FULL-LENGTH REPORT

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Who Pays to Play Freemium Games? The Profiles and Motivations of Players Who Make Purchases Within Social Casino Games

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Background and aims: Social casino games (SCGs) feature gambling themes and are typically free to download and play with optional in-game purchases. Although few players spend money, this is sufficient to make them profitable for game developers. Little is known about the profile and motivations of paying players as compared to non-paying players. *Methods:* This study compared the characteristics of 521 paying and non-paying Australian social casino game players who completed an online survey. *Results:* Paying players were more likely to be younger, male, speak a non-English language, and have a university education than non-payers. Paying players were more likely to be more highly involved in SCG in terms of play frequency and engagement with games and emphasized social interaction more strongly as a motivation for playing. A cluster analysis revealed distinct subgroups of paying players; these included more frequent moderate spenders who made purchases to avoid waiting for credits and to give gifts to friends as well as less frequent high spenders who made purchases to increase the entertainment value of the game. *Discussion:* These findings suggest that paying players have some fundamental differences from non-paying players and high spenders are trying to maximize their enjoyment, while non-spenders are content with the game content they access. *Conclusions:* Given the structural similarities between SCG and online gambling, understanding subgroups of players may have broader implications, including identifying characteristics of gamers who may also engage in gambling and players who may develop problems related to excessive online gaming.

Keywords: social casino games, social network sites, gambling, freemium, addiction, social media

INTRODUCTION

Participation in online social network services (SNS) has experienced exponential growth in recent years. Accompanying the appeal of SNS is the rise of social network games (SNGs) that are distributed primarily through SNS and mobile apps and feature gameplay mechanics that leverage the online connections available through SNS (Järvinen, 2009). Freemium SNG (also: free-to-play, F2P) are free to download and play, but include optional in-game purchases. One of the most popular emerging categories of SNG activities are social casino games (SCGs), which are estimated to attract three times as many players as online gambling (Morgan Stanley, 2012). In July 2015, eight SCG titles were in the Top 20 Grossing iOS Games in the US and, as evidence of their popularity, these games scored highest when it comes to the share of gamers who would recommend them to a friend (Newzoo, 2015). The global SCG market generated an estimated US$3.5 billion in revenue in 2015 and revenue is expected to reach US$4.4 billion in 2017 (Ruddock, 2016).

SCG activities have many similarities with online gambling, including the structural design of games, playing experience, music and animations, and experience of losses and wins (Bramley & Gainsbury, 2015; Derevensky & Gainsbury, 2015; Gainsbury, Hing, Delfabbro, & King, 2014; Groves, Skues, & Wise, 2014; Karlsen, 2011; King, Delfabbro, & Griffiths, 2010a). These structural similarities have led to assumptions that SCG playing may be maintained by similar factors to gambling, most notably in relation to people's desire to experience the excitement of winning and the potential to be "successful," even if the chips have no tangible value other than a position on a leader board (King & Delfabbro, 2016). As SCG can be played without risking any money, it might be expected that people's motivations for playing are largely intrinsic in nature. However, the fact that some people are willing to spend money suggests that mere enjoyment of SCG might not be the only motivation. Research suggests that there are demographic similarities between online gamblers and SCG players (Abarbanel & Rahman, 2015; Gainsbury, Russell, & Hing, 2014; King, Delfabbro, Kaptsis, & Zwaans, 2014; SuperData, 2013) and some concerns have been raised that these games may encourage players to migrate to gambling (Derevensky & Gainsbury, 2015; Kim, Wohl, Salmon, Gupta, & Derevensky, 2015; King, Delfabbro, & Griffiths, 2010b; Parke, Wardle, Rigbye, & Parke, 2013).

Few studies have specifically examined SCG as a genre of SNG, despite the many similarities between these games and online gambling. Therefore, the available literature to provide context for this study is limited to the broader field of SNG. Operators of SNG usually generate income through in-game advertisements, marketing offers, and sales of

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virtual currency and items (Shin & Shin, 2011). The rationale for using a freemium model is to allow flexible price points for different players with different levels of willingness to pay (Paavilainen, Hamari, Stenros, & Kinnunen, 2013). Players are initially provided with a limited amount of virtual currency and are instructed on ways to earn additional currency via in-game tasks and activities. Players can also make real money purchases for virtual goods and/or additional in-game currency. Financial expenditure is made in exchange for continued game play, access to additional game content, expedited in-game progress, customization options, access to rare items, and purchasing gifts for other users. Due to the high volume of players, monetizing even a small proportion of the game can be profitable for operators.

