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An investigation of social casino gaming among land-based and Internet gamblers: A comparison of socio-demographic characteristics, gambling and co-morbidities



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ABSTRACT

Social casino games are free-play online games that feature gambling themes, but do not payout winnings in monetary form. These games are distinct from Internet gambling; however, the cross-over between these consumer markets is not well understood. This study compared the use of social casino games among a population of 2010 Australian adult Internet and land-based gamblers who completed a nationally representative telephone survey. The most popular social casino games were poker, gaming machines and casino table games and this popularity differed by gender. Social casino game players were more likely to be younger than non-social casino game players and had more similarities with Internet than land-based gamblers. Internet gamblers were more likely to also play social casino games than land-based gamblers, and use of these games was related to high engagement with gambling. Social casino gamers were more likely to smoke and use illicit drugs, and to have higher levels of psychological distress and gambling problems compared to non-social casino game players. This study is highly significant as it is one of the first comprehensive studies to examine the relationship between social casino game play and gambling in a representative adult population. Consumer protection measures should be strengthened where social casino games are offered in close proximity to gambling and when social casino players are encouraged to migrate to gambling opportunities.

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1. Introduction

In general terms, gambling refers to the staking of something of value on the outcome of an event governed by an inevitable element of chance for a reward with monetary value. During gambling, money is typically staked and won or lost either directly through cash transactions, or indirectly via chips, tokens or credits which have monetary value. However, vast arrays of social games now provide simulated gambling-themed activities, including poker, slots or gaming machines, casino card and table games, sports betting, and bingo. These social casino games are distinguished from gambling as no money (or anything of monetary value) can be won and money is not required to play (Gainsbury, Hing, Delfabbro, & King, submitted for publication). As such, these games are not legally classified as gambling or regulated as such (King, Delfabbro, & Griffiths, 2010; Owens, 2010).

Social gaming is a rapidly growing phenomenon of online games that typically operate or interact with social networking sites. Around 12% of the world's population (800 million people) are estimated to play one or more forms of online social gaming every month (Morgan Stanley, 2012). Of these, just over 20% play some form of social casino game, an estimated 173 million people, which is triple the size of the online gambling market. Most social casino games are based on a 'freemium' model which allows users to access social casino games at no financial cost and users are provided with free credits, which are reloaded periodically; however, users are able to purchase virtual currency which allows immediate play and access to enhanced features or upgrades such as new levels, game experiences, gifts, and other bonuses. Social casino games are distinguished from free-play (or practice) versions of Internet gambling provided by gambling operators, which enable customers to learn the mechanics of the game before they spend any real money, as they are based on social networking sites or stand-alone apps that interact with social networking sites (Gainsbury et al., 2013, submitted for publication). Social casino games are also typically offered as standalone games, rather than

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as a direct promotional tool to encourage users to engage in Internet gambling.

Social casino games are among the most profitable types of social games. The social casino game market was valued at US\$2.9 billion in 2013 and is forecast to rise to US\$4.4 billion by 2015 (SuperData, 2013a). In contrast, the global online gambling market is estimated to be twelve times larger, valued at US\$35 billion in 2012 (Morgan Stanley, 2012). This discrepancy in terms of player base and revenue demonstrates the tendency for social casino gamers to not spend any money on these games. Industry estimates suggest that only 2% of social casino gamers spend any money on a monthly basis (Morgan Stanley, 2012). There has been a large amount of convergence between the social casino gaming and Internet gambling industries in an attempt to consolidate skills and convert some of the vast number of social casino gamers to real money gamblers (King et al., 2010; Schneider, 2012).

The convergence between social casino and gambling operators can take multiple forms. Examples includes Internet and land-based gambling companies purchasing or partnering with social casino game operators, for example IGT's purchase of Double Down social casino for US\$500 million and the merger of bWin and PartyPoker to create bWin.Party (Schneider, 2012). Where regulation permits, social casino game operators may begin to offer gambling opportunities on what was previously a social game. This has occurred in the UK with the launch of Bingo Friendly and ZyngaPlus through Facebook (Schneider, 2012). Critically, although social casino games may look like a replication of a real gambling activity that can be played without spending any money, the underlying game mechanics are typically very different. For example, social casino games are typically not based on random outcomes and chance, but algorithms designed to enhance player enjoyment and encourage continued play (Sapsted, 2013). Consequentially, providing gambling based on social casino games can be very difficult as to meet regulatory requirements, outcomes of gambling must be determined randomly by chance. Therefore, when gambling operators provide social casino games, these may be offered on a separate website or mobile platform under a unique brand name as they do not replicate an Internet gambling experience. In addition to the possibility of migrating social casino gamers to gambling, the freemium model allows social casino gaming to generate revenue in its own right. For example, IGT's social casino gaming revenue grew to US\$219 million, an increase of 151% from 2012 to 2013 (iGaming Business, 2013). These games also provide an opportunity for gambling operators to market their brand and engage with customers online, which is particularly important in jurisdictions where online gambling is prohibited or restricted.

