



# Fantasy Football (Soccer) Playing and Internet Addiction Among Online Fantasy Football Participants: A Descriptive Survey Study

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## Abstract

The aim of the present study was to ascertain the levels of possible internet addiction within fantasy football (FF) (soccer) participants and the characteristics of the participants within this group. An online survey of questions regarding characteristics of regular FF participants and consumption of FF-related content was posted on FF internet forums (*Reddit* and *Boards.ie*). Self-selecting participants ( $N=684$ ) completed the survey containing questions on FF (time spent during weekdays/weekend on FF, gambling on FF, devices used to access FF), internet use (time spent on internet on weekdays/weekends) and an internet addiction screening questionnaire (Chen Internet Addiction Scale). Subgroup analysis was performed on each variable by nationality (Irish, UK and world-wide). Of the 684 participants, 17.5% (diagnostic) and 24.9% (screening) participants met criteria for internet addiction, above the expected level in the general population. The most frequent time spent on FF during weekdays was 30–60 min per day (32.2%) and 1–2 h per day on weekends (29.1%). Over half of participants (50.6%) gambled on FF with the majority (61.3%) gambling once per year and 74.3% of participants gambling less than €50 per year on FF. Avid FF participants demonstrated an increased likelihood of internet addiction compared prevalence rates of previous epidemiological studies among different cohorts. This may be due to FF itself and the increased consumption of FF-related content. Further large-scale nationally representative studies are required to compare regular and casual participants of FF in relation to possible internet addiction.

**Keywords** Internet use disorder · Internet addiction · Fantasy football · Fantasy sports · Behavioural addiction

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Problematic internet use and internet addiction has become an emerging major health concern with the widespread use of the internet in everyday life (Kuss and Lopez-Fernandez 2016). There is a large variance in the prevalence of internet addiction, with studies reporting prevalence rates in the USA of 0.3 to 8.1% (Alimoradi et al. 2019), in Europe between 2 and 18.3% (Alimoradi et al. 2019) and up to 30.1% among medical students (Zhang et al. 2018). Internet addiction is associated with comorbid psychiatric symptoms such as depression and anxiety (Kuss and Lopez-Fernandez 2016), substance misuse (Widyanto and Griffiths 2006), fatigue and sleep disturbance (Bener et al. 2019).

There is ongoing controversy within scientific literature about what constitutes internet addiction (Pontes and Griffiths 2014; Ryding and Kaye 2018). Initial research on the topic of internet addiction grouped a number of internet-based impulse control problems such as cybersexual addiction, cyber-relationship addiction, internet compulsions (such as gambling and shopping), information overload (web surfing) and computer addiction (such as video gaming) under the heading of internet addiction (Young 1999). While each of these categories involve use of the internet and addictive behaviours, there is a difference between addictions that use the internet as a medium for engagement and true addiction to the internet itself (Griffiths 2000). For instance, internet gambling and internet gaming use the internet as a means of easy access to gamble and play video games, respectively, activities which are also available offline (Pontes and Griffiths 2014). Here, the internet is purely a medium to fuel other potential addictions (i.e., individuals addicted to online gaming or gambling are not internet addicts, but gaming or gambling addicts). In the literature, generalized internet addiction refers to individuals who spend all their time on the internet typically engaging in more than one type of behaviour (Griffiths and Szabo 2014). Excessive use of the internet to gather information (Zhang et al. 2018) or addiction to social networking, which would be very difficult to replicate without the internet, are examples of internet addictions because the activity can only occur online but are not examples of generalized internet addiction (Pontes and Griffiths 2014).

