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Migration from social casino games to gambling: motivations and characteristics of gamers who gamble

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Migration from social casino games to gambling: Motivations and characteristics of gamers who gamble

Abstract

The increasing convergence of the gambling and gaming industries has raised questions about the extent to which social casino game play may influence gambling. This study aimed to examine the relationship between social casino gaming and gambling through an online survey of 521 adults who played social casino games in the previous 12 months. Most social casino game users (71.2%) reported that these games had no impact on how much they gambled. However, 9.6% reported that their gambling overall had increased and 19.4% reported that they had gambled for money as a direct result of these games. Gambling as a direct result of social casino games was more common among males, younger users, those with higher levels of problem gambling severity and more involved social casino game users in terms of game play frequency and in-game payments. The most commonly reported reason for gambling as a result of playing social casino games was to win real money. As social casino games increased gambling for some users, this suggests that simulated gambling may influence actual gambling expenditure particularly amongst those already vulnerable to or affected by gambling problems.

Keywords: social network games, social casino games, problem gambling, migration, convergence, freemium games

Introduction

Social network gaming, which refers to playing games that are connected to social networking services (SNS) directly, or through mobile applications (apps), is a popular online activity. Social network games (SNG) are generally free-to-play and do not award monetary prizes, but users can make in-game purchases to advance within the game, customise the game, give gifts to friends, and access other exclusive benefits and features, leading to these games being referred to as 'freemium'. Although SNG are connected to a SNS and encourage users to interact with their connections, most SNG can be played without any social interaction. SNG have grown rapidly in popularity and the global SNG market is predicted to grow annually at 16% from 2013-2019 to reach a total market value of US$17.4 billion (Transparency Market Research, 2015). A survey of Facebook users in Australia in November 2012 reported that there are over 3.5 million social gamers across Australia and almost 70% play SNG daily (Spiral Media, 2013), and it is highly likely that the use of SNG has increased since this time.

One of the most popular and profitable SNG genres is games that simulate casino or other gambling (or betting) activities. Such games are referred to as social casino games (Gainsbury, Hing, Delfabbro, & King, 2014). These games generally appear to replicate the basic structural design of gambling activities (i.e., betting mechanics, chance-determined outcomes), but are free to play and the prizes awarded are generally virtual currency that has no value outside of the game. Thus, while they resemble gambling activities, they are not legally classified or regulated according this category (Owens, 2010).

Gambling and gaming market convergence

The proportion of SNG users who become paying customers is generally small, with estimates suggesting that only 2.3% of all users made in-app purchases with real money (Swerve, 2015). Despite the small proportion of paying users, the massive number of users means that the global social casino market generated an estimated US$2.8 billion in revenue in 2014, a 37% increase from 2013 and revenue was expected to reach US$3.4 billion in 2015 (Eilers Research, 2015; SuperData, 2015). Not surprisingly, the high profitability of the social casino market has attracted international interest, most notably from gambling operators who have, through partnerships, mergers and acquisitions, now become the dominant players in the social casino market. For example, Playtika, owned by Caesars Interactive Entertainment, a subsidiary of Caesars Entertainment Corporation, the world's largest gambling company,

was estimated to account for 22% of the entire social casino game market, whereas *DoubleDown Casino*, owned by gaming machine manufacturer IGT, accounted for 11% (Grove, 2015). An increasing number of land-based gambling venues are also now offering social casino games, often linked with player loyalty programs, for marketing and customer engagement purposes (Abarbanel & Rahman, 2015; Gainsbury, Hing et al., 2014). However, despite apparent convergence between the gaming and gambling markets, several online gambling operators that have established online gambling on social casino games or directly on SNS have ceased these operations (Altaner, 2014; Amsel, 2013). The lack of success of these online gambling operations may indicate that the cross-over between the gambling and gaming markets does not necessarily translate to being able to 'migrate' social casino game users to a gambling product (Flood, 2015).

To date, little research has examined the convergence between gambling and gaming, although early evidence provides some grounds to justify more detailed investigations. For example, correlational studies show that young people who play gambling-themed games, including social casino games, are more likely to also engage in gambling and experience gambling problems (Ipsos MORI, Forrest, McHale, & Parke, 2009; King, Delfabbro, Kaptsis, & Swaans, 2014; McBride & Derevensky, 2009; Parke, Wardle, Rigbye, & Parke, 2013). A study of 2,010 Australian adult gamblers found that 13% also played social casino games, and these were more likely to be younger respondents, males and Australian born (Gainsbury, Russell, & Hing, 2014). They were also more likely to gamble online and be involved in all forms of gambling assessed, as well as smoke daily, use illicit drugs, experience gambling problems and have higher psychological distress. A survey of US social casino game users found that over one-third (36%) of participants visited a land-based casino more than twice a year, and two-thirds (68%) were interested in gambling on their favourite social casino game (SuperData, 2013). Similarly, a survey of online gamblers found that more frequent participation in social casino games was associated with greater gambling involvement (Abarbanel & Rahman, 2015). These results suggest some cross-over between the social casino game and gambling markets. In one longitudinal study, 409 US social casino gamers who had never gambled online were surveyed at two time-points (Kim, Wohl, Salmon, Gupta, & Derevensky, 2014). About one-quarter of the sample of social casino gamers reported having migrated to online gambling over the six-month period and making micro-transactions (payments) was the only unique statistical predictor of migration from social casino gaming to online gambling.

