

**THE RELATIONSHIP BETWEEN DAILY FANTASY SPORTS (DFS) FREQUENCY
AND GAMBLING PROBLEMS AMONG A SAMPLE OF COLLEGE STUDENT DFS
PLAYERS**

by

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The relationship between daily fantasy sports (DFS) frequency and gambling problems among a sample of college student DFS players

Introduction

Traditional Fantasy Sports

Fantasy sports has been an increasingly popular form of entertainment over the last decade. It involves picking players from a specific sport and those players performance being compared to the performance of players on competing fantasy teams. The fantasy sport participant whose players perform the best is the winner. While some leagues are free to enter, fantasy sports leagues can be set up to have entry fees. While some may be low-stakes, such as \$20 a person, there are many leagues where the stakes are much higher and can get into the thousands of dollars to enter. The premise behind the entry fees is players can win back their fee and everyone else's as a form of prize money for winning the fantasy sports league. This form of wagering on fantasy sports is a form of gambling (Martin, Nelson, & Gallucci, 2016).

While the most popular sport to compete in fantasy sports in is football, there are fantasy leagues set up for other sports such as soccer, baseball, hockey, and basketball (Martin et al., 2016). The majority of fantasy sports participants are men, as only 29% of participants are female (FSTA, 2018). The average age of participants is 32 and half of all players have at least a college degree or more (FTSA, 2018). Fantasy sports participation has been on a steady rise over the last fifteen years. In the early 2000s, around 12-15 million people participated in fantasy sports and in 2017 that number has risen to over 59 million (FTSA 2018). Part of this is due to the rise in advertisement of fantasy sports from major networks such as CBS, FOX, and ABC (Dwyer & Weiner, 2018).

Traditionally, fantasy football involves drafting a team of real players, organizing that team into a lineup, and that lineup's performance in one week of football games against another team determines whether or not the fantasy football participant wins that weekly matchup. These matchups take place over the course of a NFL season and the fantasy football participant who wins the most weekly matchups wins the fantasy football league. This style of fantasy football is referred to as Traditional Fantasy Sports (TFS).

Daily Fantasy Sports

Daily Fantasy Sports (DFS) has become popular as it incorporates the matchup style of TFS but the difference is that every week participants can draft, or select, a new team to compete instead of having the same team of players for an entire football season. This style of fantasy sports allows less commitment and more of a variety week to week that makes fantasy sports more appealing to some participants. Additionally, shorter contests lead to faster payouts for participants as they can get their results on a week to week basis instead of waiting an entire football season for a payout.

Fantasy sports can also be a huge distraction in the workplace. In the article, "How much does fantasy football cost employers?", Mike Hockett (2014) writes about how fantasy sports impact the workplace. This article goes in depth into how fantasy sports is leading to a less productive workplace. Hockett explains how there are year-round distractions in the workplace such as March Madness, the World Cup and football season for fantasy football participants.

Studies Examining Fantasy Sports and Gambling

One of the prior studies concerning fantasy sports examined in this project is a study titled, "Understanding the relationship between sports-relevant gambling and being at-risk for a gambling problem among American adolescents" (Marchica, Zhao, Derevensky, & Ivoska,

2017). This study examines adolescents and their participation in fantasy sports and the effects of those sports on the adolescents. The study was conducted among 6818 high school students in Ohio. An advantage of this study is that the researchers focus on a population group that most studies do not; adolescents. The study tracks their motives and behaviors and identifies problem gamblers amongst the youth in Ohio. This study found that adolescents participating in fantasy sports and sports related gambling are more likely to be at risk for a gambling problem (Marchica et al 2017). Among the participants in this study, sports betting had the highest participation rates followed by season long fantasy sports, then daily fantasy sports. All of which had higher rates among males than females (Marchica et al 2017).

Another study by Marchica and Deverensky (2016) used in this study is “Fantasy Sports: A Growing Concern Among College Student-Athletes.” This study used data from the NCAA to examine gambling issues among college students and their participation in fantasy sports (Marchica and Deverensky, 2016). Not only was male participation much higher than females in gambling, but males who participated in football, hockey, and baseball were more likely than other male athletes to participate in fantasy sports (Marchica and Deverensky, 2016).

Another study used is “Fantasy sports, real money: Exploration of the relationship between fantasy sports participation and gambling-related problems” (Martin and Nelson, 2014). This was a survey examined over 1500 college students and it assessed them on whether or not they experienced signs of gambling disorder. The survey also focused on whether or not they participated in fantasy sports and if they did, to what extent. They compared male and female participants and their indicators of gambling disorder. This study found that male students more often participated in fantasy sports and that students (both male and female) that participated in

fantasy sports had a higher rate of experiencing gambling related issues (Martin and Nelson, 2014).