There are some areas of overlap between addictions using the medium of the internet to facilitate their usage (such as internet gaming disorder) and internet addiction. The internet is readily available, convenient, anonymous, and facilitates an environment where individuals can immerse themselves and escape from reality, all associated with increasing the risk of addictive behaviours (Griffiths et al. 2016). Both internet addiction and internet gaming disorder can be conceptualized by the presence of core features of addictions—salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse (Griffiths 2005). This overlap is important when considering games played on the internet which can incorporate aspects of both online gaming and more generalized internet use. One such example of this is participation in fantasy sports. Fantasy sports participants seek out online information to help in research and participation in fantasy sports, increasing their time spent online and possible internet addiction.

Fantasy sports consist of selecting an online team of real-world players based on the rules of the particular fantasy sport. Participants are then awarded points based on the real-world statistics of those players (Farquhar and Meeds 2007). For example, in fantasy *National Football League* (NFL), players are awarded points based on variables such as touchdowns, yards run, and turnovers (Farquhar and Meeds 2007). Fantasy sports are hugely popular, with over 59 million individuals participating in fantasy sports in the USA and Canada in 2017 (Fantasy Sports and Gaming Association 2019).

For the majority of individuals participating in fantasy sports, it is a harmless and casual pursuit but for a minority of individuals there can be harms associated with fantasy sports. There are multiple examples of individuals discussing their mental health difficulties and addiction to fantasy sports (Irvine 2020; Kahn 2016; Levy 2019). Gambling can play a major

role in fantasy sports, especially in the form of Daily Fantasy Sports (DFS). DFS involves an accelerated version of fantasy sports where participants can bet on the performance of their players and win a proportion of their opponent's entry fees (Nelson et al. 2019). DFS participants have been shown to have similar psychological and emotional characteristics to their traditional fantasy sports counterparts (Dwyer and Weiner 2018) but have been associated with increased problem gambling behaviours (Dwyer et al. 2018b). Gambling is common within traditional fantasy sports, with one US study reporting 43.5% of participants gambling on fantasy sports (Martin and Nelson 2014). Aside from the gaming aspect of fantasy sports (selecting players, switching line-ups on a weekly basis, etc.), fantasy sports participants can spend hours consuming content related to the sport. Fantasy NFL participants have been shown to consume over four times the amount of NFL-related content compared to those not playing fantasy sports (Neeson 2014). Self-reported measures of time spent on fantasy sports have found that men and women spend an average of 4.7 and 3.5 h/week, respectively, choosing their fantasy teams (Wardle 2018). In terms of participants performing their own research for their fantasy sports teams, the internet is the primary source of information for fantasy sports participants (Drayer et al. 2010). One business conservatively estimated that workers were spending 2 h/week while at work researching and choosing their fantasy football (FF) teams at an estimated loss of \$13.8 billion to businesses in the USA (Snyder 2014).

While much of the research to date has focused on predominately US fantasy sports (such as NFL or baseball), there is little research on FF, the association football (soccer) version of fantasy sports. The most popular version of FF is the *Fantasy Premier League* with over six million participants registered for this version of FF which is based on the players in the top flight of English football (Premier League 2020). Each participant selects a squad of 15 real professional footballers with a £100 million budget and selects eleven of these players on a weekly basis to accrue points based on actual in-game achievements such as scoring or assisting goals (Christian 2019). FF has changed the way the sport is consumed, provides friendly rivalry between participants and has spawned numerous interactive internet forums for discussion of FF (Christian 2019). One such forum is the worldwide *Reddit* forum for discussion of the *Fantasy Premier League*, which has over 200,000 members (Reddit 2011).

Participants using forums for additional dialogue and information on FF are likely to be more avid users and may be more susceptible to developing an internet addiction due to the increased amount of internet-based content consumed. Therefore, the aim of this study was to ascertain the levels of possible internet addiction within FF (soccer) participants and the characteristics of the participants within this group.