Theoretical links between gambling and gaming

The increasing convergence of the gambling and gaming industries has raised some concerns about whether social casino games might pose risks to certain groups in the community (Derevensky & Gainsbury, 2015; Gainsbury, Hing et al., 2014; King, Delfabbro, & Griffiths, 2010a). One of the theorised consequences of gambling-themed games is the normalisation of gambling behaviours (Department of Broadband, Communications and the Digital Economy, 2013; Gainsbury, Hing et al., 2014; Gambling Commission, 2015; Griffiths, 2010; King & Delfabbro, 2016; King et al., 2014; Parke et al., 2013). If people play social casino games they may be more likely to view gambling as an acceptable everyday activity and develop favourable attitudes to gambling, transferred from their positive experiences with the games. One hypothesis is that social casino games may represent a gateway product that could precede gambling. At present, however, evidence in support of migration from social casino games to gambling remains very limited. The notion of migration is complex and could involve transfers from social casino gaming to gambling activities while still remaining with the same operator, or it could refer to transfers to other available gambling activities. This may include users who have not previously gambled, as well as existing gamblers for whom the games triggered engagement in discrete or ongoing gambling sessions. In this way, the term migration connotes the possibility that users may engage in social casino games, while also expanding their online activities to include gambling.

Apart from their shared commercial connections, another reason why social casino game users may migrate to gambling is that the activities have many characteristics in common, particularly in relation to structural design (Bramley & Gainsbury, 2014; Groves, Skues, & Wise, 2014; Karlsen, 2011; King, Delfabbro, & Griffiths, 2010b). However, unlike gambling products, social casino games may not involve randomly determined outcomes and there is no transparency about how outcomes are determined. Conceivably, it is possible for social casino games to use algorithms that produce different outcomes in response to user behaviours to encourage continued play and in-game purchases (Heatz, 2015). Without the same regulatory oversight of game mechanics as in gambling, it is possible that social casino games may encourage misplaced confidence in users that they will be successful at gambling if they perceive the two experiences as highly similar (Bednarz, Delfabbro, & King, 2013; Frahn, Delfabbro, King 2014; Sevigny, Cloutier, Pelletier, & Ladouceur, 2005). Engaging in SNG may also encourage financial risk-taking, based on research that shows that online

environments produce greater disinhibition and risk-taking and the establishment of online social interactions that might encourage financial risk-taking to appear courageous and skilful compared to other users (Chan & Saqib, 2015; Wilcox & Stephen, 2013).

It is possible that individuals who play social casino games are already interested in gambling. Given a demonstrated interest in gambling themes, social casino game users may be targeted with advertisements and promotional offers from gambling sites or directly encouraged to migrate to a gambling site based on their use of social casino games. These issues were examined in a qualitative study with social casino gamers. Some participants reported that playing social casino games may lead to gambling because the similarity between the two activities may encourage user familiarity and transition in the hope of winning prizes of value (Gainsbury, Hing, Delfabbro, Dewar, & King, 2015). Other participants reported clearly understanding the differences between social casino games and gambling, and that if they were going to play games for money, they may as well gamble. For some users with gambling problems, social casino games acted as a trigger and exacerbated gambling, and at least one participant attributed their gambling and associated problems to earlier social casino gaming experiences. Thus, a variety of effects may occur but limited research has quantified them or determined any differential effects on sub-populations.

The aim of this paper was to examine the relationship between social casino gaming and gambling. Australian adults have access to Internet gaming and gambling in multiple forms, including online gambling and were chosen as an appropriate population to examine the impact of social casino games on gambling. The principal research question was whether social casino games influenced users directly to gamble or whether social casino games increase gambling (Rq1), and to investigate the demographic and playing patterns that characterised these affected social casino game users (Rq2). We hypothesised that, for the majority of users, social casino games would have little to no impact on their gambling, but that for a subset of users social casino games would lead to increase gambling and some users would gamble as a direct result of these games (Hp1). A second hypothesis was that migration to or increased gambling as a result of social casino games would be motivated by a desire to make money and a belief that their experience with social casino games had increased their likelihood of winning when gambling (Hp2).