The sizeable social casino gaming player base and rising market value indicate that it will have an increasing impact on the entertainment and gambling industries. As the social casino gaming market is still relatively new, having doubled in population size between 2010 and 2012 (Morgan Stanley, 2012), the cohort of social casino gamers is not well understood with very little research conducted on this population. Social casino games occupy a unique segment within the social games market, and feature a unique audience and different game mechanics to other social games and Internet gambling activities. Consequently, many questions remain unanswered including: what are the similarities and differences between social casino gamers and gamblers, why do gamblers also play social casino games, and what needs do these different games meet? From a responsible gambling and public health perspective, it is important to investigate the impact of social casino games and in particular, whether these games encourage gambling, create irrational beliefs about gambling, and the extent to which they may contribute to problem gambling. This paper will begin the process of answering these questions by drawing on a large sample of land-based and Internet gamblers. Specifically,

the paper aims to compare gamblers who play social casino games to gamblers who do not and investigate demographic characteristics, Internet access, gambling behaviour, attitude to gambling, smoking, alcohol and illicit drug use, and problem gambling.

2. Literature review

2.1. Demographic characteristics of social casino gamers and gamblers

Given the size of the social casino gaming population, it is likely that there is a significant overlap between customers who use these games and those who engage in gambling. Both gamblers and social casino gamers are heterogeneous populations, although there are some demographic characteristics that appear to discriminate between these groups. Social casino gamers tend to be younger than gamblers. Surveys indicate that around one-fifth to one-third (18–32%) of US and UK social casino game players are aged under 30 years compared to just 18% of Internet gamblers and 25% of land-based gamblers (Gainsbury, Wood, Russell, Hing, & Blaszczynski, 2012; Gainsbury et al., 2013, submitted for publication; Information Solutions Group, 2011; Morgan Stanley, 2012; SuperData, 2013b; Wood & Williams, 2011). However, only a small proportion of social casino game players are estimated to be younger than 21 years of age (SuperData, 2013b).

There is evidence that social casino gamers are more likely to be women (Information Solutions Group, 2010, 2011; Morgan Stanley, 2012; SuperData, 2013b). According to Bwin.Party, which operates both social casino games as well as real money gambling, the typical social casino game player is a 35-year old woman (GamblingData, 2012). This profile is similar to some gambling markets, in particular, Internet bingo and Internet casino players as well as land-based electronic gaming machine players who are all likely to be women aged over 40 years (Church-Sanders, 2012; Delfabbro, 2008). However, Internet poker, in both its social gaming and real money formats, is a male dominated game and men are more likely to bet on sports and races, which are not popular social casino gaming activities (Church-Sanders, 2012; Delfabbro, 2008; Morgan Stanley, 2012).

There also appear to be similarities in the socio-demographic profiles of social gamers (not limited to social casino game players) and Internet gamblers. Reports indicate that approximately 40% of social game customers have obtained college degrees or higher, 35% work full-time, 25% work in professional or managerial positions, and 23% have a household income of US\$70,000 or more (Information Solutions Group, 2010, 2011; Media & Entertainment Consulting Network, 2010). This profile is similar to Internet gamblers, who are likely to have university-level education, work full-time and have high household incomes (Gainsbury, Russell, & Blaszczynski, 2012; Gainsbury et al., 2013, submitted for publication; Wood & Williams, 2011). However, these results are not based on representative samples, but rather on online surveys of self-selected participants or players with one particular operator. Furthermore, the profiles of social casino gamers is less well understood so these similarities may be related to greater likelihood of Internet use for a variety of activities, including entertainment.

2.2. What impact does social casino game play have on gambling?

Social casino gamers are becoming a targeted market for Internet gambling operators given the size of this population and their interest in gambling-type activities. A survey of 1103 US social casino game player revealed that over two-thirds (68%) of players are interested in gambling, 64% of players think that Internet gambling should be allowed, and 67% would likely gamble online if this were

legal (SuperData, 2013b). Over one-third (36%) of social casino players reported visiting a land-based casino more than twice a year, indicating that social casino players and gamblers are overlapping consumer groups. However, the low conversion rate of social casino gamers to paying customers (estimated at approximately 2%) has raised the question of whether social casino gamers are likely to also engage in gambling activities (Morgan Stanley, 2012).

The impact of social casino game play on gambling has not been thoroughly investigated through rigorous empirical research. It has been argued that social casino gaming may increase the likelihood of gambling as players become familiar with, understand the principles and mechanics and have positive experiences with gambling-themed activities (Griffiths, 2013). Because they are not regulated as gambling, the outcomes of many social casino games are not determined randomly and players are more likely to experience wins, to ensure that they enjoy the playing experience (Sévigny, Cloutier, Pelletier, & Ladouceur, 2005). Therefore, social casino gaming may build self-confidence and potentially increase one's perceived illusion of control in predicting gambling outcomes, thus motivating participation in gambling.

There is some evidence to suggest that the opportunity to play without money makes games more attractive, increases player confidence and perception of skill, reduces barriers to play, and may undermine attempts to discontinue playing (Blaszczynski, Walker, & Sharpe, 2001). However, more recent studies of free play options for electronic gaming machines did not suggest that this increased the likelihood of continued gambling (Blaszczynski, Gainsbury, & Karlov, 2013). An alternative explanation for the relationship between social casino games and gambling is that people who are interested in gambling are also interested in social casino games. Internet gambling is currently restricted in many jurisdictions whereas social gaming is not classified as gambling and faces few legal restrictions internationally (Gainsbury & Wood, 2011; Owens, 2010). Therefore, in large markets, particularly the US, where Internet gambling is largely prohibited, social casino game players may use these games as they are unable to access gambling alternatives. Similarly, in Australia, where this study was conducted, although Internet wagering and lotteries are permitted, all other types of Internet gambling including poker and casino games are prohibited, albeit not very effectively (Gainsbury & Wood, 2011).