A second study by Ryan Martin and colleagues is going to be referenced in this project, titled, “Game on: past year gambling, gambling-related problems, and fantasy sports gambling among college athletes and non-athletes” (Martin, Nelson, & Gallucci, 2016). That study was conducted because previous research indicated that college students evidence more gambling related issues than other population groups (Martin et al., 2016). There have not been many studies done in regard to fantasy sports and gambling in the student athlete population, so this study examined those among 692 college students at a private university in Southeast US. The study compared those who participated in collegiate sports to those who did not and amongst each gender. Males had the highest rates of participation in DFS and students who participate in sports had the highest rate of gambling related issues (Martin et al., 2016).

The study, “Daily and season-long fantasy sports participation and gambling-related problems among a sample of college students at three universities” by Ryan Martin, Sarah Nelson, Andrew Gallucci, and Joseph Lee (2017) found that those who engage in paying to play fantasy sports in the form of entry fees are more likely to gamble more frequently. This is what makes this study unique to other studies. This study focuses more on the frequency of participation in each sport rather than the demographics of those participating in fantasy sports. This will be done by examining the results from the survey questions asked in the 2017 study.

Another study that will be beneficial to the project is “Fantasy sports: skill, gambling, or are these irrelevant issues?” (Pickering, Blaszczynski, Hartmann, & Keen, 2016). This scholarly source examines the rise of fantasy sports and whether or not it is considered a form of gambling. The article outlines how there are not many laws in place in regard to gambling in fantasy sports

as there is not much research into the topic and explains why there is more regulation needed. The source also disproves the argument that daily fantasy sports are more skill based than chance based and shows that DFS is a form of online gambling that leads to real mental health problems. Companies that facilitate DFS will often make the argument that the sport is skill-based instead of chance but that is not the case and this source shows that.

Purpose

The current study builds on this previous DFS studies by conducting a secondary data analysis using data collected by Martin et al. (2017) among a sample of college students. This data was collected from a series of survey questions and the results of that survey will be analyzed in this study. The purpose of the current study is to examine the correlation between frequency of DFS participation and number of gambling problems among DFS participants of the Martin et al. (2017) sample. Additionally, this current study will examine DFS frequency by gender and ethnicity. Further, this study will examine participation in specific DFS sport-types. Listed below are the research questions for the current study.

Research Questions

1. Among DFS participants, is there a correlation between frequency of DFS participation and the number of gambling problems?
2. What sports are the most popular sports for DFS players to participate in?
3. Among DFS participants, does the frequency of DFS participation vary by gender?
4. Among DFS participants, does the frequency of DFS participation vary by ethnicity?

Methods

Primary Data Collection

This study will use secondary data from a 2017 Martin et al. study. That data was collected in Spring 2016 from college students at three different universities in the US. The universities were a public Western university, a private southwestern university, and a public southeastern university. International Review Board (IRB) approval was obtained at all the schools (Martin et al 2017). To send out the survey instructors were contacted to allow researchers to make an announcement and the teachers forward an email with the survey to students. 37 (77%) of the teachers agreed and sent the survey to students (Martin et al 2017). A total of 4250 surveys were sent out and 982 were collected, then 41 surveys were removed due to missing responses (Martin et al 2017). Of the 982, a sub sample of 45 DFS players was used to complete the analyses in this study.

The survey asked questions about the participants demographics such as ethnicity and gender as well as the frequency of fantasy sports participation and what sport players participated in (Martin et al., 2017). Then the survey asks a series of questions involving gambling issues. These questions were taken from the DSM-5 diagnostic criteria for gambling disorder and used to determine if a person has a clinical gambling disorder. There are nine questions asked that all relate to gambling issues and the number of responses that are yes to these questions assess the extent of an individual's gambling disorder (American Psychiatric Association, 2013).

The IRB concluded that the current study, which was a secondary data analysis, did not meet the federal definitions of research involving human participants. Therefore, the IRB designated the current study not human subjects research (NHSR).

Measures

To assess DFS participation, we used the following measures:

- How often did you play day-long or week-long fantasy sports via FanDuel or Draft Kings in the past year?
 - Never (0)
 - Once a year (1)
 - 2 to 3 times per year (2)
 - Every other month (3)
 - Once a month (4)
 - 2 to 3 times per month (5)
 - Weekly (6)
 - More than once a week (7)
 - Every other day (8)
 - Every day (9)

This question will be treated as a continuous variable (Range 0-9).