Method

Participants

Respondents were recruited through Survey Sampling International (SSI). Inclusion criteria were that respondents were aged 18 years or older, active Internet users and could read and write comprehensible English. SSI randomly selected respondents from large existing panels, invited them to participate in the survey via email (without disclosing the survey topic to avoid response bias) and screened respondents according to age, gender and location quotas that were representative of the Australian population (current at the time of the survey, May-June 2014). Respondents gave informed consent to complete the survey and were aware that they could discontinue at any time. Respondents were compensated a small amount for their participation by SSI. Ethics approval was granted by [anonymised for review] Human Research Ethics Committee.

A total of 1,554 adults completed a larger survey based on social media use and gambling behaviours. The analyses for this paper were based on 521 of these adults (33.5%), who were classified as social casino game (SCG) users based on self-reported engagement in these games in the previous 12 months.

Survey Instrument

Demographics. Age, gender, marital status, household type, highest education qualification, work status, total family household income, main language spoken at home and country of birth were measured.

Gambling. Respondents were asked how frequently they had gambled during the last 12 months. Those who reported having bet on at least one form of gambling within the last 12 months were classified as gamblers and asked to nominate how important each of the following motivations were for gambling: social interaction, to relieve stress/escape from my worries, to pass the time/avoid boredom, to improve my gambling skills, to make money, for excitement/fun, and for the competition/challenge (response options: ‘not at all important’, ‘somewhat important’, ‘very important’).

Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001). All respondents who reported gambling completed the nine-item PGSI, apart from those who only gambled on

lottery-type forms on a less-than-weekly basis (total *n* = 403). 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 are used to classify respondents into the following groups: non-problem gamblers (PGSI = 0), low-risk gamblers (PGSI = 1 to 2), moderate-risk gamblers (PGSI = 3 to 7) and problem gamblers (PGSI = 8 to 27). Cronbach's alpha for the PGSI in this sample was 0.96. The PGSI has been independently validated and shown to have excellent reliability, dimensionality, external/criterion validation, item variability, practicality, applicability, and comparability (McMillen & Wenzel, 2006; Neal et al., 2004).

Social casino game (SCG) use. Social casino games were introduced as "*gambling-themed games that are online and accessed through social media sites or mobile apps. They are free to play and do not provide real money prizes, but you can use real money to purchase additional virtual currency. Social casino games typically encourage users to connect with social media platforms (e.g., posting scores and sharing activity with friends). Social casino games may resemble lotto (e.g., Big Bucks Lotto), poker (e.g., Zynga Texas Hold'Em), casino games (e.g., DoubleDown Casino, MyVegas), slot machines (e.g., Slotomania, Heart of Vegas), sports betting (e.g., Betting Billionaire), or bingo (e.g., Zynga Slingo, Bingo Island 2).*" Respondents were asked how frequently they had played SCGs in the last 12 months. Respondents were asked if they had spent money on SCGs and, if so, how often and to indicate their motivations for playing SCG (same response options as for gambling motivations).

Impact of social casino games on gambling. SCG users were asked how similar they considered SCGs and gambling to be in terms of appearance, playing experience, and excitement of winning. Respondents were asked if they had any interest in gambling with real money on their favourite SCGs if they could, whether they had gambled as a result of their SCG use, and, if they had, which aspects of SCGs had encouraged them to gamble. Respondents were also asked to what extent their experiences with SCGs had increased or decreased how much they would like to and actually gamble for money, and the extent to which they agreed or disagreed that SCG operators encouraged them to gamble.

Analyses

The 619 respondents who indicated that they had played any of six forms of SCGs at least once in the last 12 months were classified as SCG users. In open-ended questions 98

respondents reported that they had misunderstood or misread the introduction text explaining social casino games and subsequent responses revealed that they were not SCG users[1]. These respondents were reclassified as SCG non-users, leaving a final total of 521 SCG users.

The presented analysis compares SCG users who reported that they had and had not gambled as a result of their SCG use. Comparisons were mostly based on proportions using chi-square test of independence, with post-hoc tests of proportions where necessary. Likert scales were treated as ordinal and thus non-parametric correlations (Spearman's rho) or group comparisons (Mann-Whitney *U*) were conducted on these variables. Where more than two groups were compared, Kruskal-Wallis tests were employed with Mann-Whitney *U*-tests as post-hoc tests. Effect sizes are reported for the chi-square analyses (Φ) and an alpha of 0.05 is used throughout unless stated otherwise. Analyses were conducted using SPSS v22.