On the whole, SCG are thought to be more profitable than other SNG, with estimates that microtransaction spending in SCG is 40% higher than in other categories of SNG (Kontagent, 2012; SuperData, 2012). Available evidence suggests that few SCG players convert into paying customers. For example, only 3% of PlayStudios (makers of *MyVegas* and many other SCG) customers monetize (Ruddock, 2016). However, these players tend to stay monetized and continue to spend money, with 80% still active and paying players 2 years later. One report estimated that 46% of SCG players have spent money within these games (Newzoo, 2015). Although SNG data suggest that the majority of purchases are small (US$1–5) and most users spend money only once or twice per month (Swrve, 2015), estimates suggest that 64% of monthly SNG revenue is derived from the top 10% of paying players, who represent just 0.23% of total players (Swrve, 2015). SNG operators are, therefore, reliant on a small proportion of high spending gamers as well as a high number of lower spending players (Ruddock, 2016; Swrve, 2015).

These statistics suggest that insights into the characteristics of paying customers are likely to be important for predicting their future behaviors. Not only there is a strong commercial interest in understanding what types of people choose to pay and why they do this, but also there is also broader public policy interest in understanding this new type of consumer behavior and the extent to which SCG might be a new opportunity for experiencing harm associated with excessive expenditure. Research suggests that some game design features may cause players problems, and it has been suggested that game developers implement exploitative game design where aggressive monetization strategies are used for short-term profits rather than long-term player engagement (Alham, Koskinen, Paavilainen, Hamari, & Kinnunen, 2014). Few jurisdictions specifically regulate SNG and SCG, although there are increasing discussions about the need for this and to enhance consumer protection, protect vulnerable populations, including youth, and avoid manipulative sales techniques (Derevensky & Gainsbury, 2015). Furthermore, paying to play SCG has been identified as a predictive factor related to commencing online gambling (Kim et al., 2015). Conversely, playing SCG has also been reported as a way for problem gamblers to reduce their gambling, although these games may still be used in a problematic way (Gainsbury, Hing, Delfabbro, Dewar, & King, 2015).

Player attitudes and enjoyment may play a role in affecting motivation to play and spend money in SNG. For example, a study of online gamers, including SNG players, found that greater enjoyment of the game reduced the willingness to buy virtual goods (Hamari, 2015). The authors suggested that if players already enjoy the game, they may not be motivated to make any purchases as they do not need to spend money to add value to their experience, whereas those who enjoy the game somewhat less may be incentivized to buy virtual goods to increase their enjoyment of the game, for example, by progressing further. Other studies suggest that SNG play may be driven by other emotional factors. A study of users of the SNG *Candy Crush Saga* reported a strong positive link between low self-control and the amount of money players spent on in-game purchases (Soroush, Hancock, & Bohns, 2014). Analysis of qualitative responses indicated that some participants experienced frustration when "stuck" in the game and found it hard to resist the option to spend money. Paying SCG players are more likely to be young males (aged 21–35 years old), although young females represented over one-fifth of paying players in one industry report (Newzoo, 2015). These findings are interesting, as the typical SCG player is typically a female aged over 45 (Wells, 2015). Overall, the limited research in this area suggests that paying players may differ from non-paying SCG players.

THE CURRENT STUDY

Our current state of knowledge suggests that gamers are likely to be motivated to play SCG for a variety of reasons and engage with these games in different ways. The SCG industry relies on a small proportion of paying users, yet little research has focused on these players' profiles and motivations. Accordingly, this study was designed to compare gamers who pay to play SCG from other non-purchasing players. The study compared paying and non-paying players in terms of: their demographic characteristics, the frequency of use and time spent playing games, their motivations for playing SCG, and why they paid money to play. The study also aimed to identify whether any subgroups of paying gamers could be identified along demographic and motivation factors. The objective of this research was to create a greater understanding of SCG players, including the identification of any potentially problematic patterns of play that characterizes a specific population of players.

METHOD

Participants

Respondents were recruited through an Australian market research company. Inclusion criteria were being aged 18 years or older, actively using the Internet, and English language competency, with no specific exclusion criteria. As this was part of a larger study investigating online behaviors, SCG players were not specifically recruited. Respondents were screened according to age, gender, and

location quotas that were representative of the Australian population (at the time of the survey, May–June 2014).

Procedure

Participants completed an online survey and were financially compensated for their participation a small amount by the market research company.