- Which types of daily fantasy sports did you participate in during the past year? (select all that apply)
 - Pro football (NFL)
 - Pro baseball (MLB)
 - Auto racing
 - Pro basketball (NBA)
 - Golf
 - Pro hockey (NHL)
 - Pro soccer
 - Other

To assess participant demographics, we used the following measures:

- What is your gender?
 - Male
 - Female
- What is your ethnicity?
 - White
 - Hispanic or Latino
 - Black or African American
 - Native American or American Indian
 - Asian / Pacific Islander
 - Other

In order to conduct analyses by race, and because the majority of our sample was White, this variable was recoded (White vs. Other).

To assess gambling-related problems, we used the nine disordered gambling criteria from the DSM-V (American Psychiatric Association, 2013):

- In the past year, have you been preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)?
- In the past year, have you needed to gamble with increasing amounts of money in order to achieve the desired excitement?
- In the past year, have you made repeated unsuccessful efforts to control, cut back, or stop gambling?
- In the past year, have you felt restless or irritable when attempting to cut down or stop gambling?
- In the past year have you often gambled when feeling distressed (e.g., helpless, guilty, anxious, depressed)?
- In the past year, after losing money gambling, did you often return another day to get even?
- In the past year, have you lied to conceal the extent of involvement with gambling?
- In the past year, have you jeopardized or lost a significant relationship, job or educational or career opportunity because of gambling?
- In the past year, have you relied on others to provide money to relieve a desperate financial situation caused by gambling?

These were yes/no questions. We added up the positive responses to create a DSM-V sumscore (Range 0-9) for each participant, which we treated as a continuous variable.

Statistical Analyses

1. Among DFS participants, is there a correlation between frequency of DFS participation and the number of gambling problems?

To examine the association between DFS frequency and gambling-related problems, a correlation analysis will be used.

2. What sports are the most popular sports for DFS players to participate in?

For the data regarding what sport fantasy players participated in, the frequency of participants in each sport will be calculated.

3. Among DFS participants, does the frequency of DFS participation vary by gender?

A one-way ANOVA test will be used to examine if the frequency of DFS participation varies by gender.

4. Among DFS participants, does the frequency of DFS participation vary by ethnicity?

A one-way ANOVA test will be used to examine if the frequency of DFS participation varies by ethnicity.

Results

Among the 45 students who participate in fantasy sports, 82.2% are in their first three years of college, 75.6% are white, and 77.8% are male. 20% of the 45 participants play fantasy sports more than 2-3 times a month, while the majority participate in fantasy sports once a month or less. The results of DFS frequencies are shown above in Table 1.

Table 1. DFS Frequency among a sample of DFS participants (N=45)

Frequency of DFS play	Frequency	Percent
Once	14	31.1
2-3 Times	14	31.1
Every other month	2	4.4
Once a month	4	8.9
2-3 times per month	2	4.4
Weekly	6	13.3
More than once a week	3	6.7
Total	45	100.0

The majority of participants, 71.1%, did not answer yes to any of the problem gambling questions but 24% of the respondents answered yes to 1 to 6 questions related to problem gambling. All of the results of the DSM sum score are shown below in Table 2.

Table 2. DSM-V Gambling Disorder Criterion Sumscores among a sample of DFS participants (N=45)

DSM Sumscore	Frequency	Percent
0	32	71.1
1	2	4.4
2	2	4.4
3	1	2.2
4	2	4.4
6	4	8.9
8	1	2.2
9	1	2.2
Total	45	100.0

Earlier in the study as a result of one of the research questions, it was found that the NFL was the most popular sport to play, with 55.6% of respondent's participating in that sport. The rest of the results of DFS frequency in all fantasy sports are shown below in Table 3.

Table 3. DFS Participation in different sports-types among a sample of DFS players (N=45)

Daily Sports Participation	NFL Daily	MLB Daily	Auto Daily	NBA Daily	Golf Daily	NHL Daily	Soccer Daily	Other Daily
Yes	25 (55.6%)	13 (28.9%)	9 (20.0%)	17 (37.8%)	13 (28.9%)	12 (26.7%)	8 (17.8%)	9 (20.0%)
No	20 (44.4%)	32 (71.1%)	36 (80.0%)	28 (62.2%)	32 (71.1%)	33 (73.3%)	37 (82.2%)	36 (80.0%)

A correlation analysis was completed using SPSS to determine whether or not there was a relationship in the first research question between DFS frequency and the number of gambling problems among fantasy sports participants. This analysis found a Pearson correlation value of .318, meaning there is a positive relationship between DFS participation and the number of

gambling problems. The p-value is .033, showing that there is a significant relationship between DFS participation and the number of gambling problems.