Results

Gambling behaviour

The majority of respondents (90.8%, n=473) were also classified as gamblers. In the last year, 92.0% of these 473 respondents had gambled on lottery-type games, 71.5% on EGMs, 51.4% on race wagering, 47.1% on sports betting, 38.5% on other casino-style card or table games and 31.5% on poker. Two-hundred-and-forty (50.7%) SCG users had gambled online at some point during their lifetime. Based on PGSI results, 39.2% were classified as non-problem gamblers, 18.9% were low-risk gamblers, 18.4% were moderate-risk gamblers and 23.6% were problem gamblers.

Gambling behaviour and demographic characteristics of those who gambled as a result of SCG use

In response to Rq1, almost one-fifth (19.4%, n=101) of SCG users reported that they had gambled for real money as a result of playing a SCG. In addressing Rq2, further analysis found that males (25.9%) were significantly more likely to have gambled as a result of SCGs compared to females (14.2%; χ^2 (1, N = 521) = 11.23, p = 0.001, Φ = 0.15), as were younger SCG users, (Spearman's rho = -0.24, $p < 0.001$), and those who speak a language other than English at home (33.0% vs 16.0%; χ^2 (1, N = 521) = 15.25, $p < 0.001$, Φ = 0.17).

[1] For example, when asked "What sites or platforms have you played social casino games on?", if respondents selected 'other', they were asked to specify. Some examples include: 'Do not play social casino games'; 'I havnt [sic] I obviously didn't read properly'; 'nt [sic] sure I understand social casino games?';'None'; 'n/a'.

Respondents with postgraduate (34.6%) or undergraduate (27.5%) degrees were significantly more likely to have gambled as a result of SCGs compared to those with lower levels of education (trade/technical certificate of diploma 14.9%, year 12 or equivalent 14.2%, year 10 or lower 15.1%; χ^2 (4, N = 521) = 17.38, p = 0.002, Φ = 0.18).

No significant differences were found based on marital status (χ^2 (4, N = 521) = 2.97, p = 0.562), household status (χ^2 (5, N = 521) = 2.31, p = 0.805), work status (χ^2 (7, N = 521) = 13.41, p = 0.063), family household income (Spearman's rho = -0.01, p = 0.868) or between respondents who were born in Australia or elsewhere (χ^2 (1, N = 521) = 0.03, p = 0.856).

Those who had gambled due to their SCG use were significantly more likely to engage in each form of gambling (smallest significant χ^2 (1, N = 473) = 12.32, p < 0.001, Φ = 0.16 for EGMs), except for lottery-type gambling (95.9% vs 90.9%, p = 0.106), possibly due to a ceiling effect. They were also more likely to report gambling online (78.6% vs 43.5% for those who have not gambled due to SCGs; χ^2 (1, N = 473) = 38.31, p < 0.001, Φ = 0.29). Those who had gambled due to SCGs were significantly more likely to be problem gamblers (52.1% vs 14.7%) and significantly less likely to be non-problem gamblers (13.5% vs 47.2%), with no significant differences for low-risk and moderate-risk gamblers; χ^2 (3, N = 403) = 68.17, p < 0.001, Φ = 0.41.

Player perceptions about the convergence of SCG and gambling

Most SCG users reported that they strongly (25.5%) or somewhat (31.1%) agreed that SCG operators encouraged users to try real money gambling, with 29.6% neither agreeing nor disagreeing, 5.6% somewhat disagreeing and 8.3% strongly disagreeing. No significant differences were found between those who had and had not gambled as a result of SCG use (Spearman's rho = 0.05, p = 0.253).

Most SCG users reported that SCGs were somewhat similar to gambling in terms of look (66.6% somewhat, 18.4% very similar, 15% not at all) and general experience (58% somewhat, 13.6% very similar, 28.4% not at all), and had similar levels of excitement (50.7%) or were not as exciting (41.8%) when winning in gambling (7.5% more exciting). Most SCG users (68.39%) reported that they were not at all interested on gambling on their favourite SCG (28.4% somewhat, 2.7% very interested). Significant differences were observed for all of these questions between those who had and had not gambled due to SCGs

(Table 1), with the former more likely to report that SCGs were somewhat similar to gambling in look, feel and level of excitement when winning. The omnibus test for the question about similarity of feel was not significant, however more focussed post-hoc tests revealed significant differences between the groups. Most respondents who had gambled due to SCGs said that they were somewhat interested in gambling on their favourite SCG.

