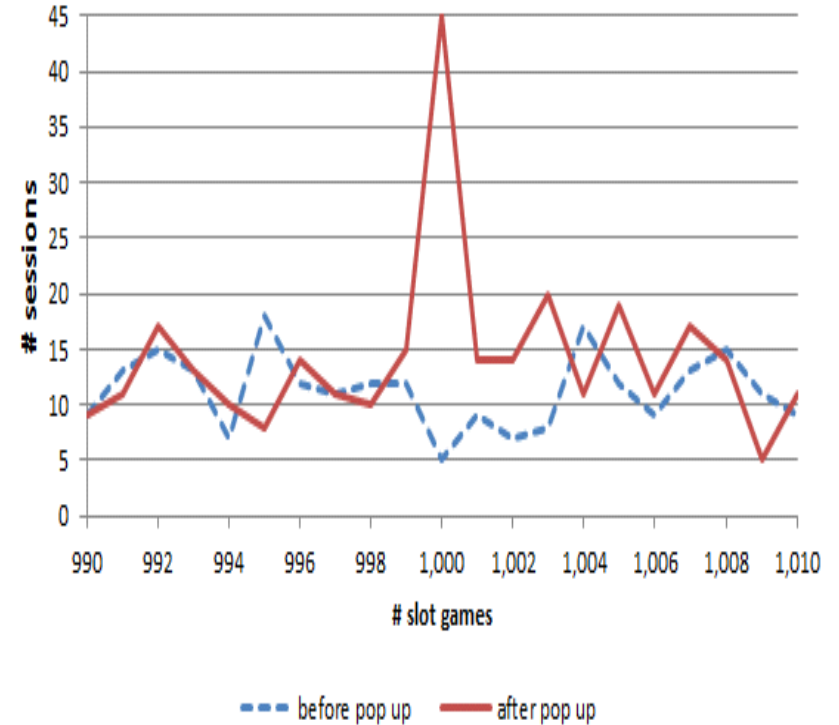
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Abstract

Certain gambling operators now provide social responsibility tools to help players gamble more responsibly. One such innovation is the use of pop-up messages that aim to give feedback to the players about the time and money they have thus far spent gambling. Most studies of this innovation have been conducted in laboratory settings, and although controlled studies are indeed more reliable than real-world studies, the non-ecological validity of laboratory studies is still an issue. This study investigated the effects of a slot machine pop-up message in a real gambling environment by comparing the behavioural tracking data of two representative random samples of 400,000 gambling sessions before and after the pop-up message was introduced. The study comprised approximately 200,000 gamblers. The results indicated that, following the viewing of a pop-up message after 1000 consecutive gambles on an online slot machine game, nine times more gamblers ceased their gambling session than did those gamblers who had not viewed the message. The data suggest that pop-up messages can influence a small number of gamblers to cease their playing session, and that pop-ups appear to be another potentially helpful social responsibility tool in reducing excessive play within session.

- (Comprising around 50,000 gamblers in total; approx 10,000 sessions reached 1,000 consecutive plays)
- The results indicated that demonstrably more gamblers ceased their gambling session following the viewing of a pop-up message after 1000 consecutive gambles on an online slot machine game compared to those who had not viewed a pop-up message.



SLOTS POP-UP EMPIRICAL STUDY 2

(Auer & Griffiths, 2015)

- Self-appraisal feedback, normative feedback, and cognitive belief feedback, have never been empirically examined in any real-world online gambling setting.
- A 2nd study investigated the effects of a normative and self-appraisal pop-up message among online slot machine players on a real online gambling site (i.e., *win2day*)

Testing normative and self-appraisal feedback in an online slot-machine pop-up in a real-world setting

Michael M. Auer^{1*} and Mark D. Griffiths²

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Over the last few years, there have been an increasing number of gaming operators that have incorporated on-screen pop-up messages while gamblers play on slot machines and/or online as one of a range of tools to help encourage responsible gambling. Coupled with this, there has also been an increase in empirical research into whether such pop-up messages are effective, particularly in laboratory settings. However, very few studies have been conducted on the utility of pop-up messages in real-world gambling settings. The present study investigated the effects of normative and self-appraisal feedback in a slot machine pop-up message compared to a simple (non-enhanced) pop-up message. The study was conducted in a real-world gambling environment by comparing the behavioral tracking data of two representative random samples of 800,000 gambling sessions (i.e., 1.6 million sessions in total) across two conditions (i.e., simple pop-up message versus an enhanced pop-up message). The results indicated that the additional normative and self-appraisal content doubled the number of gamblers who stopped playing after they received the enhanced pop-up message (1.39%) compared to the simple pop-up message (0.67%). The data suggest that pop-up messages influence only a small number of gamblers to cease long playing sessions and that enhanced messages are slightly more effective in helping gamblers to stop playing in-session.

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Keywords: online gambling, responsible gambling, online slot machines, pop-up messaging, normative feedback, ecological validity, behavioral tracking, health messaging

Introduction

The increasingly advanced technological environments of online gambling companies now allow for sophisticated ways of promoting responsible play among gamblers (Griffiths et al., 2009; Auer and Griffiths, 2013). The use of pop-up messages that appear on-screen while an individual is gambling on a slot machine and/or online is one way of informing players about how much time they have been playing and/or how much money they have spent. Pop-up messages are one of a range of tools that have been increasingly used by gaming operators to help encourage responsible gambling (Griffiths, 2012). Providing specific information in the form of messages to players while gambling is one way of intervening and helping gamblers that play excessively. It is believed that information that is given to people to enable behavioral change should encourage reflection as research has shown that self-monitoring changes behavior in the desired direction (e.g., Gilbert et al., 2001; Hardeman et al., 2002; Schwedes et al., 2002). However, it remains to be determined whether these pop-up interventions deliver the desired effects among the players that receive such messaging.