## Methods

### Participants

An online survey was posted between October 2018 and February 2019 on the international *Reddit Fantasy Premier League* forum (*r/FantasyPL*) and an Irish *Fantasy Premier League* forum hosted on the website *Boards.ie*. A total of 684 fantasy football (FF) participants completed the survey with questions concerning FF characteristics, internet use, and a screening instrument for internet addiction. Each survey began with a participant information sheet detailing the outline of the study, the reasons behind the study, and the risks and benefits of the study as well as the relevant General Data Protection Regulation (GDPR) information. Each participant completed a

consent form acknowledging their understanding of the information sheet, their voluntary agreement to participate in the study, their understanding of how their data would be used, and their opportunity to ask questions prior to completing the questionnaire. Ethical approval was obtained from the Human Research Ethics Committee of University College Dublin.

## Survey Design

A total of 13 questions and a 26-item standardized screening scale for internet addiction (Chen Internet Addiction Scale [Chen et al. 2003]) were included in the survey. Of these questions, three questions were related to demographic data (age, gender, nationality) and ten questions focused on FF characteristics and internet use such as time spent using the internet during weekdays and weekends. The FF questions enquired about the age when the participant began playing FF, the hours per day spent on FF (including research) on weekdays and weekends and the devices/apps (personal computer [PC], laptop, smartphone internet, *Fantasy Premier League* app, *Reddit Fantasy PL* app) used to access and research FF on an eight-point Likert scale (“I do not use this type of device” to “every day”). There were questions related to gambling on FF such as how often participants gambled on FF and amount spent on gambling on FF per year. Internet usage questions included the participants’ age when they started using the internet and the hours spent on the internet during weekdays and weekends.

The Chen Internet Addiction Scale (CIAS) was included to screen for internet addiction. The CIAS is one of the most widely used screening tools for internet addiction and has demonstrated good internal consistency in previous studies (Kuss et al. 2014). The CIAS is a 26-item self-report scale containing questions screening for internet addiction across five domains: compulsive use, withdrawal, tolerance, interpersonal relationships and time management (Poli 2017). The CIAS items are responded to on a four-point Likert scale ranging from “Does not match my experience at all” to “Definitely matches my experience”. The scoring ranges from 26 (lowest score) to 104 (highest score). A score of 63/64 has been used as a screening cut-off point for internet addiction in college-age participants (age 18–27 years) given the high sensitivity (83.9%) for internet addiction at this cut-off point (Ko et al. 2009). In the same study, a score of 67/68 was used as a diagnostic cut-off point for internet addiction given the high specificity (92.6%) for the diagnosis of internet addiction at this cut-off point (Ko et al. 2009). Both the screening and diagnostic cut-off points for internet addiction were assessed in the present study.

## Data Analysis

Descriptive statistics were performed on each of the thirteen questions contained within the survey in relation to FF questions, betting on FF and general internet usage questions. Spearman’s rho was calculated for correlations between variables such as time spent on fantasy football and internet addiction scores, as well as gambling frequency and internet addiction scores.

## Results

### Participant Demographics

Between October 2018 and February 2019, a total of 684 FF participants completed the online survey. Males accounted for 672 participants (98.2%) and females accounted for 12 participants

(1.8%). In terms of nationality of the FF participants, 98 were Irish (14.3%), 233 were from the UK (34.1%) and 353 were from 69 other countries (51.6%) with the largest proportions coming from India (8.8%), USA (7.2%), Norway (5.1%), Australia (3.2%), Sweden (2.8%) and Canada (2.5%). The average age of the study population was 26.7 years (SD = 6.8 years) and the average age of each nationality subgroup was 31.2 years for Ireland (SD = 8.9 years), 26.2 years for the UK (SD = 6.0 years) and 25.6 years for the remaining nationalities (SD = 6.1 years). The average age at which FF participants first began playing FF was 21.4 years (SD = 6.4 years). The age that participants first began using the internet was 11.9 years (SD = 3.9 years).

### Time Spent on Fantasy Football and Fantasy Football Research

The most frequent amount of time spent on FF and FF research during weekdays was 30–60 min per day (32.2%). The most frequent amount of time spent on FF during the weekend was 1–2 h per day (29.1%).