Table 1 – Perceived similarity between SCGs and gambling, and interest in gambling with real money on SCGs, amongst those who have and have not gambled due to SCGs (% of SCG users, $N = 521$)

Motivation	Importance	Gambled due to SCGs ($n = 101$)	Not gambled due to SCGs ($n = 420$)	Inferential statistics		
				X^2	p	Φ
Similarity in look	Not at all similar	7.9	16.7*	6.36	0.042	0.11
	Somewhat similar	76.2*	64.3			
	Very similar	15.8	19.0			
Similarity in feel	Not at all similar	20.8	30.2	4.73	0.094	-
	Somewhat similar	67.3*	55.7			
	Very similar	11.9	14.0			
Similarity of level of excitement when winning	SCGs not as exciting	29.7	44.8*	7.73	0.021	0.12
	Similar level of excitement	60.4*	48.3			
	SCGs more exciting	9.9	6.9			
Interest in gambling on your favourite SCG	Not at all interested	20.8	80.5*	135.96	< 0.001	0.51
	Somewhat interested	71.3*	18.1			
	Very interested	7.9*	1.4			

* Indicates a significant difference between percentages in each row based on tests of proportions, all $p < 0.05$. The omnibus chi-square tests are reported and have two degrees of freedom. All comparisons are between SCGs and gambling.

Impact of SCGs on gambling

Analyses to address Hp1 found that most SCG users reported that their desire to gamble and actual gambling had neither increased nor decreased as a result of their SCG use. Those who had gambled due to SCG use were significantly more likely to report an increase in both the desire to gamble and actual gambling behaviour (see Table 2).

Table 2 - Impacts of social casino games on gambling amongst those who have and have not gambled due to SCGs (% of SCG users, n = 521)

To what extent have your experiences with social casino games increased or decreased how much you would like to gamble for money?	Gambled due to SCGs (*n* = 101)	Not gambled due to SCGs (*n* = 420)
Greatly increased	8.9	2.9
Somewhat increased	35.6	11.0
Neither increased nor decreased	45.5	65.2
Somewhat decreased	6.9	10.2
Greatly decreased	3.0	10.7
Mann-Whitney U = 13,951, Z = -6.12, p < 0.001		
To what extent have your experiences with social casino games increased or decreased how much you actually gamble for money?		**%**
Greatly increased	9.9	1.0
Somewhat increased	39.6	8.6
Neither increased nor decreased	42.6	71.2
Somewhat decreased	6.9	7.1
Greatly decreased	1.0	12.1
Mann-Whitney U = 11,921, Z = -8.10, p < 0.001		

Those who stated that their SCG use had increased their actual gambling were more likely to: be male (Mann-Whitney U = 29,177.5, Z = -3.02, p = 0.003), be younger (Spearman's rho = -0.16, p < 0.001), have higher levels of education (Spearman's rho = 0.13, p = 0.001), work full-time or not be retired (Kruskal-Wallis χ^2 = 35.45, df = 7, p < 0.001 and post-hoc Mann-Whitney U tests), to live in a one parent family with children (Kruskal-Wallis χ^2 = 12.08, df = 5, p = 0.034 and post-hoc Mann-Whitney U tests) and to have higher levels of problem gambling (Spearman's rho = 0.28, p < 0.001). They were also more likely to engage in SCGs more frequently (Spearman's rho between 0.09 and 0.33, all p < 0.05).

No significant differences were observed between increase or decrease of actual gambling due to SCGs and: marital status (Kruskal-Wallis χ^2 = 4.27, df = 4, p = 0.370), total family household income (Spearman's rho = 0.05, p = 0.207), main language spoken at home (Mann-Whitney U = 27,229, Z = -1.93 p = 0.053) or country of birth (Mann-Whitney U = 34,087, Z = -0.96 p = 0.339).

A notable minority (17.9%) of SCG users thought it was likely that their experience with SCGs would increase their success at real money gambling, while 42.4% reported this was neither likely nor unlikely and 39.7% reported this was somewhat or highly unlikely. Of the SCG users, 25.7% had gambled for real money on the same type of social casino game that

they have played. Of these 134 respondents, 57.5% reported that they had gambled first, with 42.5% having played the social casino game first.

Payment for SCGs

Of the SCG users who had gambled as a result of SCGs, 85.1% had paid money for SCGs at least once, which was significantly higher than those who had not gambled as a result of SCGs (41.7%; χ^2 (1, N = 521) = 61.58, $p < 0.001$, $\Phi = 0.34$. Amongst those who had paid for SCGs, 98.8% of those who had gambled as a result of SCGs had done so within the last 12 months, compared to 62.3% of respondents who had not gambled as a result of SCGs, χ^2 (1, N = 261) = 40.38, $p < 0.001$, $\Phi = 0.39$, and they were significantly more likely to have done so at least daily (11.6% vs 4.0%) or weekly (39.5% vs 9.1%), χ^2 (4, N = 261) = 63.23, $p < 0.001$, $\Phi = 0.49$. Furthermore, those who had spent money on a higher number of different SCGs per month were significantly more likely to have gambled as a result of SCGs, Spearman's rho = -0.43, $p < 0.001$.