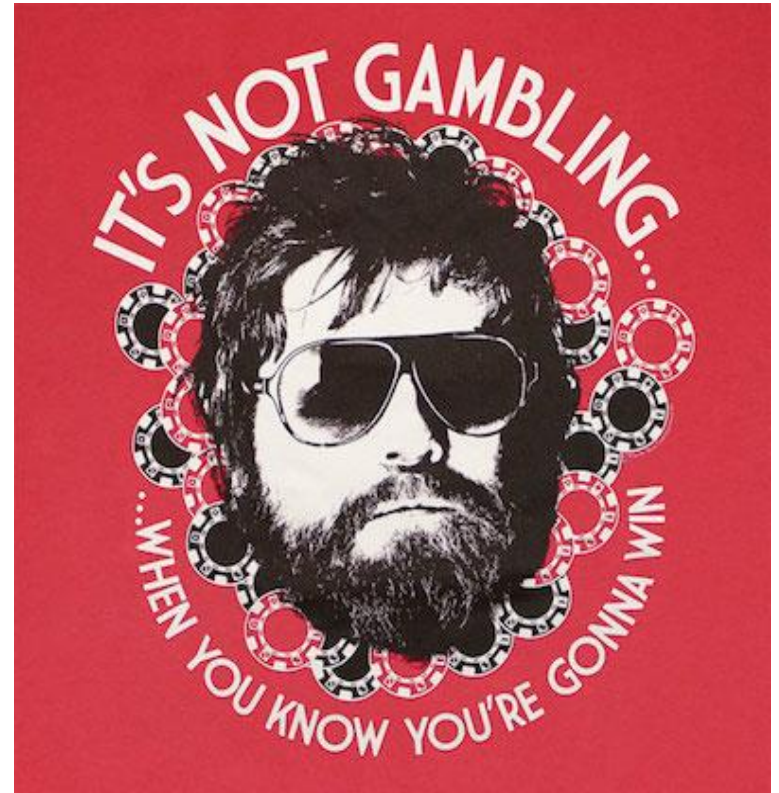
- In September 2013, the content of the *win2day* pop-up message was changed and
- New pop-up addressed self-appraisal, provided normative feedback, and addressed cognitive beliefs commonly found among gamblers.
- The new pop-up message (translated from German, the native language used on the Austrian site) reads:
- *“We would like to inform you, that you have just played 1,000 slot games. Only a few people play more than 1,000 slot games. The chance of winning does not increase with the duration of the session. Taking a break often helps, and you can choose the duration of the break”*
- The reasoning behind the messaging is as follows:

- The reasoning behind the messaging is as follows:
- **"We would like to inform you, that you have just played 1,000 slot games"**: This objectively informs players about the behavior they engaged in.
- **"Only a few people play more than 1,000 slot games"**: This provides normative feedback. Only 1.5% of playing sessions exceeds 1,000 consecutive slot games
- **"The chance of winning does not increase with the duration of the session"**: This addresses a common misbelief among gamblers (i.e., the gamblers' fallacy).
- **"Taking a break often helps, and you can choose the duration of the break"**: This provides advice and leaves the decision up to the player and is in line with the techniques of motivational interviewing (*Millner & Rollnick, 1991*)

