FOMO, Financial Trading, and Problem Gambling in College Students

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Abstract

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Increasing evidence suggests speculative trading is a type of gambling. Additionally, in recent years a fear of missing out (FOMO) on outsized short-term monetary gains through speculative trading has been highlighted as a driving force of financial behaviors. The current study sought to determine whether financial FOMO is linked to stock market and cryptocurrency trading activities and problem gambling severity in both traditional gambling and in trading domains, among a sample of 258 college students. Results of binomial regression and hurdle model analyses found financial FOMO was linked to participation in stock market and cryptocurrency trading. Financial FOMO was also associated with problem gambling severity in traditional gambling and stock market trading domains, but not in the cryptocurrency trading domain. Results suggest speculative trading may constitute problem gambling and imply financial FOMO may be an important construct to investigate in relation to problem gambling.

Introduction

In financial markets, speculative trading is the act of putting money into a financial position that has a substantial risk of losing value but also holds the expectation of a significant gain over a short term (Nguyen, 2022). Speculative trading is distinguished from investing, which is characterized by lower risk of loss and focused on seeking to profit from owning financial assets for a long term. Speculative trading seeks to offset the risk of loss through substantial gains from profitable trades over a repeated process.

In recent years, speculative trading of stock market products and cryptocurrencies has been suggested as a form of gambling addiction in the popular press (Lee, 2020; Zarroli, 2020). Detrimental negative consequences from speculative trading have been documented, including substantial financial losses and debt problems (Agnew, 2022; Hajric, 2022), mental and physical health issues such as depression and insomnia (Chang, 2022; Verma, 2022), and a completed suicide attempt (Khorram et al., 2020). Increases in help seeking behavior at gambling treatment clinics among speculative traders have also been reported in the press (Agnew, 2022; Lee, 2020).

Emerging research supports similarities between trading and gambling. Gambling and problem gambling rates are higher among those who engage in stock market and cryptocurrency trading (Delfabbro et al., 2021), and rapid online trading platforms are significantly more commonly used by participants reporting excessive gaming and alcohol drinking behaviors and higher levels of distress, anxiety, and loneliness (Oksanen et al., 2022). Similarities between speculative trading and gambling identified in a recently published review include high likelihood of losses (74-97% estimated for short term speculative trading), shared links to personality traits including overconfidence, impulsiveness and sensation seeking, help seeking

behavior among a minority of participants (referring themselves to gambling treatment clinic), and product design similarities between trading and gambling platforms (Newall et al., 2022).

Gambling is placing something of value on an event that has a possibility of resulting in a larger more beneficial outcome (Potenza et al., 2002). Risk of loss and the influence of chance events on outcomes is inherent to gambling. Traditional gambling activities include playing casino games, slot machines, buying lottery tickets, and sports betting, among others. Gambling is a widespread activity with 86% of the adult population estimated to participate in traditional forms of gambling over their lifetime (Potenza et al., 2002). Problem gambling refers to persistent gambling behavior despite negative consequences (Livazović et al., 2019). Key features of problem gambling include preoccupation with gambling, experiencing withdrawal symptoms when not gambling, and developing tolerance (needing to gamble with larger amounts of money), which have been observed in individuals who engage in frequent short term trading activities (Grall-Bronnec et al., 2015; Håkansson et al., 2021; Markiewicz et al., 2013), lending support to the inclusion of trading activities as a form of gambling activity. In particular, trading of cryptocurrencies, a popular medium for short term trading in recent years, has been demonstrated to be analogous to gambling behavior among select populations (Delfabbro et al., 2021; Mills et al., 2019; Novotny, 2018). Problem gambling is a significant public health concern, linked to higher rates of suicide attempts, substance misuse, perpetrating intimate partner violence, psychological disorders, and negative functional outcomes such as higher rates of homelessness (Cowlishaw et al., 2014; Cowlishaw et al., 2019; Dowling et al., 2016; Holdsworth et al., 2013; Suomi et al., 2019). Problem gambling has also been shown to be associated with physical ailments such as cardiovascular and gastrointestinal problems (Shaffer et al., 2002).

Problem gambling has been found to be more prevalent among males (Merkouris et al., 2016; Vitaro et al., 1997), low income individuals (Dellis et al., 2012; Winters et al., 1998), and adolescents (Calado et al., 2017; Derevensky, 2019; Shaffer et al., 1999). Several studies have found that young adults have the highest lifetime and current (past year) prevalence of problem gambling among all adult age groups (Volberg, 1993; Hodgins et al., 2011). In addition, impulsivity has been identified as a personality trait associated with gambling activity participation and problem gambling (Blaszczynski et al., 2006; Chambers et al., 2003; Ioannidis et al., 2019).