Further analyses examined the correlation between time spent on FF and FF research and levels of internet addiction as assessed using the Chen Internet Addiction Scale. There was a weak positive correlation between increased levels of use during weekdays ( $r_s = .189, p < .01$ ) and at weekends ( $r_s = .183, p < 0.01$ ) with increased internet addiction scores on the Chen Internet Addiction Scale (Table 1).

### Devices/Apps Used for Research and Playing Fantasy Football

The most common devices and apps used for FF research and playing FF (participants could endorse multiple responses) were smartphones (86.1%), followed by *Reddit* (81.7%), laptops (75.1%), *Fantasy Premier League* app (68.7%) and PCs (48.5%). In terms of use of these devices for FF information on a regular basis (either 4–6 times per week or daily use), *Reddit* was the most popular (68.3%), followed by smartphones (62.7%), laptops (38.3%), *Fantasy Premier League* app (34.8%) and PCs (25.1%).

### Gambling and Fantasy Football

Just over half of all FF participants (50.6%) had gambled on FF in the last year, with the majority of individuals gambling on FF had done so once per year (61.3%). In relation to

**Table 1** Time spent researching/engaging in fantasy football

	Total			Total	
	<i>n</i>	%		<i>n</i>	%
I do not play during weekdays	1	0.1	I do not play during weekends	0	0.0
< 15 mins	91	13.3	< 15 mins	23	3.4
15–30 min	217	31.7	15–30 min	109	15.9
30–60 min	220	32.2	30–60 min	169	24.7
1–2 h per day	124	18.1	1–2 h per day	199	29.1
2–5 h per day	27	3.9	2–5 h per day	152	22.2
5–8 h per day	2	0.3	5–8 h per day	26	3.8
8–12 h per day	2	0.3	8–12 h per day	5	0.7
> 12 h per day	0	0.0	> 12 h per day	1	0.1
Total	684	100	Total	684	100

**Table 2** Gambling frequency and spend in fantasy football

	Total			Total	
	<i>n</i>	%		<i>n</i>	%
No betting on FF Gambling participants	338	49.4	No betting on FF Gambling participants	338	49.4
Every day	3	0.9	€0–10	65	18.8
A few times a week	3	0.9	€10–20	101	29.2
About once a week	8	2.3	€20–50	91	26.3
A few times a month	2	0.6	€50–100	47	13.6
Once a month	18	5.2	€100–200	30	8.7
Less than once per month	6	1.7	€200–500	8	2.3
Once every 2–6 months	23	6.6	€500–1000	1	0.3
Once every 6–12 months	38	11.0	>€1000 per year	3	0.9
Once per year	212	61.3			
Less than once per year	33	9.5	Total	346	100
Total	346	100			

frequent gambling on FF, three FF participants gambled on fantasy sports every day (0.9%) and 34 FF participants gambled on FF at least monthly (9.8%). The most common amount of money gambled on FF per year was between €10 and 20 per year (29.2%). There was no significant correlations between amount of money spent gambling on fantasy football and internet addiction ( $r_s = -.037$ ,  $p = 0.338$ ) and between frequency of gambling and internet addiction ( $r_s = -0.054$ ,  $p = 0.161$ ) (Table 2).