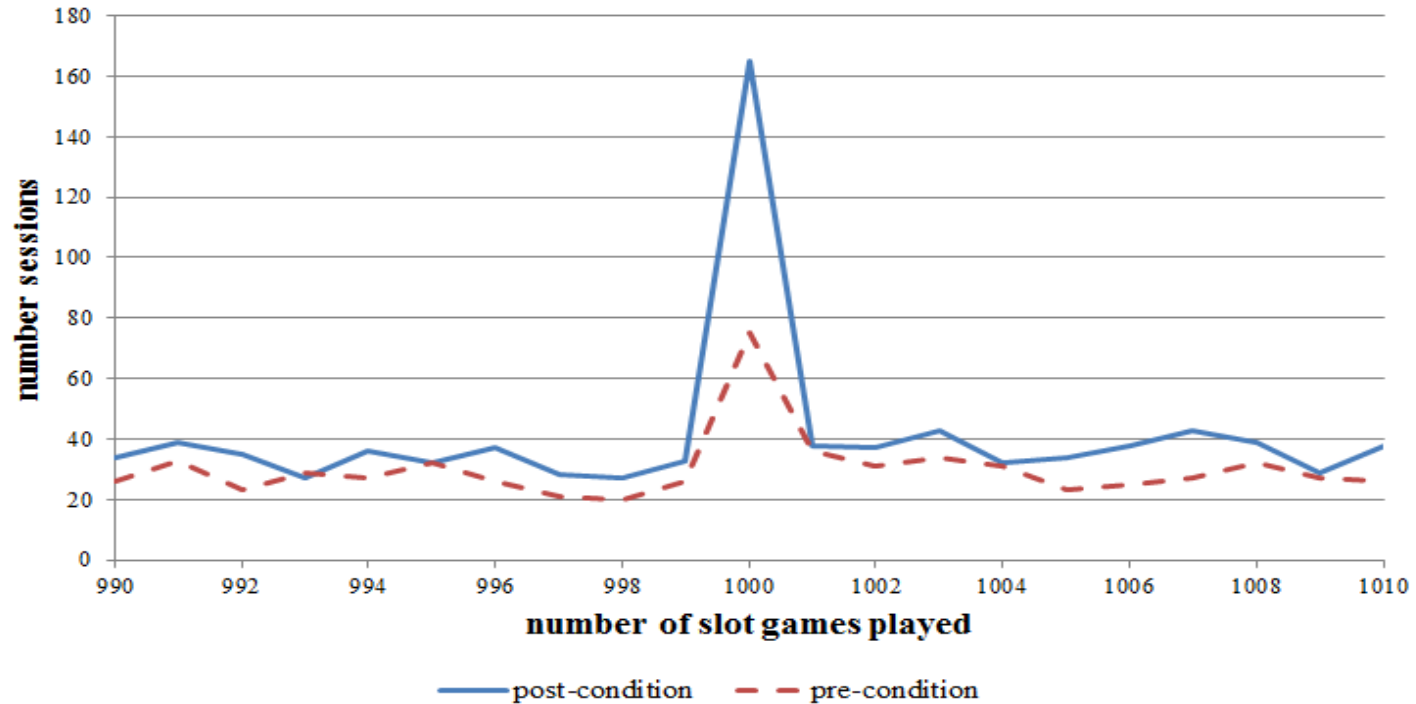
- Accessed two representative random samples of 800,000 sessions before and after the pop-up message was changed.
- The total dataset comprised 1,600,000 game sessions that contained at least one slot game (70,000 gamblers).
- We hypothesized that the changed message content would lead to an increase in gamblers terminating their gambling session after playing 1,000 consecutive slot games compared to the previous message (*i.e.*, Auer et al, 2014).



- Of the 11,232 sessions that lasted at least 1,000 games prior to the pop-up message change, 75 sessions immediately terminated after the simple pop-up message was shown (0.67%).
- After the new pop-up was introduced, 169 sessions (of 11,878) immediately terminated when the pop-up message was shown at 1,000 consecutive slot games (1.39%).



Number of sessions ended between 990 and 1,010 slot games comparing simple pop-up message (pre-condition) and enhanced pop-up message (post-condition)



PERSONALISED FEEDBACK STUDY 1

(Auer & Griffiths, 2015)

- Study evaluated the effectiveness of *mentor* (a responsible gambling tool) among 1,015 online gamblers at a European online gambling site
- Compared their behavior with matched controls (n=15,216) on the basis of age, gender, playing duration, and theoretical loss.



The use of personalized behavioral feedback for online gamblers: an empirical study

Michael M. Auer^{1*} and Mark D. Griffiths²

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Over the last few years, online gambling has become a more common leisure time activity. However, for a small minority, the activity can become problematic. Consequently, the gambling industry has started to acknowledge their role in player protection and harm minimization and some gambling companies have introduced responsible gambling tools as a way of helping players stay in control. The present study evaluated the effectiveness of *mentor* (a responsible gambling tool that provides personalized feedback to players) among 1,015 online gamblers at a European online gambling site, and compared their behavior with matched controls (n = 15,216) on the basis of age, gender, playing duration, and theoretical loss (i.e., the amount of money wagered multiplied by the payout percentage of a specific game played). The results showed that online gamblers receiving personalized feedback spent significantly less time and money gambling compared to controls that did not receive personalized feedback. The results suggest that responsible gambling tools providing personalized feedback may help the clientele of gambling companies gamble more responsibly, and may be of help those who gamble excessively to stay within their personal time and money spending limits.

Keywords: responsible gambling, player tracking, problem gambling, harm minimization, player protection

Introduction

In recent years, online gambling has become a more common leisure time activity. Data from 2010 British Gambling Prevalence Survey reports that 14% of the population gambled on the internet in the past year (Wardle et al., 2011a). According to Griffiths (2003), there are a number of situational and structural characteristics that make online gambling potentially risky for susceptible and