Nonetheless, as the demographic profiles presented above suggest, although there is some market cross over, it appears that not all social casino gamers are interested in gambling and vice versa. Poker games dominate the social casino gaming industry, in terms of revenue, followed by slot and casino games, however, slot games are the most popular genre of social casino games (Morgan Stanley, 2012; Superdata, 2013b). This deviates from the breakdown of the Internet gambling market, which is dominated by sports and race wagering (Church-Sanders, 2012). This discrepancy may be explained by the few successful social wagering games available or a lack of interest in social gaming among bettors and vice versa.

It is highly likely that the social casino game and real money gambling markets will continue to impact each other. One online survey of 503 social gamers found that 73% of social game players had reduced the amount of time they spent on other leisure activities since they began playing social games (Information Solutions Group, 2011). A survey of US social casino game players found that over half of players played at least once a day, spending an average of 34.4 min per day on these games (SuperData, 2013b). Furthermore, one of the key reasons for the popularity of social games is that they are highly convenient and easy to access as a casual player. In contrast, Internet gambling is highly regulated and players must create accounts, prove their age and identity, and deposit funds before they are able to place a bet. Therefore, engaging in

Internet gambling is more difficult than accessing a social casino game and may discourage migration to this activity.

2.3. Risky behaviour

2.3.1. Smoking, alcohol and drug use

There is some evidence of higher rates of smoking and alcohol consumption, as well as substance abuse or dependence, among gamblers and in particular, Internet as compared to non-Internet gamblers (Gainsbury et al., 2012; Griffiths, Wardle, Orford, Sproston, & Erens, 2009; Wood & Williams, 2010). The association between gambling and other risky behaviours has been argued to be related to high levels of impulsivity or sensation seeking as well as learned behaviours and social and environmental factors (Barnes, Welte, Hoffman, & Dintcheff, 2005). Although problematic Internet use and gaming have also been posited to be related to similar factors (King, Delfabbro, Zwaans, & Kaptis, 2012), no previous studies have examined rates of smoking, alcohol consumption and illicit drug use amongst social casino gamers.

2.3.2. Problem gambling

The use of social casino games among young people is of particular concern as this population is at greatest risk for the development of gambling problems (Monaghan & Derevensky, 2008). Several studies of adolescents and young adults have found that those who play social casino games online are also more likely to engage in gambling, and are at greater risk of experiencing significant gambling-related problems (Forrest, McHale, & Parke, 2009; King et al., 2012; McBride & Derevensky, 2012; Mihaylova & Kairouz, 2010). One study of 465 Canadian university students found that only 9% of those who did not gamble reported playing social casino games, compared to 55% of non-problem and 83% of problem gamblers (McBride & Derevensky, 2012).

A small survey of problem gambling counsellors in Great Britain reported that approximately two-thirds of counsellors had clients who had engaged in social casino games, and these counsellors were roughly evenly divided on whether social casino games had contributed to gambling problems or not (Parke, Wardle, Rigbye, & Parke, 2013). Previous research has found that the accessibility and convenience of online gambling is viewed as a disadvantage by problem gamblers, as the ease of access makes it more difficult for individuals to avoid triggers to gamble and control their impulses (Gainsbury et al., 2012). Gamblers also report that it is easier to spend more money than intended on Internet gambling sites as compared to in land-based gambling venues, which is reported by a significantly greater proportion of problem than non-problem gamblers (Gainsbury et al., 2012). As problem gambling is characterised by difficulties controlling impulses to gamble, the promotion of social casino games may result in problem gamblers gambling excessively, triggered by exposure to these gambling cues (Parke et al., 2013).

2.4. Current study

There is a dearth of research on the relationship between social casino gaming and gambling, particularly among adult populations (Grant, Potenza, Weinstein, & Gorelick, 2010; Griffiths, 2013; King, Delfabbro, & Griffiths, 2013). Most studies to date on social casino gaming have recruited participants through schools or universities (King, Haagsma, Delfabbro, Gradisar, & Griffiths, 2013). However, previous research has shown that university-recruited participants are not representative of the gambling behaviour or other characteristics of the general population or even of the general population of young adults (Gainsbury & Blaszczynski, 2011; Gainsbury et al., 2012). The size of the social casino gaming market in Australia was estimated to be worth USD\$59.8 million in 2012, or 3% of

the global market, and Australians are estimated to have the highest monthly average revenue per paying user (Superdata reported by Superdata, 2013a; Takahashi, 2012). However, the number of social casino game players in Australia is not known. The current study takes the significant step of comparing the use of social casino gaming amongst groups of Australian gamblers. This comparative analysis will advance the field by providing evidence about the relationship between social casino gaming and gambling to determine the extent to which these activities are used by common consumer markets. Given the lack of knowledge about social casino gamers who also gamble, no specific hypotheses were posited; however, it was expected that social casino gamers would represent a distinct subgroup of gamblers. This study is highly significant as it is one of the first comprehensive studies to examine the relationship between social casino game play and gambling in a representative adult population.