For the question comparing fantasy sports participation and race, a Oneway ANOVA was used. The p-value was .400, meaning that there was not a significant relationship between race and what fantasy sports one chooses to participate in. The results of the one-way ANOVA test are shown above in Table 4.

Table 4. Frequency of DFS Participation by Ethnicity using a one-way ANOVA test (N=45)

	N	Mean	Std. Deviation	95% confidence interval for mean Lower Bound	95% confidence interval for mean Upper Bound	F	Sig.
White	34	3.06	2.059	2.34	3.78		
Other	11	2.45	2.018	1.10	3.81		
Total	45	2.91	2.043	2.30	3.52		
Between Groups						.723	.400

A one-way ANOVA was also used to compare fantasy sports participation and gender. The p-value is 0.501, meaning there is no significant relationship between gender and what fantasy sport one chooses to participate in. The results of the one-way ANOVA tests are shown above in Table 5.

Table 5. Frequency of DFS Participation by Gender using a one-way ANOVA test (N=45)

	N	Mean	Std. Deviation	95% confidence interval for mean	95% confidence interval for mean	F	Sig.
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				Lower Bound	Upper Bound		
Male	35	2.80	1.907	2.15	3.45		
Female	10	3.30	2.541	1.48	5.12		
Total	45	2.91	2.043	2.30	3.52		
Between Groups						.460	.501

Discussion

This study analyzed a secondary dataset of college students who played DFS. One analysis completed was a correlation between DFS Participation and the number of gambling problems that participant has. There were a series of 9 questions asked that came from the DSM-V gambling criteria (American Psychiatric Association, 2013) This study also compared those who played DFS by gender and race. The study found that there is direct relationship between how often one plays DFS and the number of gambling problems they have. The more one plays DFS, the more likely that person is to develop gambling problems. This is consistent with a Martin study (2014) that found that those who participated more in DFS had a higher chance of having gambling problems.

This study found that football (NFL) was the most popular sport among DFS players. As shown in table 3, the NBA and MLB were the second and third most popular leagues among DFS players, respectively. This finding coincides with findings of other studies, such as a Martin (2017) study as well as a Marchica (2015) study, which found that the NFL and MLB were the two most popular sports to participate in.

There was not a relationship found between DFS participation and gender or race. This may just be reflective of the focus group as prior studies, such as a Martin (2014) and a Marchica (2016) study that found that males had higher rates of participation in DFS. A possible

explanation for this non-finding is the small sample size used in this study. Another possible explanation may be that the data was collected in 2016. In the past two years, DFS Participation has continued to increase. Data from 2018 may yield different results than the relationships found in the 2016 data.

This study is different than other studies as it focused on comparing DFS participation to race, gender, and the number of gambling problems one has. Prior studies focus more on the demographics of fantasy sports participants or on what sport an individual chooses to play in. For example, a 2017 Marchica study focused on identifying problem gamblers among a focus group that consisted entirely of adolescents while other studies such as a Pickering (2016) study focused on identifying DFS as a form of gambling as well as the mental health effects of participating in them. Furthermore, some studies such as the 2017 Martin study that the survey questions used in this study found similar results to this study. That study found that those who pay entry fees to play DFS are more likely to gamble (Martin et al 2017). This study adds to the literature as it shows there is a direct comparison between DFS participation and gambling problems.

This study will affect the way health professionals interact with patients that have gambling problems. This study found that gambling problems are directly related to how often one participates in DFS and health professionals can use it to create interventions to help their patients., This study found that there is a direct relationship between how often one participates in DFS and the number of gambling problems they have. Health professionals can use this finding to work with patients who have a DFS gambling problem to cut back on their gambling habits and ultimately rid themselves of all temptations to gamble. This could be done by having

that patient delete their DFS account, or working with the patient to find a new hobby so they have a distraction from DFS.

DFS providers can use this research to help reduce their client's chances of developing a gambling problem by creating ways to limit the amount of gambling a client can participate in. DFS providers could also track their clients that use their sites the most and give them resources to reduce their gambling problems.

Limitations

While this study found important information about DFS participation and gambling problems, there were some limitations. First, this was a self-reporting questionnaire, meaning there may be some bias in the answers as there is no way to measure the engagement of the respondents. However, anonymity was ensured to try to reduce this limitation. Another limitation of this study is the small sample size. As discussed previously, the sample size may be the reason some of the correlation tests did not find a relationship.

Conclusion

DFS participation is continuing to grow in popularity. The NFL, NBA and MLB continue to be the most popular sports among participants. As this study showed, there is a positive correlation found between DFS participation and the number of gambling problems a participant has. There needs to be an increase in educational programs for gambling problems with a focus on fantasy sports. The increase in DFS popularity may lead to more college students developing gambling problems and potentially losing a lot of money.

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