In recent years, a fear of missing out (FOMO) on outsized short-term monetary gains through speculative trading activities has been highlighted as a major driving force behind individuals' financial trading decisions, as stories of reaping quick, astronomical profits from financial trading have become commonplace on online news and social media websites (Hershfield, 2020; Reinicke, 2021; Stettner, 2020). Greater exposure to these accounts of fast profits have been shown to fuel obsessive financial wagering activities among some individuals (Baur et al., 2018; Delfabbro et al., 2021), raising concerns about problem gambling behaviors linked to fear of missing out on financial gains.

The term FOMO was coined in the early 2000s to denote a specific type of fear, namely a fear of missing out on unique social networking opportunities (The Harbus, 2004). The word has since been used to describe a fear or anxiety of missing out on a variety of rewarding experiences, including purchasing consumer products (Good et al., 2020), playing video games (Freire et al., 2020; Li et al., 2020), and reaping financial gains (Laurent, 2021; Bernard, 2022). The term's popularity has grown rapidly worldwide (Google Trends, 2021), gaining recognition by the Oxford Dictionary in 2013 (Dirda, 2013) and going on to be listed in Wikipedia in 10

different languages including Chinese and Arabic (Wikipedia, 2022) suggesting the phenomenon is relevant across cultural and linguistic backgrounds. Studies have also demonstrated that FOMO is relevant across gender and age groups (Barry et al., 2020; Milyavskaya et al., 2018) and is correlated with younger age (Lo Coco et al., 2020; Rozgonjuk et al., 2020).

Given that the term FOMO is routinely used in financial contexts in the popular press (Bernard, 2022; Laurent, 2021) and that FOMO has been documented to be a motivating factor in video gaming (Li et al., 2020; Freire et al., 2020), which has been identified to be similar to gambling in user interface (Derevensky et al., 2019; King et al., 2015; Vaughan et al., 2012), risk factors for excessive use (Sanders et al., 2018) and neurological correlates (Bae et al., 2017), FOMO's link to problem gambling behavior is suspected. To date, however, no published literature has examined the link between FOMO and problem gambling activities.

Despite lack of prior empirical research on the link between FOMO and problem gambling, the diagnostic criteria and research data on problem gambling also support a connection between FOMO and problem gambling. The diagnostic criteria for gambling disorder, a DSM-5 diagnosis classified as a behavioral addiction (American Psychiatric Association, 2013; Petry et al., 2018), include items that suggest FOMO may play a role in the disorder's onset and maintenance. FOMO may be reflected in criterion 5 for gambling disorder, "Often gambles when feeling distressed (e.g., helpless, guilty, anxious, depressed)" (American Psychiatric Association, 2013, p. 585) in that excessive fear and anxiety of missing out on large gambling wins may drive problem gambling behavior. FOMO may also be an exacerbating factor for criterion 6: "After losing money gambling, often returning to get even (referred to as "chasing" one's losses)" (American Psychiatric Association, 2013, p. 585). For instance, problem gamblers who are prone to gambler's fallacy (incorrect belief that a particular event is more

likely in the future if it occurred less frequently than normal in past observations, even though the events are known to be independent of one another) may experience a strong fear of missing out on a future gambling win after experiencing losses. In addition, researchers have found problem gamblers are more likely to experience anxiety over money and hold obsession with money as a sign of prestige (Blaszczynski et al., 2010; Lostutter et al., 2018), suggesting financial FOMO may be correlated with problem gambling behavior.

The prevalence of problem gambling is estimated at between 1 and 3 percent among adults and between 6 and 9 percent of adolescents and young adults in the United States, representing as many as 7 million individuals (Alegría et al., 2014; Barnes et al., 2010; Calado et al., 2016; Kessler et al., 2008; Williams et al., 2012). While the prevalence of speculative trading in the United States is unclear, evidence suggests its popularity is rapidly growing (Delfabbro et al., 2021). Identifying the correlates of problem gambling behaviors bears public health significance; understanding the links between FOMO, a widespread and familiar phenomenon across populations, and problem gambling as well as potentially related speculative trading behaviors can contribute to the development of effective problem gambling prevention and treatment approaches.