3. Method

This study forms part of a larger research project examining Internet gambling in Australia and the methodology is described in detail in (omitted for anonymity). A random digit dial telephone survey of a nationally representative sample of landline telephone numbers was conducted in November and December, 2011 using a computer-assisted telephone interview. In total 15,006 Australian adults participated in the survey (47.5% male, aged 18–100 years of age). All participants completed the screening questions and those who had not gambled in the past 12 months ($N = 5408$) were not asked any further questions. All Internet gamblers and a randomly selected sub-sample of those who reported land-based gambling in the last 12 months completed the full survey, including questions on use of social gaming ($N = 2010$). The study obtained ethical approval from the relevant institutional review boards of the two universities directly involved in data collection.

3.1. Measures

The telephone survey questionnaire included 10 main sections, although only the measures relevant to the current paper are described here. Surveys usually took up to 25 min, primarily depending on the extent of gambling involvement of the participant.

Gambling behaviour: Participants were asked whether they had participated in 10 different gambling activities (lottery tickets, instant scratch tickets, horse or dog race betting, electronic gaming machines, sports betting, keno, casino table games, poker, bingo and betting on skill games) in the past 12 months. Those who had participated at least once were asked whether they had used an Internet mode for each activity.

Gambling attitudes: Gamblers were also asked whether they thought that the benefits of gambling outweighed the harms using a five point likert scale (ranging from ‘the harm far outweighs the benefits’, to ‘the benefits far outweigh the harm’).

Social gaming: Participants were asked if they had played any gambling activities on the Internet without any money in the past 12 months. Participants who responded positively were asked what types of activities they had played, with up to three responses recorded.

Problem Gambling Severity Index (PGSI): Nine questions that comprise the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) were administered. Questions assessed the extent of gambling-related harm experienced over the previous 12 months with response options of ‘never’, ‘sometimes’, ‘most of the time’, and ‘almost always’. Total scores range from 0 to 27 and indicate the risk level of gambling problems for each participant (zero = non problem gambling, 1–2 = low-risk gambling;

3–7 = moderate risk gambling; 8–27 = problem gambling). The PGSI has been independently validated and results indicate that it has excellent reliability, dimensionality, external/criterion validation, item variability, practicality, applicability, and comparability (McMillen & Wenzel, 2006; Neal, Delfabbro, & O’Neil, 2005). The PGSI was not administered to those who only reported playing either bingo or lottery less than weekly to avoid participant fatigue amongst low-frequency gamblers and to reduce false positive rates (Williams & Volberg, 2012). The internal consistency of the PGSI for this study was good with a Cronbach’s α of 0.84.

Alcohol, tobacco, substance use and mental health: Seven questions created for this survey requested information about the frequency of cigarette smoking, drinking alcohol and illegal drug use and substance use while gambling. The six item Kessler Psychological Distress Scale (K6; Kessler et al., 2002) asked the frequency of symptoms of psychological distress with the total score indicating levels of non-specific psychological distress. The K6 has been psychometrically validated as a tool for estimating mood, anxiety, or substance use disorders with serious impairment in the Australian general population (Stewart & Andrews, 2011) and in this sample, the scale showed good reliability (Cronbach’s $\alpha = 0.837$).

Demographics: Demographic variables were measured to match the most recent Census data and included gender, year of birth, household size and current living arrangement, locality and post-code, county of birth, language spoken at home, Australian Aboriginal or Torres Strait Islander descent (ATSI), marital status, educational level, employment, and whether participants had Internet access at home and work.

3.2. Analysis

Where t -tests were used, the Welch t -test was used in order to minimise the impact of unequal group sizes. For these analyses, non-parametric tests were also run to ensure that we did not draw unwarranted conclusions. All results that were significant using the Welch t -test were also significant using the Mann–Whitney U -test, so these non-parametric test results are not reported here. Where post hoc comparisons are reported for chi-square tests, a Bonferroni-adjusted z -test has been employed or, in the case of small expected cell counts, Fisher’s exact test.

4. Results

Of the 2010 gamblers surveyed, 849 (42.2%) were classified as Internet gamblers (had gambled online at least once in the past 12 months, but may have also gambled offline) and 1161 (57.8%) were exclusively land-based gamblers. Of the entire sample, 270 (13.4%) indicated that they had engaged in gambling activities on the Internet that do not involve money (social casino gaming) and are referred to below as “social casino gamers”.

4.1. Demographics

Significant demographic differences between social casino gamers and non-social casino gamers are given in Table 1 and described below. A significantly higher proportion of social casino gamers were male compared to non-social casino gamers. Social casino gamers were also significantly younger ($M = 43.19$, $SD = 14.58$) than non-social casino gamers ($M = 54.11$, $SD = 15.90$), $t(375.83) = 11.30$, $p < 0.001$, $d = 1.17$. An investigation of age brackets indicates that a significantly higher proportion of social casino gamers were in every age bracket under 45 years of age, whereas a significantly higher proportion of non-social casino gamers were found in the 65 years or older age bracket.

Table 1
Demographic information by group.