Motivations for SCG use and gambling

Those who had gambled as a result of SCGs were significantly more likely to report each motivation for SCG play as either somewhat or very important, compared to those who had not gambled as a result of SCGs (Table 3).

Table 3 – Perceived importance of motivations for social casino game play amongst those who have and have not gambled due to SCGs (% of each group, $N = 521$).

Motivation	Importance	Gambled due to SCGs ($n = 101$)	Not gambled due to SCGs ($n = 420$)	Inferential statistics		
				χ^2	p	Φ
Social interaction	Not at all important	39.6	65.7*	27.89	< .001	0.23
	Somewhat important	45.5*	29.5			
	Very important	14.9*	4.8			
To relieve stress/ escape from my Worries	Not at all important	23.8	46.2*	17.27	< .001	0.18
	Somewhat important	60.4*	44.3			
	Very important	15.8	9.5			
To pass the time/ avoid boredom	Not at all important	16.8	35.0*	13.69	< .001	0.16
	Somewhat important	64.4	53.6			
	Very important	18.8*	11.4			
To improve my gambling skills	Not at all important	34.7	70.0*	43.90	< .001	0.29
	Somewhat important	51.5*	24.3			
	Very important	13.9*	5.7			
To make money	Not at all important	22.8	61.0*	47.89	< .001	0.30
	Somewhat important	50.5*	26.4			
	Very important	26.7*	12.6			
For excitement/ Fun	Not at all important	18.8	29.8*	8.78	< .01	0.13
	Somewhat important	54.5	54.3			
	Very important	26.7*	16.0			
For the competition/ Challenge	Not at all important	18.8	41.9*	22.56	< .001	0.21
	Somewhat important	55.4	45.5			
	Very important	25.7*	12.6			

* Indicates a significant difference between percentages in each row based on tests of proportions, all $p < 0.05$. The omnibus chi-square tests are reported and have two degrees of freedom.

Those who had gambled as a result of SCGs were significantly more likely to rate all gambling motivations as at least somewhat or very important, with the exception of to make money and for excitement/fun, although they were significantly less likely to rate these two motivations as not at all important (Table 4).

Table 4 – Perceived importance of motivations for gambling amongst those who have and have not gambled due to SCGs (% of each group, $N = 473$).

Motivation	Importance	Gambled due to SCGs ($n = 98$)	Not gambled due to SCGs ($n = 375$)	Inferential statistics		
				χ^2	p	Φ
Social interaction	Not at all important	33.7	59.2*	22.02	< .001	0.22
	Somewhat important	44.9*	30.7			
	Very important	21.4*	10.1			
To relieve stress/ escape from my Worries	Not at all important	25.5	57.1*	34.71	< .001	0.27
	Somewhat important	48.0*	32.3			
	Very important	26.5*	10.7			
To pass the time/ avoid boredom	Not at all important	19.4	53.6*	39.34	< .001	0.29
	Somewhat important	55.1*	35.7			
	Very important	25.5*	10.7			
To improve my gambling skills	Not at all important	37.8	73.9*	48.12	< .001	0.32
	Somewhat important	42.9*	20.5			
	Very important	19.4*	5.6			
To make money	Not at all important	18.4	30.4*	5.89	=.052	-
	Somewhat important	43.9	39.7			
	Very important	37.8	29.9			
For excitement/ Fun	Not at all important	12.2	21.6*	6.04	< .05	0.11
	Somewhat important	51.0	51.5			
	Very important	36.7	26.9			
For the competition/ Challenge	Not at all important	18.4	41.1*	20.87	< .001	0.21
	Somewhat important	51.0	42.9			
	Very important	30.6*	16.0			

This question was asked of SCG users who were also gamblers. * Indicates a significant difference between percentages in each row based on tests of proportions, all $p < 0.05$. The omnibus chi-square tests are reported and have two degrees of freedom.

Analysis to address Hp2 found that the most commonly reported reason for gambling as a result of playing SCGs was to win real money (Table 5). Responses indicated that SCGs were used by some users to gamble without risking any money and to develop their gambling skills, but that a subset thought that they were likely to win money if they gambled and that this would be more fun and exciting than playing SCGs.

Table 5 – Aspects of social casino games that had encouraged respondents to gamble (*N* = 101).

Aspect	**%**
I wanted to win real money	50.5
Playing social casino games allowed me to play without risking any money	37.6
I thought I would have a good chance of winning at real money gambling	31.7
Playing social casino games allowed me to develop my gambling skills	30.7
Gambling for real money is more fun and exciting than social casino games	25.7
Real money gambling is a better game experience	17.8
I wanted to challenge myself	17.8
Real money gambling is easier to play	12.9
I didn't want my play to be connected to a social network	11.9
I wanted greater competition against other players	9.9
I came across advertisements for real money gambling sites as a result of playing social casino games	8.9
I had gambled online in the past	6.9
Other	0.0

Note: Multiple responses were allowed.