Current Study

Despite the potential for FOMO related to financial rewards to be linked to problem gambling and speculative trading, prior research has not assessed FOMO in the context of these financially-oriented activities. The current study was designed to begin to remedy this research gap by assessing financial FOMO's relationship to trading activity participation and to problem gambling across traditional gambling and trading domains in a cohort of adolescents/young adults, a population known to have disproportionately high rates of problem gambling (Alegría et

al., 2014; Barnes et al., 2010; Calado et al., 2016; Kessler et al., 2008; Williams et al., 2012). These new measures were administered to a sample of university students embedded in a larger survey including problem gambling assessments. In this study, we sought to test the following hypotheses: 1a) Financial FOMO is associated with stock market trading activity participation; 1b) financial FOMO is associated with cryptocurrency trading activity participation; 2a) financial FOMO is associated with problem gambling in traditional gambling domains; 2b) financial FOMO is associated with problem gambling in the stock market trading domain; 2c) financial FOMO is associated with problem gambling in the cryptocurrency trading domain.

Method

Participants

Study participants were 328 undergraduate students enrolled in introductory psychology courses at a northwestern university between September 2021 and March 2022. Eligibility criteria included being at least 18 years of age and fluent in English. Participants entered the study on a voluntary basis, with extra credit for their course provided for study completion. The study received exempt status from the institutional review board at the author's university.

Measures

The survey instruments included demographic variables, the Financial FOMO Scale (described below), engagement in gambling and trading behaviors, the Abbreviated Impulsivity Scale (ABIS; Coutlee et al., 2014), Problem Gambling Severity Index (PGSI; Holtgraves et al., 2009) and problem gambling severity measures adapted to trading contexts (PGSI-ST and PGSI-CT). Specific measures included:

Financial FOMO Scale (F-FOMO)

A measure of financial FOMO was adapted from the Fear of Missing Out Scale (FoMOS), a 10 item, 5 point (1 to 5) scale measure developed by Przybylski and colleagues in 2013 as a measure of fear of missing out on rewarding social experiences. FoMOS has been widely used and adopted across populations and contexts, and the 2013 paper introducing the scale has been cited over 2,000 times as of writing this article (June 2022). FOMO as measured by FoMOS was closely related to excessive internet use and social media use as well as the maintenance of social anxiety disorder (Elhai et al., 2021; Gupta et al., 2021; Tandon et al., 2021). We adapted the FoMOS by modifying four of the measure's items into financial contexts. The focus on investing was chosen because the behaviors of interest in our study (gambling/speculative trading) pertain to using money on hand to generate profits. The resulting Financial FOMO Scale (F-FOMO) includes items such as "I fear that other people are making more profitable investments than I am." and "It bothers me when I miss a good investing opportunity." The full F-FOMO is shown in Appendix 1.

Engagement in Gambling and Trading Behaviors

Participants were asked about their engagement in different gambling activities with the question: "What types of gambling have you ever tried?" Possible choices were lottery tickets, casino table games, slot machines, card games with money bets, sport betting, internet gambling, and other gambling. Participants who endorsed one or more response items were counted as having participated in gambling in their lifetime. Participants were also asked about their engagement in stock market and cryptocurrency trading activities with the following questions:

“Have you ever bought cryptocurrencies (bitcoin, ethereum, etc.)?” and “Have you ever done stock market trading?” with a yes or a no as response options.

Problem Gambling Severity Index (PGSI)

The PGSI (Holtgraves et al., 2009) is a validated 9 item, 4 point (0 to 3) scale measure of problem gambling severity that assesses gambling related behavior and symptoms like chasing losses and tolerance development and gambling consequences including social, financial, and health effects. The PGSI was developed for use with a general population. The measure was used to capture the severity of problem gambling across traditional gambling domains (e.g., casino games, slot machines, lottery, sports betting). Composite score of 3 or higher indicates at-risk gambling behavior, and score of 8 or higher is categorized as problem gambling behavior (Holtgraves et al., 2009).

Problem Gambling Severity Index in Trading Domains (PGSI-ST and PGSI-CT)

In order to measure problem-gambling-like behaviors and consequences in trading contexts, PGSI items were adapted by replacing the gambling terminology with trading, since financial trading is not conventionally considered as a form of gambling. The adapted measure includes items such as “Have you needed to trade with larger amounts of money to get the same feeling of excitement?” and “Has trading caused you any health problems, including stress or anxiety?” The full adapted measure (shown in Appendix 2) was taken up to twice, once for stock trading context (PGSI-ST), and once for cryptocurrency trading context (PGSI-CT), if the participant endorsed engaging in the given trading context during lifetime.

Abbreviated Impulsivity Scale (ABIS)

The ABIS is a 13 item, 4 point (0 to 3) scale validated measure of impulsivity as a personality trait. The ABIS was constructed through a confirmatory factor analysis of the Barrett Impulsivity Scale version 11 (BIS-11) (Coutlee et al., 2014). ABIS was collected to capture impulsivity as a covariate of trading participation (Grall-Bronnec et al., 2017; Strahilevitz et al., 2015) and problem gambling (Blaszczynski et al., 2006; Chambers et al., 2003; Ioannidis et al., 2019) based on support from past literature.