Demographic	Social casino gamers (<i>n</i> = 270)		Non-social casino gamers (<i>n</i> = 1740)	
	<i>N</i>	%	<i>N</i>	%
Gender $\chi^2(1, N = 2010) = 10.97, p = 0.001, \Phi = 0.07$				
Male	167	61.9*	888	51.0
Female	103	38.1	852	49.0*
Age $\chi^2(10, N = 2010) = 109.37, p < 0.001, \Phi = 0.23$				
18–19	9	3.3*	24	1.4
20–24	27	10.0*	49	2.8
25–29	19	7.0*	55	3.2
30–34	23	8.5*	78	4.5
35–39	35	13.0*	150	8.6
40–44	33	12.2*	147	8.4
45–49	35	13.0*	164	9.4
50–54	22	8.1	177	10.2
55–59	24	8.9	204	11.7
60–64	21	7.8	187	10.7
65 or older	22	8.1	505	29.0*
Marital status $\chi^2(4, N = 2009) = 52.55, p < 0.001, \Phi = 0.16$				
Married	118	43.7	1028	59.1*
Living with partner/de facto	36	13.3*	145	8.3
Widowed	10	3.7	149	8.6*
Divorced or separated	35	13.0	193	11.1
Never married	71	26.3*	224	12.9
Living arrangement $\chi^2(5, N = 2006) = 84.19, p < 0.001, \Phi = 0.21$				
Single person	35	13.0	374	21.5*
One parent with children	33	12.2*	98	5.6
Couple with children	105	38.9	753	43.4
Couple with no children	53	19.6	434	25.0
Group household	36	13.3*	57	3.3
Other	8	3.0*	20	1.2
Work status $\chi^2(8, N = 2009) = 63.33, p < 0.001, \Phi = 0.18$				
Work full time	124	45.9*	583	33.5
Work part time	45	16.7	321	18.5
Self-employed	15	5.6	148	8.5
Unemployed and looking for work	13	4.8*	36	2.1
Full-time student	9	3.3	35	2.0
Full-time home duties	8	3.0	75	4.3
Retired	34	12.6	491	28.2*
Sick or disability pension	14	5.2*	33	1.9
Other	8	3.0	17	1.0
Born in Australia $\chi^2(1, N = 2009) = 13.00, p < 0.001, \Phi = 0.08$				
Yes	237	87.8*	1361	78.3
Home Internet access $\chi^2(1, N = 1989) = 26.91, p < 0.001, \Phi = 0.12$				
Yes	261	97.8*	1494	86.8
Interactive gambler $\chi^2(1, N = 2010) = 168.26, p < 0.001, \Phi = 0.29$				
Yes	212	78.5*	637	36.6

* Significant differences between the groups.

Social casino gamers were significantly less likely to be married widowed, but more likely to be either living with a partner or never married. Social casino gamers were significantly more likely to live in a group household or in a one parent family with children, while non-social casino gamers were significantly more likely to be living alone or in a couple with no children. No significant differences were found between the groups in terms of state of residence, $\chi^2(7, N = 2010) = 11.49, p = 0.119$. A significantly higher proportion of social casino gamers were born in Australia compared to non-social casino gamers. No significant differences were observed in terms of Aboriginal and Torres Strait Islander status ($\chi^2(1, N = 2004) = 3.38, p = 0.066$), nor in terms of whether the groups spoke English at home ($\chi^2(1, N = 1285) = 0.03, p = 0.874$).

No significant differences were observed in highest level of education completed ($\chi^2(5, N = 2006) = 9.14, p = 0.104$). In terms of work status, social casino gamers were more likely to be employed full time, to be unemployed and looking for work, to rely on a sick or disability pension or “other”, whereas non-social casino gamers were more likely to be retired.

4.2. Internet access

Social casino gamers were significantly more likely to be Internet gamblers compared to non-social casino gamers. Furthermore, a significantly higher proportion of social casino gamers had home Internet access compared to non-social casino gamers. Similarly, a higher proportion of social casino gamers (72.1%) had access to the Internet at work compared to 66.1% of non-social casino gamers, although this difference was not statistically significant ($\chi^2(1, N = 1577) = 3.03, p = 0.082$).

4.3. Social casino gaming

The most common social casino games played were poker (69.8% of Internet and 67.2% of land-based gamblers), followed by gaming machines (24.1% of Internet gamblers and 32.8% land-based gamblers) and casino table games (21.7% of Internet gamblers and 8.6% of land-based gamblers). Participation in social casino games is shown in Table 2.

Table 2Proportion of social casino gamers who engage in each gambling activity as a social game and real money gambling ($N = 312$).

Activity	N who engage in activity as a social game	% who engage in activity as a social game	N of those who engage in each activity as a social game who also engage in real money gambling on the same activity	% of those who engage in each activity as a social game who also engage in gambling on the same activity ^a
Instant scratch tickets	5	1.6	3	60.0
Sports betting	7	2.2	5	71.4
Horse or dog race wagering	6	1.9	4	66.7
Bingo	18	5.8	10	55.6
Keno	4	1.3	1	25.0
Poker	187	59.9	67	35.8
Casino table games	51	16.3	25	49.0
Gaming machines	70	22.4	52	74.3

Note: caution is required when interpreting results based on small N 's.

^a The percentages in the final column are based on the number of people who engage in each activity as a social casino game, not the whole sample.

4.4. Gambling behaviour

A significantly higher proportion of Internet gamblers had played social casino games (25.0%) compared to non-Internet gamblers (5.0%), $\chi^2(1, N = 2010) = 168.26, p < 0.001, \Phi = 0.29$. A significantly higher proportion of social casino gamers participated in every surveyed form of gambling compared to non-social casino gamers apart from buying lottery tickets, where the opposite was true (Table 3). As shown in Table 2, individuals who played each social casino game were more likely to also engage in the monetary gambling activity. Approximately three-quarters (74.3%) of social slot players also gambled on EGMs, approximately half (49%) of social casino players also gambled on casino games, and over one-third (35.8%) of social poker players also gambled on poker.