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? HELP



Messages



Wins/Losses



Deposits



Time Played



Days Played



Betsize per Game Type



Portfolio



Self-test

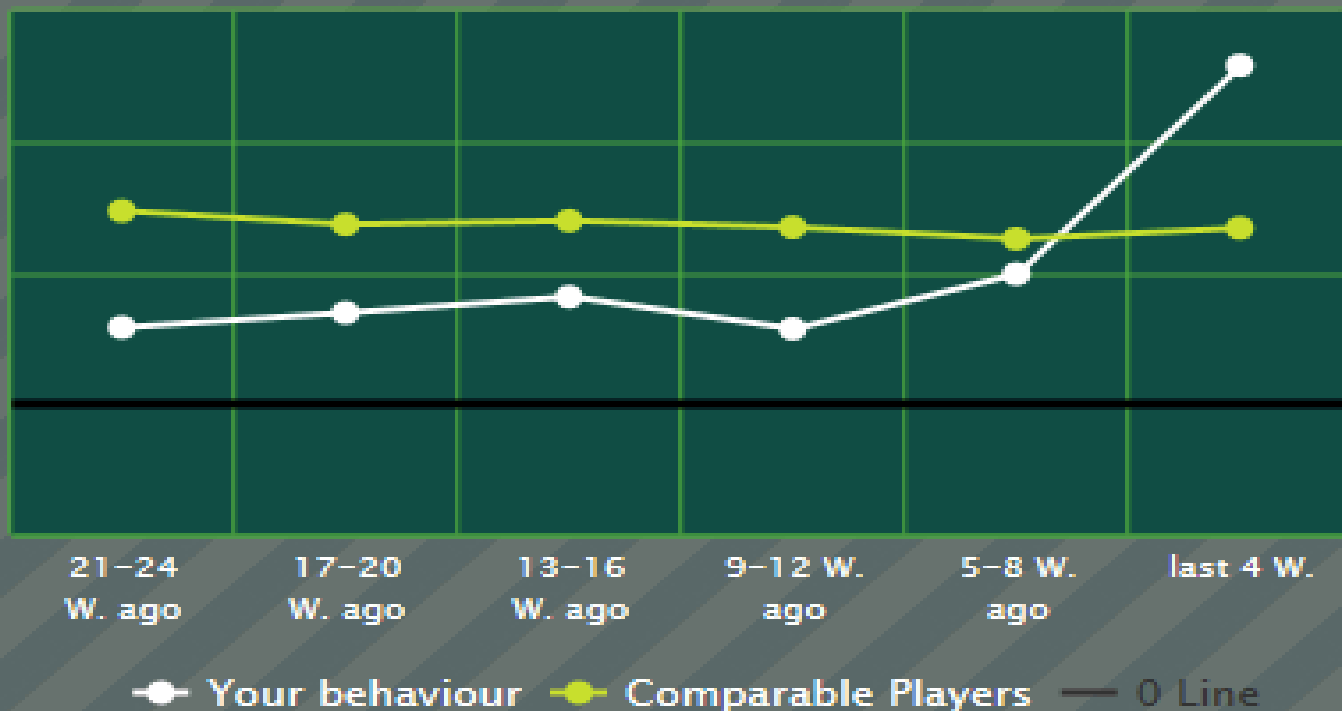


Risk Analysis



Time Played

In the last month you played **25,75** hours
In the last six months you played **62,12** hours



- The results showed that online gamblers receiving personalized feedback spent significantly less time and money compared to controls.
- The results suggest that responsible gambling tools providing personalized feedback may help the clientele of gambling companies gamble more responsibly
- May be of help those who gamble excessively to stay within their personal time and money spending limits.



PERSONALISED FEEDBACK STUDY 2

(Auer & Griffiths, 2016)

- Study evaluated the effectiveness of different types of feedback
- Personal information, normative information and/or a recommendation
- 17,552 *Norsk Tipping* online gamblers randomly distributed to six groups
- Final sample comprised 5,528 online gamblers accessed personalised messages



Personalized Behavioral Feedback for Online Gamblers: A Real World Empirical Study

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Responsible gambling tools (e.g., limit-setting tools, pop-up messages, and personalized feedback) have become increasingly popular as a way of facilitating players to gamble in a more responsible manner. However, relatively few studies have evaluated whether such tools actually work. The present study examined whether the use of three types of information (i.e., personalized feedback, normative feedback, and/or a recommendation) could enable players to gamble more responsibly as assessed using three measures of gambling behavior, i.e., theoretical loss (TL), amount of money wagered, and gross gaming revenue (GGR) (i.e., net win/loss). By manipulating the three forms of information, data from six different groups of players were analyzed. The participant sample drawn from the population were those that had played at least one game for money on the Norsk Tipping online platform (*Instaspill*) during April 2015. A total of 17,452 players were randomly selected from 69,631 players that fulfilled the selection criteria. Of these, 5,528 players participated in the experiment. Gambling activity among the control group (who received no personalized feedback, normative feedback or no recommendation) was also compared with the other five groups that received information of some kind (personalized feedback, normative feedback and/or a recommendation). Compared to the control group, all groups that received some kind of messaging significantly reduced their gambling behavior as assessed by TL, amount of money wagered, and GGR. The results support the hypothesis that personalized behavioral feedback can enable behavioral change in gambling but that normative feedback does not appear change behavior significantly more than personalized feedback.

Keywords: online gambling, responsible gambling, problem gambling, human-computer interaction, behavioral feedback, persuasive communication

INTRODUCTION

Gambling is a popular activity in many cultures. Surveys have reported that most people gamble but