Data Analysis Plan

Our hypotheses 1a and 1b (Is financial FOMO linked to stock market and cryptocurrency trading activity participation?) were analyzed using two separate binomial regression analyses, one for stock market trading and another for cryptocurrency trading, using the "glm" function in R (version 3.6.3) (R Core Team, 2020) in RStudio (RStudio Team, 2020). Trading activity participation (binary variable) was the dependent variable, and the composite Financial FOMO Scale score was used as the independent variable. ABIS score as a measure of impulsivity (Blaszczynski et al., 2006; Chambers et al., 2003; Ioannidis et al., 2019), sex assigned at birth (Merkouris et al., 2016; Vitaro et al., 1997), and self-reported relative household wealth (Dellis et al., 2012; Winters et al., 1998) were included as covariates in the analyses given strong evidence of the three factors' associations with gambling participation and problem gambling rates.

Our hypotheses 2a, 2b, and 2c (Is financial FOMO linked to problem gambling severity?) required running three analyses, given the three separate dependent variables: composite PGSI, PGSI-T for stock market trading, and PGSI-T for cryptocurrency trading scores. For each of

these analyses, we used a hurdle model using the "hurdle" function in the pscl package for R (version 3.6.3) (R Core Team, 2020) in RStudio (RStudio Team, 2020). The decision to employ a hurdle model was based on the large number of zeros among the composite PGSI and PGSI-T scores, dependent variables for the three analyses. The hurdle model is a two-part model that specifies one process for zero counts and another process for positive counts once the zero counts threshold or "hurdle" is cleared. The first part of the model processes zero counts using a binary logit model to determine if F-FOMO is associated with having nonzero problem gambling severity scores. The second part uses a truncated Poisson model with only the positive counts of problem gambling severity scores to determine if F-FOMO is associated with variations among the positive scores. ABIS score, sex assigned at birth, and self-reported relative household wealth were again used as covariates. An alpha level of 0.05 was used for all analyses.

Results

Descriptive Statistics

Of the 328 participants who enrolled in the study, 285 finished the complete set of measures. Data from the 43 participants with incomplete responses were excluded from data analysis.

Participants' mean age was 19.3 years, with a standard deviation of 1.3 years. In terms of sex assigned at birth, 67.4% of the participants were female and 32.6% were male. With respect to race, 62.1% of participants identified as non-Hispanic Asian, 24.6% as non-Hispanic White, 4.6% as non-Hispanic other or mixed race, 1.4% as non-Hispanic Black, and 0.7% as non-Hispanic Native American or Pacific Islander. With respect to ethnicity, 6.7% of the participants identified as Hispanic (3.5% as Hispanic White, 1.8% as Hispanic other race, 1.1%

as Hispanic Asian, and 0.4% as Hispanic American Indian or Alaska Native). With respect to academic majors, 20.4% of participants were planned or declared psychology majors, whereas the remainder were majoring in other subjects.

Prevalence of lifetime gambling was similar between the two sexes, with more pronounced differences found in at-risk and problem gambling rates and in trading activity participation rates. Prevalence of lifetime, at-risk and problem gambling/trading activities by sex are presented in Table 1. At-risk and problem gambling/trading thresholds were defined by composite scores of at least 3 and at least 8 on the PGSI or PGSI-ST/CT, which can range from 0 to 27.

Table 1

Prevalence of Gambling, Stock Market Trading, and Cryptocurrency Trading

	Female (n = 194)			Male (n = 91)		
	Lifetime	At-Risk	Problem	Lifetime	At-Risk	Problem
Gambling	81.3%	6.6%	3.1%	80.4%	9.3%	1.1%
Stock Market Trading	30.4%	5.7%	1.5%	25.3%	4.4%	0.0%
Cryptocurrency Trading	12.1%	2.6%	0.5%	14.9%	2.2%	0.0%
Any Gambling or Trading	83.5%	14.4%	4.1%	84.0%	13.2%	1.1%

F-FOMO and Trading Activity Participation

In the results of the binomial regression analysis for testing hypothesis 1a, shown in Table 2, higher F-FOMO score was associated with greater likelihood of stock trading activity participation ($t(284) = 0.08136$, $p = 0.006732$). In other words, F-FOMO demonstrated a statistically significant link to stock trading activity participation in our cohort.