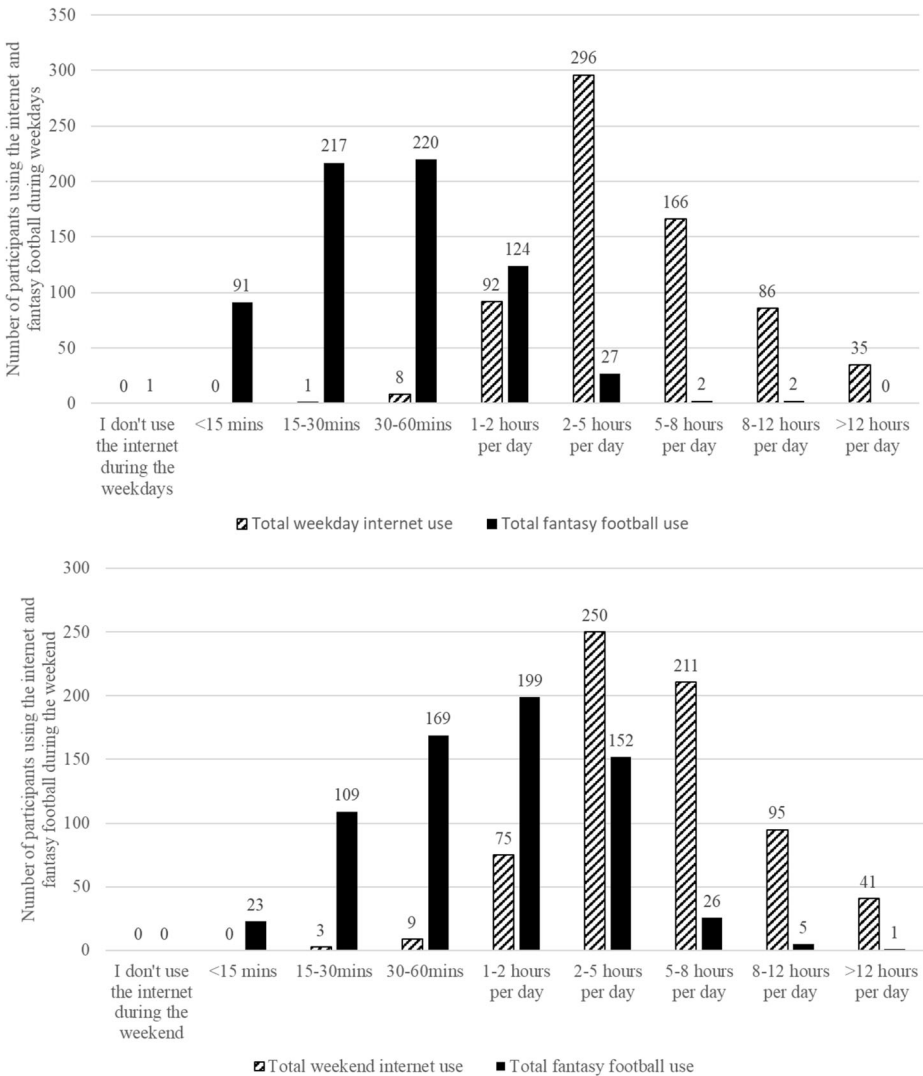
### Time Spent on the Internet

The most frequent time spent on the internet in total during weekdays was 2–5 h per day (43.3%). The most frequent time spent on the internet in total during the weekend was 2–5 h per day (36.5%). The remaining times spent on the internet are summarized in Table 3.

Further analyses showed there was a weak positive correlation ( $r_s = .196$ ,  $p < .01$ ) between time spent on the internet on weekdays and Chen Internet Addiction Scale scores, and the same correlation ( $r_s = .196$ ,  $p < 0.01$ ) between time spent on the internet and time spent on FF

**Table 3** Time spent on the internet

	Total			Total	
	<i>n</i>	%		<i>n</i>	%
I do not use the internet during the week	0	0.0	I do not use the internet during the weekend	0	0.0
< 15 mins	0	0.0	< 15 mins	0	0.0
15–30 min	1	0.1	15–30 min	3	0.4
30–60 min	8	1.2	30–60 min	9	1.3
1–2 h per day	92	13.5	1–2 h per day	75	11.0
2–5 h per day	296	43.3	2–5 h per day	250	36.5
5–8 h per day	166	24.3	5–8 h per day	211	30.8
8–12 h per day	86	12.6	8–12 h per day	95	13.9
> 12 h per day	35	5.1	> 12 h per day	41	6.0
Total	684	100	Total	684	100



**Fig. 1** Comparison of time spent daily on the internet and time spent daily on fantasy football for weekdays and weekends

during weekdays. There was a weak positive correlation ( $r_s = .303, p < .01$ ) between time spent on the internet at weekends and Chen Internet Addiction Scale scores. There was also a positive correlation ( $r_s = .273, p < .01$ ) between time spent on the internet at weekends and time spent on FF at weekends (Fig. 1).