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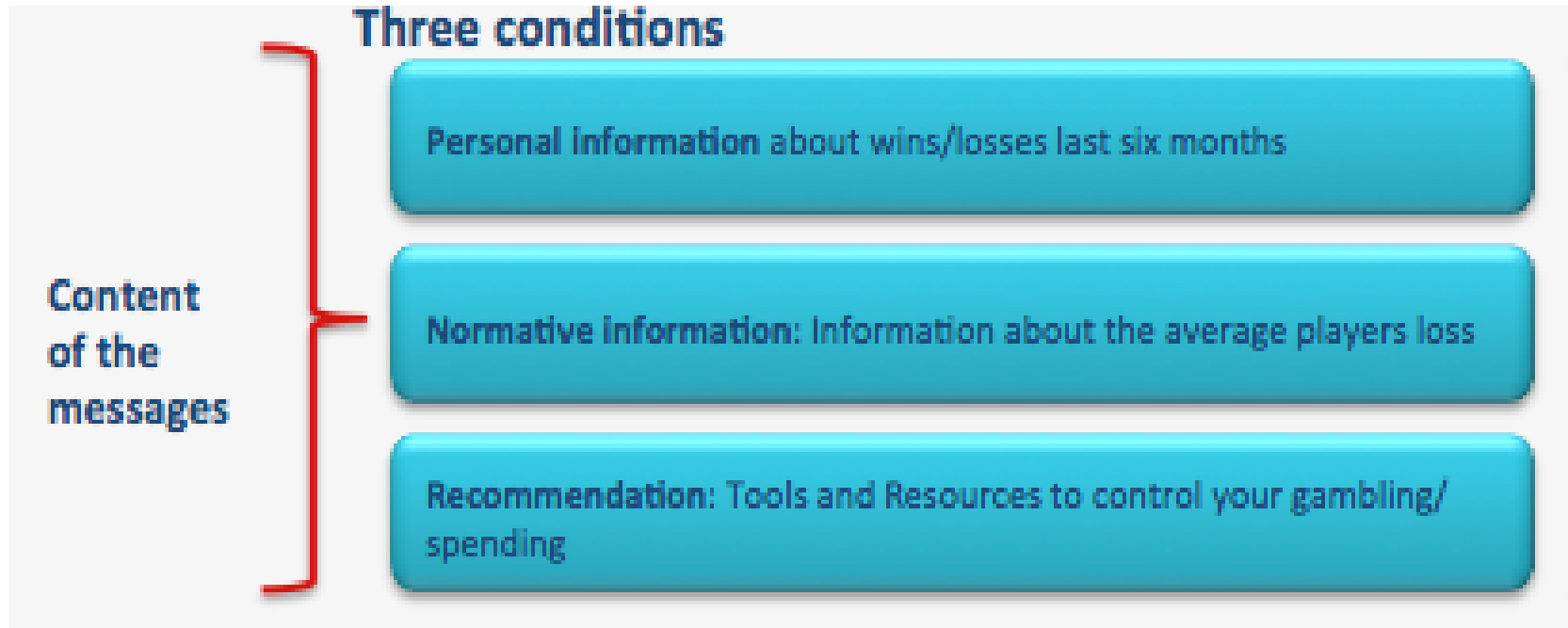
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PERSONALISED FEEDBACK STUDY 2

(Auer & Griffiths, 2016)



PERSONALISED FEEDBACK STUDY 2

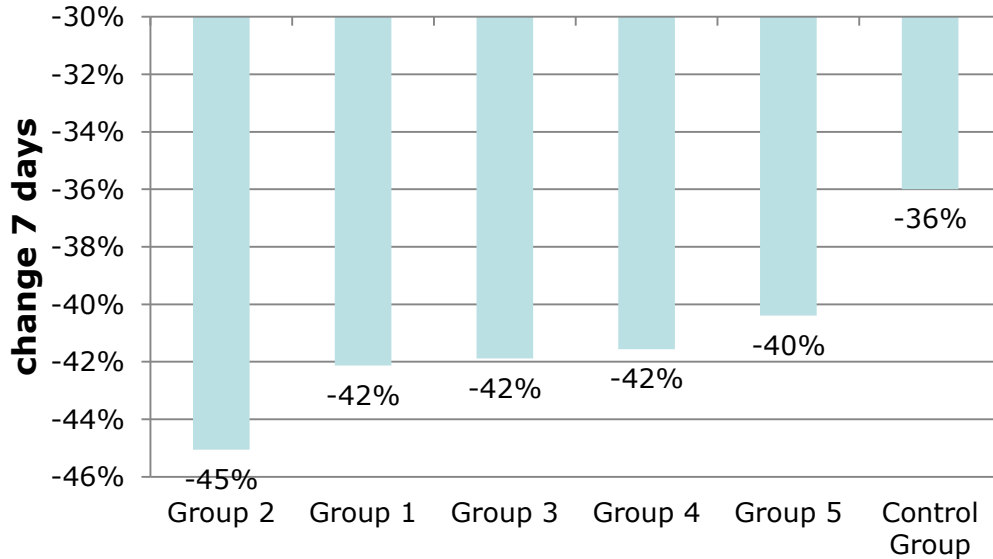
(Auer & Griffiths, 2016)

Six groups

	Personal information	Normative information	Recommendation
1	X		
2	X		X
3	X	X	X
4	X	X	
5			X
6	<i>Control group</i>		

THE EFFECTS OF RG MESSAGING

Do the different groups change differently in the week after the message was read?



- Group 2's expenditure decreased by 45%
- Group 5's expenditure decreased by 40%
- The control group's expenditure decreased by 36%

THE EFFECT OF LOSS-LIMIT REMINDERS (Auer, Hopfgartner & Griffiths, 2018)

- The aim of the study was to determine whether the receiving of personalized feedback about exceeding 80% of a personally set monetary personal limit had an effect on subsequent playing behavior compared to those gamblers that did not receive personalized feedback.
- Out of 54,002 players, a total of 7,884 players (14.5%) received at least once piece of feedback that they had exceeded 80% of their personal global monthly loss limit between January and March 2017

FULL-LENGTH REPORT

Journal of Behavioral Addictions
DOI: 10.1556/2006.7.2018.106

The effect of loss-limit reminders on gambling behavior: A real-world study of Norwegian gamblers