Measures

The online survey had the following sections.

Demographics. Respondents reported their age, gender, marital status, household type, highest education qualification, work status, total household income, main language spoken at home, and country of birth.

Use of social casino games. Respondents were asked how frequently they had played SCG in the last 12 months, how many sessions they played on a typical day, and the time they spent playing per session, when they first played SCG, their use of social features within these games, devices used to play SCG, and their motivations for playing SCG. Respondents were asked if they had spent money on SCG and, if so, how often, how much per typical purchase (AUD$), how many SCG they made purchases in, and whether the cost of purchases was clear.

Motivations for paying to play social casino games. Respondents were asked which of the following motivations had contributed to their spending money on SCG (yes/no): to decorate or personalize the game; to get ahead in the game; to avoid waiting for or earning credits; to purchase gifts for friends; the game isn't fun otherwise; to take advantage of a special offer; to increase my level of enjoyment; as an impulse decision to continue play; and other (specify).

Statistical analysis

The analyses for this paper were based on 521 respondents classified as SCG players based on their use of SCG at least once in the previous 12 months. Analyses compared those who had made purchases within SCG and those who had not. For categorical dependent variables, chi-square tests of independence were performed, with *post hoc* tests of proportions where the dependent variable had more than two levels. The effect size (Φ) is reported with the omnibus tests, where $\Phi = .1$, .3, and .5 are the generally accepted heuristics for small, medium, and large effect sizes (Cohen, 1988). Where the dependent variable was ordered or continuous, Mann–Whitney *U* tests or Spearman's rho were used. A two-step cluster analysis was performed to determine groups of people who pay for SCG based on reported frequency of sessions and expenditure per session. An alpha level of .05 was employed unless stated otherwise.

The motivations for playing social casino games were significantly correlated. Exploratory factor analyses indicated that the data were factorable, although they formed one single factor that may not be directly interpretable except to say that higher scores indicate higher motivation. We concluded that if we were to measure motivation, we would not do so in this fashion, and thus have reported the results for the motivations separately. As the motivations are correlated, a Bonferroni correction may be applied and this is indicated in Table 2.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. Ethics approval was granted by (anonymized for review) Human Research Ethics Committee. Participants were informed that the study was voluntary and that they were free to withdraw at any time without penalty. No personal information was collected and all responses were anonymous. All participants gave informed consent by clicking through to the survey after reading the participant information statement.

RESULTS

Purchasing in social casino games

Respondents were classified as having made purchases within SCG (paying players) if they reported that they had ever done so in their lifetime; 261 (50.1%) of the 521 SCG players were classified as having paid to play, while 260 (49.9%) had not (non-paying players). Purchasing frequency varied; 6.5% ($n = 17$) of paying players had made purchases in SCG in the last 12 months on a daily basis, 19.2% ($n = 50$) weekly, 23.4% ($n = 61$) monthly, 25.3% ($n = 66$) annually, and 25.7% ($n = 67$) reported not doing so in the last 12 months. Most paying respondents reported per session purchases of $5 or less (39.9%, $n = 104$), while 20.3% ($n = 53$) spent $6–$10 per session, 18.4% ($n = 48$) $11–$20, 14.6% ($n = 38$) $21–$50, and 6.9% ($n = 18$) >$51 per session. Few respondents reported spending money on more than three types of SCG (2.6%, $n = 7$), with most spending on one or two different SCGs per month (54.4%, $n = 142$). The majority (59.8%, $n = 156$) agreed or strongly agreed that the cost of any purchases was clear when making the purchase, 10.7% ($n = 28$) disagreed, and 29.5% ($n = 77$) neither agreed nor disagreed.

Individual differences in purchasing

Demographics. Paying players were significantly more likely to be male ($n = 135$, 51.7%) compared to non-paying players [$n = 97$, 37.3%; $\chi^2(1, N = 521) = 10.96$, $p < .001$, $\Phi = .15$], younger (Mann–Whitney $U = 29{,}591$, $Z = -2.53$, $p = .012$), have a postgraduate or undergraduate qualification, but not a trade/technical certificate or diploma [$\chi^2(5, N = 521) = 17.90$, $p = .003$, $\Phi = .19$], and speak a language other than English at home [$n = 71$, 27.2% vs. $n = 32$, 12.3%; $\chi^2(1, N = 521) = 18.22$, $p < .001$, $\Phi = .19$]. No significant differences were observed in relation to marital status [$\chi^2(4, N = 521) = .67$, $p = .955$], household type [$\chi^2(4, N = 521) = 3.51$, $p = .622$], work status [$\chi^2(7, N = 521) = 11.29$, $p = .127$], income (Spearman's rho = .07, $p = .108$), or country of birth [$\chi^2(1, N = 521) = 1.80$, $p = .180$].