### Internet Addiction

Using the screening cut-off point of 63/64 for internet addiction, 170 FF participants met the criteria for internet addiction (24.9%). Using the diagnostic criteria for internet addiction with a cut-off point of 67/68, 120 participants met criteria for internet addiction (17.5%).

## Discussion

The aim of the present study was to ascertain the levels of possible internet addiction within FF (soccer) participants and the characteristics of the participants within this group. Males accounted for majority of participants in the sample (98.2%), consistent with sports industry surveys on FF participants (Dwyer 2009) and other studies on participants engaging in fantasy sports (Dwyer 2011). The low levels of female participants in this study (1.8%) do not reflect the growing number of female fantasy sport participants in fantasy NFL, with females accounting for approximately 38% of the participant demographic (Dwyer et al. 2018a). The largest proportion of respondents was from the UK, which is unsurprising given that the teams involved in *Fantasy Premier League* are based in the UK. The worldwide spread of FF participants found among the participants (from 71 different countries) highlights the global appeal of the league which has the largest global television audience of any football league (Premier League 2018). The average age of the FF participants in the present study (26.7 years) was lower compared to fantasy sports surveys in the USA which report average age of fantasy sports participants as between 34 and 38 years (Dwyer 2009; Weiner and Dwyer 2017).

The main finding of this study related to possible internet addiction among FF participants. Depending on the cut-off point employed, internet addiction was identified between 17.5 and 24.9% in this cohort. When compared to expected epidemiological rates of internet addiction, these rates are on the higher end of expected internet addiction for Europe (between 2 and 18.3%) (Alimoradi et al. 2019) but less than had been reported in special groups that may be at risk of internet addiction such as medical students (Zhang et al. 2018). The higher rates of possible internet addiction may indicate that this group of participants are at greater risk of developing internet addiction due to increased consumption of FF content. It should be noted that the forums utilized in this survey would be visited by more avid users of FF and therefore increased levels of internet addiction compared to the casual FF participants are expected.

The most common devices and apps used on a regular basis to research FF information and play FF were smartphones and the *Reddit* app. The increased accessibility and portability afforded by use of smartphones and the *Reddit* app on smartphones to access the internet and FF information is the most likely reason for this finding. The ease of accessibility to the internet via these means increases exposure to the internet and could increase the risk of developing internet addiction (Griffiths et al. 2016) and other behavioural addictions such as gambling addiction (Columb and O’Gara 2018).

The amount of time spent playing FF and accessing related content increased at weekends with 1–2 h per day (29.1% of FF participants) being the most common time spent playing and researching FF compared to 30–60 min (32.2%) on weekdays. This would be in keeping with the majority of FF games taking place over the weekend. Previous studies examining the time spent on NFL-related content online by fantasy NFL participants showed a four-fold increase in time online compared to non-participants of fantasy NFL (Neeson 2014). This amounted to an average of 4.33 h/week for fantasy NFL participants compared to 0.92 h for the non-participants of fantasy NFL (Neeson 2014). This average timeframe of weekly consumption of NFL-related content online for fantasy NFL participants is comparable to the most common times selected during the present study. Another (old) study found that one third of fantasy NFL participants spend 10 or more hours per week thinking about FF (Levy 2005). In the present study, 51.3% of FF participants spent 1–5 h per day on the weekend researching and playing FF and 22.0% of participants spent 1–5 h per day on the weekdays on FF activities, reflecting higher levels of engagement than 10 h/week among fantasy NFL participants (Levy 2005).