4.5. Gambling attitude

A significantly higher proportion of non-social casino gamers stated that they believed that the harm from gambling far outweighs the benefits, while social casino gamers were significantly more likely to state that the benefits somewhat or far outweigh the harm of gambling (Table 4).

4.6. Gender differences in social casino game playing

A significantly higher proportion of female social casino game players reported playing slot machine and bingo games compared to male social casino gamers. Conversely, a significantly higher

proportion of male social casino gamers reported playing social poker games compared to female social gamers. No other significant gender differences were observed (Table 5).

4.7. Smoking, alcohol and illicit drug use and mental health

A significantly higher proportion of social casino gamers smoked on a daily basis compared to non-social casino gamers, whereas a higher proportion of non-social casino gamers never smoked, compared to social casino gamers. No significant differences were found in terms of alcohol use (both in terms of whether they use alcohol or not and how often they use it), but a significantly higher proportion of social casino gamers reported at least some use of illicit drugs in the last 12 months, compared to non-social casino gamers. Social casino gamers ($M = 4.09, SD = 5.00$) were significantly higher on the Kessler 6 compared to non-social casino gamers ($M = 2.52, SD = 3.24$), $t(302.16) = 4.97, p < 0.001$ (see Table 6).

4.8. Problem gambling

The PGSI was completed by 1768 of the 2010 gamblers who completed the other survey items. For social casino gamers, 54.3% were classified as non-problem gamblers, 26.2% as low-risk gamblers, 14.8% as moderate risk gamblers, and 4.7% as problem gamblers. For non-social casino gamers, the percentages were 80.4%, 12.8%, 5.8% and 1.0% respectively. Differences existed between the groups for every level of problem gambling severity,

Table 3

Number and percentage of respondents in each group who engage in each form of gambling.

Gambling form	Social casino gamers ($n = 270$)		Non-social casino gamers ($n = 1740$)		Inferential statistics
	N	%	N	%	
Instant scratch tickets	145	53.7*	812	46.7	$\chi^2(1, N = 2010) = 4.64, p = 0.031, \Phi = 0.05$
Lottery, lotto, pools tickets	176	65.2	1296	74.5*	$\chi^2(1, N = 2010) = 10.31, p = 0.001, \Phi = 0.07$
Sports betting	124	45.9*	399	22.9	$\chi^2(1, N = 2010) = 64.20, p < 0.001, \Phi = 0.18$
Horse or dog race wagering	154	57.0*	691	39.7	$\chi^2(1, N = 2010) = 28.79, p < 0.001, \Phi = 0.12$
Bingo	32	11.9*	78	4.5	$\chi^2(1, N = 2010) = 24.54, p < 0.001, \Phi = 0.11$
Keno	77	28.5*	198	11.4	$\chi^2(1, N = 2010) = 58.14, p < 0.001, \Phi = 0.17$
Poker	74	27.4*	76	4.4	$\chi^2(1, N = 2010) = 179.66, p < 0.001, \Phi = 0.30$
Casino table games	90	33.3*	146	8.4	$\chi^2(1, N = 2010) = 140.32, p < 0.001, \Phi = 0.26$
Games of skill	20	7.4*	16	0.9	$\chi^2(1, N = 2010) = 55.93, p < 0.001, \Phi = 0.17$
Electronic gaming machines	156	57.8*	497	28.6*	$\chi^2(1, N = 2010) = 90.95, p < 0.001, \Phi = 0.21$

* Significant differences between the groups.

Table 4
Views about the relative benefits and harm of gambling by group.

	Social casino gamers (<i>n</i> = 263)		Non-social casino gamers (<i>n</i> = 1675)	
	<i>N</i>	%	<i>N</i>	%
Gambling attitude $\chi^2(4, N = 1938) = 16.34, p = 0.003, \Phi = 0.09$				
The harm far outweighs the benefits	83	35.4	736	43.9 [*]
The harm somewhat outweighs the benefits	84	31.9	496	29.6
The benefits are about equal to the harm	47	17.9	308	18.4
The benefits somewhat outweigh the harm	24	9.1 [*]	89	5.3
The benefits far outweigh the harm	15	5.7 [*]	46	2.7

^{*} Significant differences between the groups.

Table 5
Social casino game behaviour differences between genders.

Gambling form	Males (<i>n</i> = 167)		Females (<i>n</i> = 103)		Inferential statistics
	<i>N</i>	%	<i>N</i>	%	
Instant scratch tickets	1	0.6	4	3.9	Fisher exact <i>p</i> = 0.072
Sports betting	5	3.0	2	1.9	Fisher exact <i>p</i> = 0.712
Horse or dog race wagering	2	1.2	4	3.9	Fisher exact <i>p</i> = 0.206
Bingo	3	1.8	15	14.6 [*]	$\chi^2(1, N = 270) = 16.69, p < 0.001, \Phi = 0.25$
Keno	2	1.2	2	1.9	Fisher exact <i>p</i> = 0.637
Poker	134	80.2 [*]	53	51.5	$\chi^2(1, N = 270) = 24.79, p < 0.001, \Phi = 0.30$
Casino table games	35	21.0	16	15.5	$\chi^2(1, N = 270) = 1.22, p = 0.269$
Electronic gaming machines	26	15.6	44	42.7 [*]	$\chi^2(1, N = 270) = 24.45, p < 0.001, \Phi = 0.30$

^{*} Significant differences between the groups.

Table 6
Alcohol, tobacco and illicit drug use by group.