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Background: Over the past two decades, problem gambling has become a public health issue and research from many countries indicates that a small but significant minority of individuals are problem gamblers. In Norway, the prevalence of problem gambling among adults is estimated to be just less than 1%. To help minimize the harm from gambling, the Norwegian government's gambling operator (Norsk Tipping) has introduced several responsible gambling initiatives to help protect players from developing gambling problems (e.g., limit-setting tools, voluntary self-exclusion, personalized feedback, etc.). **Aim:** The aim of this study was to determine whether the receiving of personalized feedback exceeding 80% of a personally set monetary personal limit had an effect on subsequent playing behavior compared to those gamblers who did not receive personalized feedback. **Methods:** Out of 54,002 players, a total of 7,884 players (14.5%) received at least one piece of feedback that they had exceeded 80% of their personal global monthly loss limit between January and March 2017. **Results:** Using a matched-pairs design, results showed that those gamblers receiving personalized feedback in relation to limit-setting showed significant reductions in the amount of money gambled. **Conclusion:** The findings of this study will be of great value to many stakeholder groups including researchers in the gambling studies field, the gambling industry, regulators, and policymakers.

Keywords: gambling, problem gambling, responsible gambling tools, social responsibility, limit-setting, personalized feedback

INTRODUCTION

Gambling has become a widely viewed socially acceptable form of recreation (Stucki & Rihs-Mödel, 2007) and is an enjoyable and harmless activity for most individuals. However, for a small minority, severe negative consequences can follow as a result from problematic and/or addictive behavior (Meyer, Hayer, & Griffiths, 2009). Consequently, the expansion of legalized gambling has been identified as an important public health concern (Shafer & Korn, 2002; Williams, Volberg, & Stevens, 2012). In addition, the number of individuals seeking assistance for gambling-related problems has received increased attention from both researchers and policymakers (Abbott, Volberg, & Rönnsberg, 2004; Saarnali, Hodgins, Tonatto, & Cunningham, 2008).

In many jurisdictions, the public health sector has attempted to increase knowledge about the epidemiology of gambling, incidence of problem gambling, and the potential effectiveness of policies to mitigate gambling's harm (Williams et al., 2012). Recently, Calado and Griffiths (2016) published a systematic review of empirical research from 2000 to 2015 concerning worldwide problem gambling rates comprising 69 prevalence studies. Despite different methods of measurement, it was observed that lifetime prevalence of combined problem and pathological gambling across the world ranged from 0.7% (in Denmark)

to 6.5% (in Estonia). Past-year problem gambling prevalence varied between 0.12% and 5.8% across the world, with the highest rate being in Hong Kong.

Problem gambling in Norway

In Norway (the place where this study was carried out), there have been a number of prevalence surveys. The first one was by Gjøtestam and Johanson (2003), who conducted a problem gambling prevalence survey in Trondheim among 2,014 adult participants. They reported that 0.15% of participants were pathological gamblers (endorsing five or more items on the DSM-IV), with a further 0.45% being considered at-risk gamblers (endorsing 3–4 items on the DSM-IV). Problem gambling (the combined rate of pathological and at-risk gambling) was more prevalent among men than women (0.95% vs. 0.28%, respectively) and among 18–30 years old age group than older age groups (1.97% vs. 0.19%).

Later studies by Lund and Nordland (2003) and Jonsson (2006) among 5,235 participants aged 15–74 years

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- Using a matched pairs design, results showed that those gamblers receiving personalized feedback in relation to limit-setting showed significant reductions in the amount of money gambled over a three-month period
- Apart from the top 10% most intense players, the message that they had exceeded 80% of their monthly monetary limit had a significant effect in all of the other nine groups.



LIMIT SETTING AND GAMBLER LOYALTY


(Auer, Hopfgartner & Griffiths, 2019)

- The effect of voluntary limit-setting on player loyalty was evaluated over time using tracking data provided by *Kindred Gaming*
- Anonymized dataset of 175,818 players who had placed at least one bet or gambled at least once during January 2016 to May 2017
- The dataset comprised a 20% random sample of the total player population of *Kindred*

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ORIGINAL ARTICLE

An Empirical Study of the Effect of Voluntary Limit-Setting on Gamblers' Loyalty Using Behavioural Tracking Data

Michael Auer¹ · Niklas Hopfgartner¹ · Mark D. Griffiths² 

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Abstract

Online gambling has become increasingly popular over the past decade as has research using behavioural tracking (player account) data. To date, there is no study that has empirically investigated the effects of responsible gambling tools on loyalty. In the present study, the effect of voluntary limit-setting on player loyalty was evaluated over time using tracking data provided by an online gambling operator. More specifically, the authors were given access to an anonymised dataset of 175,818 players who had placed at least one bet or gambled at least once during January 2016 to May 2017 at the online gambling operator *Kindred*. The average age of the players was 31 years, and overall 18,484 of the players were female (10.5%). The dataset comprised a 20% random sample of the total player population of *Kindred*. In each of ten playing intensity groups, the percentage of active players in the first quarter of 2017 was higher in the group of players who had set voluntary money limits in the first quarter of 2016 compared to players that did not (suggesting players that set voluntary spending limits are more loyal compared to those who do not). The implications of these findings are discussed.



- Sample was divided into ten playing intensity groups based on amount of money wagered
- The percentage of active players in the first quarter of 2017 was higher in the group of players who had set voluntary money limits in the first quarter of 2016 compared to players that did not
- Suggests players that set voluntary spending limits are more loyal compared to those who do not.