There were some positive correlations between the use of FF and use of the internet leading to higher scores on the Chen Internet Addiction Scale but these were of low associational strength. While increased time spent on the internet is a risk factor for developing internet addiction (Kuss et al. 2014), the strength of association limits making any definitive statements concerning the correlation between time spent on FF and internet addiction. This suggests that the presence of the main components of internet addiction—salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse (Griffiths 2005) from using FF itself may partly account for the higher internet addiction scores in this population.

In terms of gambling on FF, just over half of the FF participants (50.6%) gambled on FF but the majority did so on an annual basis. This mirrors other studies of gambling in fantasy sports in the USA with one study reporting 43.5% of participants gambling on fantasy sports (Martin and Nelson 2014). The same study also found that participation in FF (regardless of playing for money or not) increased the risk of developing gambling disorder (Martin and Nelson 2014). The majority of gambling in this study was done on a low level of once per year (61.3%) with relatively low amounts of money being gambled on a yearly basis (74.3% of participants gambling less than €50 yearly on FF). This implies that the majority of individuals betting on FF do so casually and for small sums of money, in a similarly benign fashion to traditional fantasy sport platforms (Weiner and Dwyer 2017). However, there were a small number of FF participants engaging very frequently in fantasy sports gambling (0.9% stating daily) and the same percentage of participants using relatively large amounts of money (>€1000) per year on fantasy sports. This may pose a concern with the increasing popularity of daily fantasy sports and crossover into this platform given the association with gambling and daily fantasy sport platforms (Dwyer et al. 2018b; Griffiths 2017).

There are a number of limitations to this study. Firstly, the higher levels of internet addiction obtained by the screening tool could be accounted for by elements of online gaming addiction as they both share common features of behavioural addiction and there is a large gaming component to FF. The participants in this study would be characterized as avid users of FF and therefore the rates of internet addiction and time spent on FF would be expected to be higher compared to the general public. This study captured time spent on the internet as a total but further delineation as to what that time was spent on (e.g., social media, video gaming) would be useful for further studies. While data were collected relating to gambling behaviours, no data were collected in relation to possible problem gambling or participation in DFS versions of this version of fantasy football. Future studies are required to examine this specific aspect of fantasy football. A significant majority of the study population were male and the findings of the present study may not be representative of female participants in fantasy football. Finally, this sample was a self-selecting sample with self-reported measures of internet addiction, leading to possible selection bias in this population. Also, all the questions concerning time spent online and money spent gambling were self-report, and research has shown that individuals estimating how much money they have spent gambling is unreliable, particularly among those who gamble regularly (Auer and Griffiths 2017).

In conclusion, this study is the first study to investigate possible internet addiction among this version of FF and some basic characteristics of this group. The results of this study show that, for avid FF participants, there may be an increased likelihood of internet addiction compared to the general population. This may be due to the increasing consumption of FF and content related to FF. Further large-scale epidemiological studies would be needed to include more casual participants in FF and to look at interrelated areas of behavioural addiction and mental health issues associated with playing FF.

## Compliance with Ethical Standards

**Conflict of Interest** DC and CO have no conflicts of interest to declare. MDG's university currently receives research funding from *Norsk Tipping* (the gambling operator owned by the Norwegian Government). MDG has also received funding for a number of research projects in the area of gambling education for young people, social responsibility in gambling and gambling treatment from Gamble Aware (formerly the Responsible Gambling Trust), a charitable body which funds its research programme based on donations from the gambling industry. MDG regularly undertakes consultancy for various gaming companies in the area of social responsibility in gambling.

**Ethical Approval** All procedures performed in this study involving human participants were in accordance with the ethical standards of University's Research Ethics Board and with the 1975 Helsinki Declaration.

**Ethical Standards** The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. The study protocol was approved by the ethics committee of University College Dublin.

**Informed Consent** Informed consent was obtained from all participants.

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