	Social casino gamers (<i>n</i> = 269)		Non-social casino gamers (<i>n</i> = 1741)	
	<i>N</i>	%	<i>N</i>	%
Alcohol use in the last 12 months $\chi^2(1, N = 1978) = 0.07, p = 0.794$				
Yes	239	88.8	1509	88.3
Illicit drug use in the last 12 months $\chi^2(1, N = 1976) = 15.40, p < 0.001, \Phi = 0.09$				
Other	29	10.8 [*]	83	4.9
Tobacco use in the last 12 months $\chi^2(1, N = 1979) = 109.37, p < 0.001, \Phi = 0.23$				
Yes	116	43.1 [*]	343	20.1
Tobacco use frequency in the last 12 months $\chi^2(5, N = 1979) = 74.10, p < 0.001, \Phi = 0.19$				
Daily	87	32.3 [*]	233	13.6
Several days per week	4	1.5	23	1.3
Several days per month	6	2.2	25	1.5
Once a month or less	8	3.0	25	1.5
Only a few days all year	11	4.1	37	2.2
Never	153	56.9	1367	79.9 [*]

^{*} Significant differences between the groups. The information about frequency of illicit drug use contained too many small cells to analyse.

with a significantly lower proportion of social casino gamers falling into the non-problem category, but a significantly higher proportion in every other category, $\chi^2(3, N = 1768) = 90.85, p < 0.001, \Phi = 0.23$. Similarly, for each of the nine PGSI items, a significantly lower proportion of social casino gamers said that they had never experienced each issue compared to non-social gamers (smallest $\chi^2(3, N = 1768) = 14.64, p < 0.001, \Phi = 0.09$ for “Have you borrowed money or sold anything to get money to gamble”).

5. Discussion

As expected, social casino gamers differed from non-social casino gamers in several ways and results showed that gamblers who

play social casino games are a distinct sub-group of this population. Contrary to previous reports (Morgan Stanley, 2012; SuperData, 2013b), social casino gamers were more likely to be male. However this may reflect the sample of gamblers used in the current study and indicate that social casino game players who also gamble differ from a more general sample of social casino game players. Gender-based analyses showed that social casino game play followed similar patterns to gambling activities, with women more likely to play social bingo and gaming machine games, and men more involved in poker games (Church-Sanders, 2012; Morgan Stanley, 2012; Productivity Commission, 2010). Research in the wider online gaming field suggests that men are more likely to seek out games that include direct competition, whereas women tend to select games if they involve cooperation and positive social

encounters (Scharkow, Festl, Vogelgesang, & Quandt, 2012). Similarly, in the gambling field, women are more likely to play with others (McMillen, 2004) and appear to prefer gambling on bingo (Wood & Williams, 2011), which typically features social interactions. In a study of mostly male online poker players, winning was the primary motivator for play (Hopley & Nicki, 2010). This suggests that the various forms of social casino games are preferable to the same demographics that prefer the associated gambling activities, which may indicate that social casino game play is motivated by similar factors that motivate gambling.

Our results found that social casino gamers were younger than non-social casino gamers, which is consistent with previous research, and the average age of 43 years indicates that these games are not only used by young adults (Information Solutions Group, 2011; Morgan Stanley, 2012; SuperData, 2013b). Social casino gamers were more likely to be single or living with a partner than non-social casino gamers, suggesting that this group is either less settled, or less interested in the tradition of marriage and also reflecting the younger age of this cohort. The greater likelihood of living in a group household also likely reflects these characteristics, including being a young adult living with parents. However, social casino gamers were not more likely to be students and were likely to be working full-time. These results are consistent with previous research on social casino gamers, as well as research comparing Internet and land-based gamblers, with social casino gamers showing greater overlap with the population of Internet gamblers (Gainsbury et al., 2012; Griffiths et al., 2009; Wood & Williams, 2011). As these results are from a nationally representative sample of gamblers they provide important validation of previous descriptions of social gamers. The results indicate that gamblers who play social casino games represent a distinct subgroup, and their younger age suggests that there may be an increasing trend of gamblers also playing social casino games through the next generation.

The most popular form of social casino gaming was poker-style games, which is similar with the international social casino game market (Morgan Stanley, 2012). The use of social slot games is also consistent with the popularity of these games internationally. It is interesting to note that a high proportion of land-based gamblers played social slot games given the popularity of electronic gaming machines among land-based gamblers in Australia (Gainsbury et al., 2013, submitted for publication; Productivity Commission, 2010). The results for other social casino games also indicated that a substantial proportion of social casino game players were likely to also gamble on the same types of activities as they played without money. This may indicate that some gamblers are also interested in the social casino game versions of activities they also gamble on. These results are consistent with international research which found that social slot players were more likely to visit land-based casinos than other social casino players (SuperData, 2013c). This research also found that the frequency of visits to land-based casinos increased with the amount players spent on social casino games. A study of 1500 adult social gamers from the US found that 46% of social gamers said that playing with friends is the most important feature to them (Shaul, 2013). In comparison, gambling is typically motivated by winning, although socialisation is an important factor for some gamblers (Custer & Milt, 1985; Lam, 2007; McBride & Derevensky, 2009). Further research should examine the motivations of social casino gamers and what leads them to choose to play gambling or social casino games at different times.