Cognitive Dissonance, Personalized Feedback, and Online Gambling Behavior: An Exploratory Study Using Objective Tracking Data and Subjective Self-Report

Michael Auer¹ · Mark D. Griffiths²

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Abstract Providing personalized feedback about the amount of money that gamblers have actually spent may—in some cases—result in cognitive dissonance due to the mismatch between what gamblers actually spent and what they thought they had spent. In the present study, the participant sample ($N = 11,829$) was drawn from a Norwegian population that had played at least one game for money in the past six months on the *Norsk Tipping* online gambling website. Players were told that they could retrieve personalized information about the amount of money they had lost over the previous 6-month period. Out of the 11,829 players, 4045 players accessed information about their personal gambling expenditure and were asked whether they thought the amount they lost was (i) more than expected, (ii) about as much as expected, or (iii) less than expected. It was hypothesized that players who claimed that the amount of money lost gambling was more than they had expected were more likely to experience a state of cognitive dissonance and would attempt to reduce their gambling expenditure more than other players who claimed that the amount of money lost was as much as they expected. The overall results contradicted the hypothesis because players without any cognitive dissonance decreased their gambling expenditure more than players experiencing cognitive dissonance. However, a more detailed analysis of the data supported the hypothesis because specific playing patterns of six different types of gambler using a machine-learning tree algorithm explained the paradoxical overall result.

Keywords Behavioral tracking · Gambling · Cognitive dissonance · Gambling expenditure · Online gambling

Self-Reported Losses Versus Actual Losses in Online Gambling: An Empirical Study

Michael Auer¹ · Mark D. Griffiths²

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Abstract Many research findings in the gambling studies field rely on self-report data. A very small body of empirical research also suggests that when using self-report, players report their gambling losses inaccurately. The aim of the present study was to evaluate the differences between objective and subjective gambling spent data by comparing gambler's actual behavioral tracking data with their self-report data over a 1-month period. A total of 17,742 Norwegian online gamblers were asked to participate in an online survey. Of those surveyed, 1335 gamblers answered questions relating to gambling expenditure that could be compared with their actual gambling behavior. The study found that the estimated loss self-reported by gamblers was correlated with the actual objective loss and that players with higher losses tended to have more difficulty estimating their gambling expenditure (i.e., players who spent more money gambling also appeared to have more trouble estimating their expenses accurately). Overall, the findings demonstrate that caution is warranted when using self-report data relating to amount of money spent gambling in any studies that are totally reliant on self-report data.

Keywords Responsible gambling · Behavioral tracking · Gambling expenditure · Pre-commitment

ORIGINAL ARTICLE

Gambling behavior in alcohol-serving and non-alcohol-serving-venues: a study of electronic gaming machine players using account records

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ABSTRACT

Aim: Contextual factors, such as venue characteristics appear to influence gambling behavior. However, few studies have compared the relationship between gambling behavior in alcohol-serving venues (ASVs) and non-alcohol serving venues (NASVs). The aim of the study was to examine individual gambling behavior in ASVs and NASVs.

Method: A repeated-measures design was used to examine individual gambling behavior in ASVs and NASVs covering a month. The sample comprised 1452 observations of 726 individuals (25.2% female). A quantile regression model was conducted to examine individual differences in gambling behavior (number of days, sessions, bets made, stake, time spent, money lost, and average bet size) across ASVs and NASVs. Analyses were broken down by gambler category (those that reached legal mandatory spending limits and those that did not) as well as on time frame (overall gambling behavior and average in-session gambling behavior).

Results: Individuals gambled regularly in NASVs and occasionally in ASVs. Compared to NASVs, in-session gambling behavior was more variable in ASVs. In-session analysis showed that non-limit reaching gamblers staked less money in ASVs than in NASVs but lost more money in ASVs than in NASVs. Limit reaching gamblers showed no differences in gambling behavior across venues.

Conclusions: The findings show that in-session gambling behavior is more variable in ASVs compared to NASVs regardless of gambler category. Non-limit reaching gamblers may be more sensitive to contextual factors than limit reaching gamblers and appear to be more willing to take more risk in ASVs compared to NASVs. The contextual implications are discussed.

ARTICLE HISTORY

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KEYWORDS

Contextual characteristics; gambling venues; gambling behavior; account-based gambling data; repeated measures; alcohol



Does Individual Gambling Behavior Vary across Gambling Venues with Differing Numbers of Terminals? An Empirical Real-World Study using Player Account Data

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Research examining gambling behavior via experiments, self-report, and/or observation presents many methodical challenges particularly in relation to objectivity. However, the use of player account-based gambling data provides purely objective data. Based on this real-world data, the primary aim of the present study was to examine gambling behavior in gambling venues with different numbers of gambling terminals (i.e., venues with one terminal; 2–5 terminals; 6–10 terminals; 11–16 terminals). Player account-based gambling data aggregated over a year (2015) amounting to 153,379 observations within 93,034 individual gamblers (males = 74%; mean age = 44.1, *SD* = 16.4 years) were analyzed. Gambling frequency was highest in venues with 2–5 terminals (54.5%) and lowest in venues with 11–16 terminals (1.6%). Approximately half of the sample (52.5%) gambled in only one venue category, with the majority (81.5%) preferring venues with 2–5 terminals present. Only 0.8% of the sample gambled in all four venue categories. Compared to venues with one terminal, venues with two or more terminals were associated with gamblers placing more bets, and spending more time and money per session. However, gamblers had higher losses (albeit small) in venues with one terminal compared to venues with 2–5 terminals. No differences in net outcome were found between venues with one terminal and those with 6–10 and 11–16 terminals. Overall, the present study demonstrates that in the natural gambling environment, gambling behavior is reinforced in venues with multiple terminals.