Discussion

The principal research question in this study was twofold. The first was to examine whether social casino games influenced users directly to gamble or whether social casino games increase gambling; the second was to investigate the demographic and playing patterns that characterised these affected social casino game users. Our first hypothesis was supported as less than one-in-ten of all social casino game users surveyed reported that their gambling had increased due to their social casino game play and only one-fifth of social casino game users reported that they had gambled directly as a result of these games. This may include users who had not previously gambled, as well as existing gamblers for whom the games triggered engagement in discrete or ongoing gambling sessions. Among the subset of social casino game users who had also gambled on the same type of activity, the majority reported having gambled first, which indicates that gambling can also lead to gaming. Nonetheless, two-fifths of those who gambled and played social casino games of the same type reported that they had played social casino games first, suggesting that these games may act as a gateway to gambling within specific activities for a subset of users.

Those who reported gambling as a result of social casino games have similar demographic characteristics as Internet gamblers (Gainsbury, Russell, Hing, Wood, Lubman, & Blaszczynski, 2015), indicating a potential cross-over in markets of online gamblers and social casino game users. This is consistent with previous research (Gainsbury, Russell, Hing,

2014). Those who stated that social casino games had increased their gambling were similar to those who reported gambling as a direct result of social casino games. However, these groups did not exactly overlap as a proportion of social casino game users reported that these games had influenced them to gamble more, but reported that they had not gambled directly as a result of social casino games. The results suggest that for this subset of gamers, simulated gambling stimuli may act as a cue and trigger for gambling indirectly. We cannot assess the extent of 'new' migrants to gambling, as compared to those with a history of previous gambling as all questions were about the past 12 months. Nonetheless, the results suggest that for some gamblers, social casino games increase gambling participation, suggesting that their experience with games affects their perceptions of and attraction to gambling.

The majority of social casino game users surveyed agreed that social casino game operators encourage users to gamble indicating a perception among game users that operators attempt to migrate users between gaming and gambling. Attempts by social casino game operators to migrate users to gambling were not assessed and this migration may be an indirect consequence rather than a result of specific marketing by game operators. The observed convergence between gambling and gaming was supported by the majority of participants reporting that these games look and feel at least somewhat similar to gambling sites. This may relate to similar graphics, music, themes and game mechanisms in both activities (Bramley & Gainsbury, 2014; Groves et al., 2014; Karlsen, 2011; King et al., 2013). Most social casino game users surveyed reported that winning on social casino games was similarly or more exciting than winning at gambling. This likely reflects the most common motivations to play social casino games, which were for fun and excitement and to pass the time.

As hypothesised, social casino game users were most likely to migrate to gambling from social casino games for the opportunity to win money. Other reported motivations for migration indicated that some users were using social casino games as a way to try out gambling and to develop their skills without risking money. As hypothesised, around one-third of those who migrated to gambling stated that they had a good chance of winning at gambling as a result of their social casino game play. This may reflect these games acting indirectly as a form of interactive advertising for gambling that allows people to try a perceived free version of the activity, which they have a positive experience with, leading them to decide to engage in real money gambling. For users unfamiliar with gambling, the

interactive nature of social casino games may facilitate greater confidence in gambling abilities and perceived skills transferable to gambling, leading to risk-taking in subsequent gambling sessions (Bednarz et al., 2014). The similar game design to gambling activities, but inaccurate payout rates, may encourage users to think that they are similarly likely to win when playing gambling activities (Sevigny et al., 2007). Therefore, people's confidence in their 'skills' may actually represent illusions of control and distortions of their probability of success, and these misbeliefs may result in gambling losses and persistence in gambling (Moore & Ohtsuka, 1999). For those who played poker, social casino games may increase skills to an extent, however, the calibre of poker players is likely to be much higher in poker than in games. Future research should investigate cognitive and motivational determinants of migration in more detail.

One factor significantly associated with greater influence of gaming on gambling was paying to play social casino games, with paying players significantly more likely to have gambled as a result of their social casino game use than non-paying gamers. Paying players who were highly involved in games were the most likely to be triggered to gamble. This is consistent with previous research (Gainsbury, Hing, Delfabbro, Dewar, et al., 2014; Kim et al., 2014) and it is possible that micro-transactions (in-game purchases) may normalise paying to play, increase the perceived similarities between activities and increase the salience of monetary risks and rewards. The minority of respondents who had gambled due to their social casino game use who were more likely to report the games looked and felt somewhat similar to gambling. The perceived similarity between activities may explain why users believe that their experiences with the games may be similar when they start to gamble. Of interest, those who had gambled as a result of games were more likely to be similarly excited when winning at games and gambling. This supports the prediction that playing for money is a major motivator to move from games to gambling for this group, but it does suggest that social casino game play is sufficiently motivating in its own right.