Social casino game involvement. Paying players were significantly more likely to take part in each form, and play

Table 1. Proportion of respondents who have played each type of social casino game within the last 12 months among those who had made purchases and had not made purchases within social casino games (% of each group, $N = 521$)

	Non-paying players ($n = 260$)		Paying players ($n = 261$)		Inferential statistics		
Motivation	*n*	%	*n*	%	χ^2	*p*	Φ
Lottery-type games (lotteries, scratchies, lotto, pools, bingo, and keno)	153	58.8	232	88.9*	60.94	<.001	.34
Slot-machines/pokies/gaming machines	173	66.5	184	70.5	.95	.331	–
Sports betting	48	18.5	151	57.9*	85.62	<.001	.41
Race wagering	58	22.3	143	54.8*	57.99	<.001	.33
Poker	85	32.7	112	42.9*	5.79	.016	.11
Other casino-style card or table games	73	28.1	124	47.5*	20.92	<.001	.20

*Statistical significance, $p < 0.01$.

more frequency, with the exception of slot-games that compared non-paying players (Table 1) (smallest significant Spearman's rho = .12, $p = .004$ for poker). Paying players were significantly more likely to play SCG for more sessions on a typical day of SCG play ($n = 131$, 50.2% played more than one session per day vs. $n = 100$, 38.5%) (Mann–Whitney $U = 30{,}192$, $Z = -2.42$, $p = .016$) and to spend more time playing SCG ($n = 164$, 62.8% played for more than 15 min vs. $n = 136$, 52.3%) (Mann–Whitney $U = 30{,}581$, $Z = -2.07$, $p = .039$) compared to non-paying players.

Paying players had started playing SCG earlier than non-paying players (Spearman's rho = .12, $p = .006$) and were more likely to use social features on these games [$n = 111$, 42.5% vs. $n = 43$, 16.5%; $\chi^2(1, N = 521) = 42.26$, $p < .001$, $\Phi = .29$], including: read comments [$n = 62$, 23.8% vs. $n = 33$, 12.7%; $\chi^2(1, N = 521) = 10.69$, $p = .001$, $\Phi = .14$] and posting comments [$n = 51$, 19.5% vs. $n = 14$, 5.4%, $\chi^2(1, N = 521) = 23.90$, $p < .001$, $\Phi = .21$], but not promoting their activity, sharing comments, or inviting their wider online network to join in [$\chi^2(1, N = 521) = 2.40$, $p = .121$].

Paying players were significantly less likely to report using smartphones to access SCG compared to non-paying players [$n = 69$, 26.4% vs. $n = 94$, 36.2%; $\chi^2(1, N = 521) = 5.72$, $p = .017$, $\Phi = .11$], with no significant differences for any other devices.

Motivations for playing social casino games. Paying players were significantly more likely to rate the following motivations as somewhat or very important than non-paying players: social interaction, to relieve stress/escape from my worries, to improve gambling skills, for excitement/fun, and for the competition/challenge (see Table 2).

Logistic regression predicting differences between those who do and do not pay to play SCGs

A logistic regression was conducted to examine the independent contribution of different predictors because of the

Table 2. Perceived importance of motivations for social casino game play among those who had made purchases and had not made purchases within social casino game (% of each group, $N = 521$)

		Non-paying players ($n = 260$)		Paying players ($n = 261$)		Inferential statistics		
Motivation	Importance	*n*	%	*n*	%	χ^2	*p*	Φ
Social interaction	Not at all	182	70.0*	134	51.3	19.74	<.001	.20
	Somewhat	67	25.8	103	39.5*			
	Very	11	4.2	24	9.2*			
To relieve stress/escape from my worries	Not at all	126	48.5*	92	35.2	10.59	.005	.14
	Somewhat	113	43.5	134	51.3			
	Very	21	8.1	35	13.4*			
To pass the time/avoid boredom	Not at all	82	31.5	82	31.4	.43	.808	–
	Somewhat	147	56.5	143	54.8			
	Very	31	11.9	36	13.8			
To improve my gambling skills	Not at all	195	75.0*	134	51.3	31.50	<.001	.25
	Somewhat	51	19.6	103	39.5*			
	Very	14	5.4	24	9.2			
For excitement/fun	Not at all	74	28.5	70	26.8	7.51	.023[a]	.12
	Somewhat	151	58.1	132	50.6			
	Very	35	13.5	59	22.6*			
For the competition/challenge	Not at all	106	40.8	89	34.1	6.05	.048[a]	.11
	Somewhat	124	47.7	123	47.1			
	Very	30	11.5	49	18.8*			