Keywords: casino environment, electronic gaming machines, gambling environment, gambling terminals, gambling venue, social facilitation

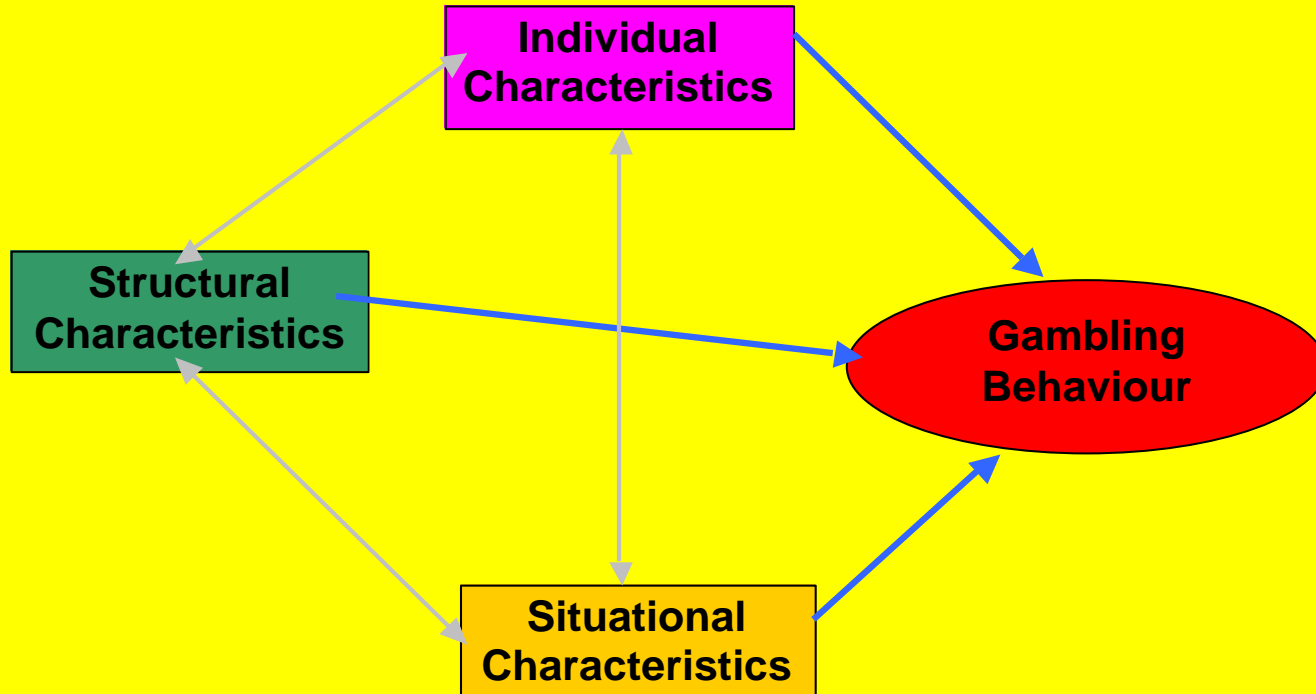
The Relationship Between Structural Game Characteristics and Gambling Behavior: A Population-Level Study

Tony Leino · Torbjørn Torsheim · Alex Blaszczynski ·
Mark Griffiths · Rune Mentzoni · Ståle Pallesen · Helge Molde

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Abstract The aim of this study was to examine the relationship between the structural characteristics and gambling behavior among video lottery terminal (VLT) gamblers. The study was ecological valid, because the data consisted of actual gambling behavior registered in the participants natural gambling environment without intrusion by researchers. Online behavioral tracking data from *Multix*, an eight game video lottery terminal, were supplied by *Norsk-Tipping* (the state owned gambling company in Norway). The sample comprised the entire population of *Multix* gamblers ($N = 31,109$) who had gambled in January 2010. The individual number of bets made across games was defined as the dependent variable, reward characteristics of a game (i.e., payback percentage, hit frequency, size of winnings and size of jackpot) and bet characteristics of a game (i.e., range of betting options and availability of advanced betting options) served as the independent variables. Control variables were age and gender. Two separate cross-classified multilevel random intercepts models were used to analyze the relationship between bets made, reward characteristics and bet characteristics, where the number of bets was nested within both individuals and within games. The results show that the number of bets is positively associated with payback percentage, hit frequency, being female and age, and negatively associated with size of wins and range of available betting options. In summary, the results show that the reward characteristics and betting options explained 27 % and 15 % of the variance in the number of bets made, respectively. It is concluded that structural game

PROBLEM GAMBLING IN CONTEXT



CONCLUSIONS

- Behavioural tracking is an innovative method in identifying problem gamblers evaluating RG tools
- While behavioural tracking research has many advantages it is not without problems
- RG tools that use a player's tracking data can help some (but not all) players
- Providing feedback to players based on their playing behaviour has great potential in helping players gamble more responsibly



THANK YOU FOR LISTENING!