Not surprisingly, social casino gamers were more likely than non-social casino gamers to have easy access to the Internet. Nonetheless, given that a high proportion of Australian gamblers appear to have Internet access at home and work (Gainsbury et al., 2013, submitted for publication), lack of Internet access is unlikely to represent a significant barrier for most Australian adults to access-

ing social casino games. The finding that a significantly greater proportion of Internet gamblers also played social casino games is also not surprising given that there appears to be a greater degree of similarity between Internet gamblers and social casino gamers, than between non-Internet gamblers and social casino gamers, in terms of demographic characteristics as well as engagement in online activities. Compared to land-based gamblers, Internet gamblers are likely to be younger, have a positive attitude towards gambling and be engaged in a greater number of gambling activities (Gainsbury et al., 2012, 2013, submitted for publication; Griffiths et al., 2009; Wood & Williams, 2011). Therefore, the greater gambling engagement and more positive attitudes about gambling held by social as compared to non-social casino gamers may be related to their greater representation among Internet gamblers in the current sample. Further research is needed to understand the sequencing of social casino game use and gambling, including samples of non-gamblers, to investigate whether social casino gaming encourages gambling, or vice versa, or whether individuals who are interested in gambling are more likely to engage in both social casino gaming and gambling activities.

The results from this study are consistent with previous studies on young adult and adolescent populations which found that problem gambling was strongly related to the use of social casino games (King et al., 2012; McBride & Derevensky, 2012; Mihaylova & Kairouz, 2010) and are important in demonstrating this relationship in an adult sample. Social casino gamers were more likely to smoke as well as have higher reported levels of illicit drug use, which are both highly comorbid with gambling problems (Prakash, Avasthi, & Benegal, 2012). Social casino game players also had higher levels of psychological distress, which may be related to higher reported levels of gambling problems, which are often comorbid with other mental health issues including anxiety, stress and depression (Delfabbro, 2008). Alternatively, the psychological distress may be related to excessive Internet use, including playing online social games, which has been proposed to represent a discrete mental health disorder, similar to disordered gambling (King & Delfabbro, 2013). The current research does not indicate causality or direction and no non-gamblers were included in this analysis so the relationship between problem gambling, substance use and mental health issues and social casino gaming needs additional investigation.

The extent to which social casino games contribute to disordered gambling is unknown. A small survey of problem gambling counsellors in Great Britain reported that for some clients, social casino gaming was their first experience with gambling, and some clients reported that social casino games triggered gambling urges and contributed to problems, however, others suggested that social casino games did not cause problems or were even helpful in avoiding gambling (Parke et al., 2013). It is possible that social casino games may encourage misplaced confidence in users that they will be successful at gambling, due to the development of irrational beliefs about the likelihood of winning (Bednarz, Delfabbro, & King, 2013; Sévigny et al., 2005). However, it is also possible that individuals who are motivated to gamble are also interested in social casino games, and their problems are related to range of bio-psycho-social factors (Blaszczynski & Nower, 2002; Sharpe, 2002), among which social casino games play a minimal role. Excessive Internet gaming has been proposed to be a similar behavioural addiction as disordered gambling (King & Delfabbro, 2013) so it is possible that similar underlying characteristics lead to problematic use of these activities. Clearly these results need further investigation, and future studies should include measures of excessive Internet gaming; however, the finding that a proportion of social casino gamers are also experiencing mental health problems is highly important as it demonstrates that there is a need to consider policies to minimise related harms.

Some obvious limitations of this research have already been noted; there were no non-gamblers in this sample, so the results only pertain to social casino gamers who also engage in gambling. Future research should recruit a sample including non-gambling social casino gamers as it is likely that there are significant differences between these populations. This research also did not include any measures of psychological characteristics such as impulsivity, sensation-seeking or risk taking, which may also provide further insights into this population. Ideally, prospective longitudinal research should be conducted to investigate the sequence of social casino gaming and gambling as well as gambling-related problems. The different motivations for social casino gaming and gambling and the distinct purposes these two activities serve is also of interest to determine the extent to which one may substitute for another or players may convert between these activities.

6. Conclusions

This study represents the first nationally representative analysis of social casino gaming among Australian adult gamblers. The findings show that social casino game use is more common amongst Internet gamblers, although social casino gamers appear to represent a distinct subgroup of gamblers who are younger, male, and more engaged in gambling overall. The results clearly show that there is a proportion of social casino gamers who also engage in gambling, which is consistent with the growing trend of social casino gaming companies offering gambling and gambling companies partnering with or offering social casino gaming in an attempt to capture this market. It is likely that there will be continued convergence between these two activities, which will have important implications for policy makers. In particular, research is needed to determine whether social casino games are normalising gambling and leading to more positive attitudes towards gambling, intentions to gamble and increases in gambling participation, particularly among young people.

Social casino gaming is currently relatively free of regulation. However, where it is offered in close proximity to gambling and players are encouraged to start gambling, strong social and public health policies are required to protect players from potential harms. As the current research showed that social casino game use amongst gamblers was related to elevated levels of gambling harm, smoking, drug use, and psychological distress, policies should be implemented to protect vulnerable populations, including young people and problem gamblers who play social casino games. Although the evidence does not indicate that social casino games cause harm, gamblers who engage in these games are clearly appropriate targets for harm minimisation strategies. Policies to minimise harms may include ensuring that social casino games are clearly distinguishable from gambling, particularly where the outcomes of games do not realistically depict the odds of gambling to avoid misleading players. The use of social casino games to educate players about responsible gambling should also be explored.

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