Note. The omnibus χ^2 tests are reported and have two degrees of freedom.
[a]Indicates a result that is not statistically significant if a Bonferroni correction is applied.
*Indicates a significant difference between percentages in each row based on tests of proportions, all $p < .05$.

significant associations observed between them in bivariate analyses. The variables included in the model, and their correlations, are indicated in Table 3. Sports and horse wagering SCG users, as well as poker and casino SCG users, were combined because of their significant overlap. Tolerance statistics indicated some overlap between motivations variables, as expected, although the lowest tolerance was .45, which was considered to be acceptable.

The overall model predicted 73.1% ($n = 190$) of non-paying SCG users and 73.9% ($n = 193$) of paying SCG users [model $\chi^2(23, N = 521) = 197.13$, $p < .001$]. Significant predictors in the final model are indicated in bold in Table 4. Some predictors that were significant in the previous bivariate analyses were no longer significant in this final model, notably: age, language spoken at home, length of session, and number of sessions in a typical day of SCG play, and some of the motivations, indicating that the differences between those who do and do not pay to play SCGs may be at least partially explained by other variables in the model, but that there is some individual variance in paying for SCGs that is accounted for by some variables reported above.

Motivations for paying to play

The most commonly reported reasons for making purchases within SCG were: to increase the "level of enjoyment" ($n = 57$, 21.8%); "to take advantage of a special offer" ($n = 54$, 20.7%); "to get ahead in the game" ($n = 51$, 19.5%); as an "impulse decision to continue play" ($n = 48$, 18.4%); "because the game isn't fun otherwise" ($n = 46$, 17.6%); "to purchase gifts for friends" ($n = 44$, 16.9%); and to avoid waiting for or earning credits ($n = 43$, 16.5%). Decorating or personalizing the game was the least commonly reported reason ($n = 19$, 7.3%).

Cluster analysis

A two-step cluster analysis was conducted on all those who had made purchases within SCG during their lifetime based on how often the respondents reported making purchases in SCG and how much they usually spent each time they paid during the last 12 months. This cluster analysis yielded five clusters. These clusters were then compared on the frequency and amount of expenditure on SCG in the last 12 months and were given the following labels: *non-spenders* (NS; $n = 50$), *monthly low spenders* (MLS; $n = 39$), *annual low spenders* (ALS; $n = 53$), *less frequent high spenders* (LFHS; $n = 52$), and *more frequent moderate spenders* (MFMS; $n = 67$). The characteristics of the LFHS and MFMS groups were of most interest. The groups are described below in terms of their expenditure and then compared to each other and to the three other groups.

LFHS were characterized by respondents who made purchases within SCG mostly monthly or annually, but these expenditures were generally quite high, mostly between $21 and $100. MFMS tended to pay more frequently (mostly daily or weekly), but these expenditures were generally between $1 and $20. The LFHS group were significantly more likely to be male ($n = 34$, 65.4%) compared to the MFMS and NS groups ($n = 29$, 43.3% and $n = 23$, 46.0%, respectively; test of proportions, $p < 0.05$), while the MLS and ALS groups did not differ from any other groups in gender proportion ($n = 18$, 46.2% and $n = 31$, 58.5% male, respectively). Median ages for the groups were: 34 (MFMS), 37 (MLS), 41.5 (NS), 42 (ALS), and 42.5 (LFHS). No significant differences were observed between the groups (largest Mann–Whitney $U = 1{,}460$, $p = 0.131$ for MFMS vs. LFHS). No significant differences were observed between the groups in terms of income or education [Kruskal–Wallis $\chi^2(4, N = 261) = 4.61$ and 3.93, $p = .330$ and .416, respectively].