As we hypothesised, the majority of social casino game users reported that these games had no impact on how much they gambled and they had not gambled as a direct result of their social casino game play. Although social casino game users were significantly more likely than non-social casino game users to also gamble, this may represent a common interest in both activities rather than a directional influence between them. However, this research is somewhat limited in the extent to which it captures the relationship between gambling and

gaming as it is reliant on self-report and the extent to which people gambled before and after their social casino game use is difficult to assess.

The vast majority of social casino game users were not interested in gambling on their favourite social casino game. This differs from reports from US social casino game users (SuperData, 2013) and perhaps reflects the greater availability of legal gambling opportunities within Australia. Users who had gambled as a result of social casino games were more likely to report an interest in gambling on their favourite social casino game, which may reflect their higher involvement in these games, as demonstrated by their propensity to pay to play. Users who had not gambled as a result of games were more likely to report that each motivation to play social casino games and gambling was not important. It is possible that these users were less involved with both social casino games and gambling, which explains why their gambling was less affected by their social casino game play. Analysis of a sample of US gamblers and social casino game users found that those who play social casino games more frequently also spend more time gambling online and more money gambling than their peers (Abarbanel & Rahman, 2015). Subgroups of social casino game users have not been examined, but this could reflect a greater interest in gambling-themed activities.

At-risk and problem gamblers were more likely to report having increased their gambling and gambled as a direct result of their social casino game use. This indicates that this subset of social casino game users is vulnerable to engaging in excessive gambling, although it is likely that these problems were not initially caused by social casino games (see Gainsbury, Hing, Delfabbro, Dewar, & King, 2015). The impact of social casino games on vulnerable populations requires further investigation, particularly given that younger and male gamblers, and those from culturally diverse backgrounds, the group most likely to be influenced by social casino games, are already at greater risk of developing gambling problems (Gainsbury, Russell, Hing, Wood, Lubman, & Blaszczynski, 2014; Johansson, Grant, Kim, Odlaug, & Götestam, 2009; Volberg, Abbott, Rönnberg, & Munck, 2001). However, as directionality is not clear, it is also possible that gamblers, including those with gambling problems, play social casino games as a distraction from gambling. This is consistent with previous interviews with social casino game users, including an Australian sample which included several problem gamblers who purposefully engaged with social casino games in an attempt to reduce their online gambling expenditure (Gainsbury, Hing, et al., 2015). A survey of online gamblers similarly found a subset that had higher gambling expenditure who engaged

in social casino games (Abarbanel & Rahman, 2015). Although the directionality of this relationship cannot be confirmed using the present design, it is possible that the gamblers wanted to maintain the experience of gambling without spending as much money and made the transition to social games. These findings should be explored in more detail; it is possible that social casino games might be a useful substitute for highly involved gamblers who want to reduce their expenditure and this could be encouraged as part of an intervention or treatment program. However, caution is also needed if at-risk gamblers are experiencing triggers that lead to increased gambling as a result of these games. Consideration should be given to the inclusion of warnings within social casino games to inform users that gambling activities are not equivalent and outcomes within a social game are unlikely to be replicated in a gambling activity.

Limitations

Although the sample was not representative of all Australian social casino gamers, it was taken from a relatively large panel sample and the results are similar to previous studies, so it may be a relatively accurate representation of this population. It is possible that some responses were affected by misunderstanding. For example, a proportion of users reported that they were motivated to play social casino games to win money, which is inconsistent with the definition of these games (provided to respondents) that the games do not involve any monetary prizes. Although directionality was partially assessed, it is difficult to measure whether users ceased one activity, moved repeatedly between these or exactly how the use of the two activities is related. Similarly, we cannot determine whether those migrating to gambling were initiating gambling for the first time, or already engaged in this activity. The survey also only asked about the past 12 months so that people who played social casino games more than 12 months ago and migrated to gambling but no longer play social casino games were not captured. Further research should investigate the timeline of involvement in social casino games and gambling in more detail.

Conclusions

The current study demonstrated that there is a subset of social casino gamers who report that they engage in gambling as a result of social casino games, most commonly driven by the motivation to win money and gain more excitement. Migration may also be motivated by irrational beliefs about the association between these two activities, including increased gambling skill as a result of playing games. Nonetheless, for the majority of social casino

game users their gambling is unaffected by their use of these games. Further research is needed to investigate how social casino games impact gambling, including longitudinal research to examine changes in gambling and gaming over time. It is likely that gambling and gaming will continue to converge and include social media as an important platform with which to engage users. As technological and industry developments continue, the impact of each industry on the other and among users will need to be monitored and assessed, particularly to protect vulnerable users.

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