MFMS ($n = 23$, 34.3%) and MLS ($n = 11$, 28.2%) were significantly more likely to make purchases within SCG in order to avoid waiting for or earning credits compared to ALS ($n = 5$, 9.4%), LFHS ($n = 3$, 5.8%), and NS, $\chi^2(4, N = 261) = 33.27$, $p < .001$, $\Phi = .36$. MFMS ($n = 18$, 26.9%) were significantly more likely to purchase gifts for friends compared to LFHS ($n = 6$, 11.5%) and MLS ($n = 2$, 5.1%), with ALS and NS not significantly different to the other groups, $\chi^2(4, N = 261) = 11.11$, $p = .025$, $\Phi = .21$. LFHS ($n = 15$, 28.8%) reported that they made purchases within SCG to increase their level of enjoyment, which was significantly higher than MFMS ($n = 9$, 13.4%), with the other groups not differing significantly from either LFHS or MFMS [omnibus $\chi^2(4, N = 261) = 8.57$, $p = .073$, although significant differences were observed in pairwise comparisons, tests of proportions, $p < .05$].

DISCUSSION

The aim of this study was to investigate SCG players who make in-game purchases and the demographic and motivational factors that differentiate them from their non-paying counterparts. Overall, it was found that the profile of paying players as young, well-educated, and male differs from the typical profile of SCG and SNG players, which tends to be predominantly composed of older female players (Morgan Stanley, 2012; Wells, 2015). Paying players were more involved with SCG, playing more frequently, for longer sessions, over a longer time, and more likely to use the social interaction options and obviously spend money than non-payers. Time spent in an online environment has been previously associated with greater purchase activity (Mäntymäki & Salo, 2011; Rosen, 2001; Venkatesh & Agarwal, 2006) as is intention for ongoing play (Hamari, 2015). Our results also showed that players' ability to control their level of involvement may be influenced by motivational factors, as indicated by the reported desire to achieve progress within the game or take advantage of special offers (Soroush et al., 2014). We did not find evidence that the greater accessibility of these games through mobile platforms was associated with a greater likelihood to spending money as in other reports (Eilers Research, 2015; SuperData, 2015). In contrast, use of mobile devices was associated with less likelihood to make purchases.

With respect to motivational factors, purchasing behavior was positively associated with a desire to relieve stress as well as to increase enjoyment, to make the game more fun, and to avoid waiting for or earning credits, rather than to escape boredom. This was consistent with previous studies

Table 3. (Pearson's) correlations between predictors included in the logistic regression ($N = 521$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Paid for SCG (1)	1																		
Age (2)	−.11*	1																	
Gender (3)	.15**	.10*	1																
Education (4)	.13**	−.19**	.03	1															
LOTE (5)	.19**	−.20**	−.04	.23**	1														
Use of lottery SCGs (6)	.34**	−.15**	−.09*	.04	.12**	1													
Use of EGM SCGs (7)	.04	−.04	.06	−.08	−.02	.05	1												
Use of sports or wagering SCGs (8)	.40**	−.24**	.22**	.24**	.15**	.23**	.14**	1											
Use of poker/casino SCGs (9)	.09*	−.14**	.17**	.15**	.07	.04	.30**	.34**	1										
Separate SCG sessions per typical day (10)	.08	−.02	−.01	.03	.08	−.02	.24**	.10*	.40**	1									
Time spent on SCGs per typical day (11)	.07	.08	.04	−.11*	.01	−.05	.30**	.04	.36**	.53**	1								
Year of first SCG use (12)	.14**	.25**	.08	−.11*	−.02	.14**	−.05	.00	−.01	−.04	.00	1							
Use of social features (13)	.29**	−.17**	.08	.12**	.20**	.13**	.16**	.32**	.36**	.32**	.26**	−.04	1						
Play SCG via smartphone (14)	−.11*	−.24**	−.07	.07	−.04	−.11*	.12**	.02	.08	.09*	.05	−.18**	.15**	1					
Social interaction (15)	.19**	−.26**	.03	.12**	.22**	.17**	.14**	.27**	.28**	.15**	.15**	.01	.31**	.04	1				
To relieve stress/escape from my worries (16)	.14**	−.18**	−.05	.04	.14**	.12**	.24**	.14**	.23**	.22**	.30**	−.06	.25**	.07	.53**	1			
To pass the time/avoid boredom (17)	.02	−.17**	−.02	.07	.05	.01	.26**	.13**	.30**	.24**	.31**	−.10*	.24**	.12**	.42**	.62**	1		
To improve my gambling skills (18)	.22**	−.31**	.09*	.13**	.19**	.19**	.17**	.35**	.36**	.21**	.21**	−.01	.32**	.07	.60**	.49**	.53**	1	
For excitement/fun (19)	.08	−.10*	−.05	.04	−.02	.03	.23**	.15**	.30**	.24**	.32**	−.06	.28**	.10*	.39**	.50**	.53**	.44**	1
For the competition/ challenge (20)	.10*	−.09*	.05	.11*	.06	.07	.15**	.21**	.36**	.26**	.30**	−.03	.28**	.04	.44**	.53**	.50**	.53**	.65**

Note. LOTE = speaking a language other than English at home.
*$p < .05$.
**$p < .01$.

Table 4. Results for logistic regression comparing those who do and do not pay for SCGs ($N = 521$)

Variable	*b*	SE (*b*)	Wald	*p*	OR	OR 95% CI LL	OR 95% CI UL
Age	−.01	.01	.50	.479	.99	.98	1.01
Gender (ref = female)	**.67**	**.24**	**8.08**	**.004**	**1.96**	**1.23**	**3.12**
Education (ref = less than year 10)			8.74	.120			
Year 10 or equivalent	1.18	.69	2.96	.085	3.25	.85	12.48
Year 12 or equivalent	.60	.66	.83	.362	1.82	.50	6.63
Trade/technical certificate/ diploma	.78	.65	1.44	.231	2.18	.61	7.82
University or college degree	**1.37**	**.68**	**4.07**	**.044**	**3.94**	**1.04**	**14.96**
Postgraduate	1.15	.74	2.40	.122	3.15	.74	13.49
LOTE (ref = no)	.53	.30	3.17	.075	1.70	.95	3.04
Use of lottery SCGs	**1.55**	**.29**	**28.89**	**<.001**	**4.69**	**2.67**	**8.24**
Use of EGM SCGs	.08	.26	.10	.757	1.08	.66	1.79
Use of sports or wagering SCGs	**1.49**	**.26**	**33.26**	**<.001**	**4.42**	**2.67**	**7.32**
Use of poker/casino SCGs	**−.91**	**.30**	**9.40**	**.002**	**.40**	**.22**	**.72**
Separate SCG sessions per typical day	.11	.15	.57	.451	1.12	.84	1.48
Time spent on SCGs per typical day	.19	.13	2.22	.136	1.21	.94	1.56
Year of first SCG use (higher = longer ago)	**.04**	**.02**	**5.89**	**.015**	**1.04**	**1.01**	**1.07**
Use of social features	**1.04**	**.28**	**13.60**	**<.001**	**2.83**	**1.63**	**4.91**
Play SCG via smartphone	**−.57**	**.26**	**4.81**	**.028**	**.57**	**.34**	**.94**
Social interaction (ref = no)	−.10	.25	.15	.699	.91	.56	1.47
To relieve stress/escape from worries	**.53**	**.25**	**4.65**	**.031**	**1.70**	**1.05**	**2.75**
To pass the time/avoid boredom	**−.59**	**.26**	**5.29**	**.021**	**.56**	**.34**	**.92**
To improve my gambling skills	.25	.26	.93	.336	1.28	.77	2.13
For excitement/fun	.16	.24	.47	.493	1.18	.74	1.89
For the competition/challenge	−.27	.24	1.25	.264	.76	.48	1.23

Note. Dependent variable is those who do not (0) and do (1) pay for SCGs.
Bold text indicates statistically significant predictors.

that paying players have lower game enjoyment and make purchases to increase their satisfaction with games (Hamari, 2015). As games being fun and enjoyable is a critical factor in whether players will start and persist with SNG play (Chang & Chin, 2011; Lee, Lee, & Choi, 2012; Shin & Shin, 2011), this may represent an important tradeoff for SNG developers. That is, to make a game fun and enjoyable by offering the experience of progression, but to include strategically placed "paywalls" that encourage payment to target those players willing to pay to alleviate frustration at stalled progress. Special offers and impulse purchases also appear to be effective in motivating players to make purchases, potentially when promoted as a way to advance within the game.

The greater social interaction of paying customers was consistent with previous research, which suggests that online connections play an important role in generating revenue in games (Hamari, 2015; Lee et al., 2012). Paying players were more likely to use social features and social interaction was rated as at least "somewhat important" by almost half of paying players compared to only one-in-three non-paying players. However, paying players were no more likely to share their in-game activity with their online networks, suggesting that financial expenditure in SNG itself does not provide any additional motivation or incentive to promote SNG on online social networks.

The current study found that the majority of participants surveyed had spent money within SCG which is consistent with one previous industry report (Newzoo, 2015), but inconsistent with other reports (Ruddock, 2016). However, consistent with industry reports (Swrve, 2015), the results showed that a small proportion of players are high spenders, although it was not possible to determine the exact value of players' purchases. Subgroups of paying players were identified which highlighted the different payment patterns and characteristics of these groups. More frequent moderate spenders, who were the youngest group, were motivated to avoid waiting and to purchase gifts for friends, whereas less frequent high spenders, who were more likely to be male and older, appeared to pay to increase game enjoyment. These findings are similar to reported industry data, which showed that one-third of SCG paying players are young males, while older males represent one-fifth of paying players (Newzoo, 2015). Most paying players agreed that they understood what they were paying for, but a subset of players was uncertain about their purchases. This finding was consistent with other work suggesting that freemium games should be designed in more socially responsible ways, such as making in-game purchases more transparent and informative to all players (Alham et al., 2014).

It is important to acknowledge a number of qualifying factors that should be taken into account when interpreting the findings of the present study. First, the research design involved self-report measures and data taken from a single time point only. The use of player behavioral data may be a useful adjunct measure in future studies, although access to this information is often difficult to obtain. A longitudinal, prospective design may be useful to identify the level of consistency of financial expenditure in SNG among paying players. Second, to limit the length of the online survey, the

study did not include a wide range of psychological measures associated with high levels of engagement, including compulsive behaviors, which may have been useful in understanding some players who spend large amounts of money in SNG. For example, it may be that impulsivity, addictive tendencies, and other factors explain why some people are drawn to this type of activity and the intensity of engagement (Blaszczynski, Steel, & McConaghy, 1997; Gainsbury, Hing, et al., 2015; King & Delfabbro, 2013; Soroush et al., 2014). A third issue is that the data were drawn from a self-selected panel of Internet users willing to complete surveys, and as this study was part of a larger investigation of Internet behavior, SCG players were not specifically recruited. Therefore, it is not clear whether the results of the sample can be generalized to other SCG players. The current findings provide important initial insights into SCU players, which should be advanced with further in-depth studies of this population.

IMPLICATIONS

Although evidence supporting a link between SCG and harm associated with excessive expenditure is limited (Gainsbury, King, Russell, Delfabbro, & Hing, 2015), these findings nevertheless have some implications for regulators and policy makers. It will be important to ensure that freemium games are not promoted in a predatory manner so as to commit people to patterns of behavior which are strongly socially reinforced, but which cannot be pursued unless one commits consistent injections of money. Incentives for continued play should be fair and transparent and, wherever possible, the same social influences that are used to promote additional expenditure should able be used to underscore the leisure value of the activity as opposed to its potential similarity or association with online and monetized gambling. These views are consistent with a small body of emerging research, which shows that some players report spending more than they intended (Gainsbury, Hing et al., 2015) and that some game designs can potentially exploit the vulnerability of some players (Alham et al., 2014). Research is needed to understand whether SCG and SNG are being used in a problematic way, and whether these may act as a substitute for, or lead to, excessive online gambling.

Although SCG do not represent gambling activities in the technical sense, as players do not have to spend money and the prizes are not of monetary value, they certainly mimic gambling products (Gainsbury, Hing, et al., 2014). The results reveal some similarities between SCG players and gamblers, supporting the potential crossover between these activities (Gainsbury, Russell, et al., 2015). Similarly to the current results, online gamblers are a diverse group characterized by a high proportion of low spenders and a small proportion who spend high amounts (Gainsbury, Sadeque, Mizerski, & Blaszczynski, 2012; LaBrie, LaPlante, Nelson, Schumann, & Shaffer, 2007). Online gamblers are likely to be well-educated, younger males (Gainsbury, Russell, et al., 2015; Griffiths, Wardle, Orford, Sproston, & Erens, 2009; Wood & Williams, 2011). Further research is needed to compare the motivations for paying to play SCG with financial expenditure on gambling activities as well as the crossover between SCG players and online gamblers and migration between these activities.

CONCLUSIONS

Research on the psychological and economic aspects of SCG and SNG more broadly is rapidly growing in response to their massive global uptake and popularity. This study contributes to our understanding of SCG players and highlights the importance of examining subgroups of these players. Paying players differ from non-paying players in terms of demographic characteristics as well as game play and motivations. For some players, having opportunities for social comparisons and other social activity appears to be a likely incentive for additional expenditure, whereas others appear to be using monetary expenditure as a way to enhance the extent of game-play and, by implication, their enjoyment of the activity.

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