Table 2

Financial FOMO's association with Stock Market Trading Activity Participation

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-7.334	2.106	-3.482	<0.001***
Male	-0.271	0.297	-0.912	0.362
HouseholdWealth	0.035	0.072	0.486	0.627
Age	0.250	0.099	2.540	0.011*
F-FOMO	0.081	0.030	2.710	0.007**
ABIS	-0.044	0.022	-1.945	0.052

*p < .05. **p < .01. ***p < .001

The results of the analysis for testing hypothesis 1b found higher F-FOMO was also related to greater likelihood of cryptocurrency trading activity participation (t(284) = 0.08204, p = 0.03225) in our cohort, as shown in Figure 2. These results supported our hypothesis that financial FOMO is associated with participation in stock and cryptocurrency trading activities.

Table 3

Financial FOMO's association with Cryptocurrency Trading Activity Participation

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-8.516	2.634	-3.233	0.001**
Male	-0.165	0.389	-0.423	0.673
HouseholdWealth	0.081	0.094	0.864	0.387
Age	0.275	0.122	2.258	0.024*
F-FOMO	0.082	0.038	2.141	0.032*
ABIS	0.013	0.028	0.465	0.642

*p < .05. **p < .01. ***p < .001

F-FOMO and Problem Gambling Severity

In our hurdle model analysis for hypothesis 2a (Figure 3), F-FOMO passed the zero hurdle process (t(284) = 0.07528, p = 0.013), demonstrating a significant association with the

PGSI composite score having a positive value. Furthermore, its link to the PGSI composite score was also statistically significant in the second process for positive counts (t(76) = 0.04704, p = 0.007994). In other words, F-FOMO was meaningfully related to the variance of PGSI composite scores among the 77 of 285 participants whose scores were greater than 0, supporting our hypothesis.

Table 4

F-FOMO and Problem Gambling Severity in Traditional Gambling Domain (hurdle model)

Count model coefficients (truncated poisson with log link)				
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-2.368	1.244	-1.904	0.057
Male	-0.010	0.183	-0.056	0.955
HouseholdWealth	-0.148	0.042	-3.567	<0.001***
Age	0.215	0.062	3.490	<0.001***
F-FOMO	0.047	0.018	2.652	0.007**
ABIS	0.054	0.012	4.361	<0.001***
Zero hurdle model coefficients (binomial with logit link)				
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.988	2.151	-0.459	0.646
Male	0.116	0.293	0.397	0.692
HouseholdWealth	-0.032	0.071	-0.448	0.654
Age	-0.018	0.104	-0.171	0.864
F-FOMO	0.075	0.030	2.484	0.013*
ABIS	0.031	0.022	1.412	0.158

*p < .05. **p < .01. ***p < .001

For hypothesis 2b (Figure 4), F-FOMO cleared the zero hurdle process (t(76) = 0.18329, p = 0.0039), implying that higher F-FOMO score is associated with reporting a nonzero

PGSI-ST composite score in stock market trading contexts among the 77 participants who have stock market trading experience. Meanwhile, unlike for PGSI, F-FOMO was not significantly linked to the variance of PGSI-T composite scores among the 37 participants who reported a nonzero PGSI-ST score (t(36) = 0.04562, p = 0.12853). Hypothesis 2b was partially supported by the results.

Table 5

F-FOMO and Problem Gambling Severity in Stock Trading Domain (hurdle model)

Count model coefficients (truncated poisson with log link):				
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-0.330	1.778	-0.186	0.853
Male	-0.297	0.255	-1.162	0.245
HouseholdWealth	-0.039	0.066	-0.589	0.556
Age	0.078	0.089	0.875	0.382
F-FOMO	0.046	0.030	1.520	0.129
ABIS	0.044	0.015	2.905	0.004**
Zero hurdle model coefficients (binomial with logit link):				
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	4.718	3.927	1.201	0.230
Male	0.396	0.572	0.693	0.488
HouseholdWealth	0.201	0.154	1.306	0.192
Age	-0.431	0.192	-2.239	0.025*
F-FOMO	0.183	0.064	2.886	0.004**
ABIS	0.025	0.038	0.654	0.513

*p < .05. **p < .01. ***p < .001

In the hurdle model analysis for hypothesis 2c, F-FOMO did not clear the zero hurdle process (t(34)=-0.034454, p=0.746), failing to support the hypothesis.

Table 6

F-FOMO and Problem Gambling Severity in Cryptocurrency Trading Domain (hurdle model)

Count model coefficients (truncated poisson with log link):

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-4.291	4.270	-1.005	0.315
Male	-0.156	0.876	-0.178	0.859
HouseholdWealth	-0.385	0.216	-1.783	0.075
Age	0.438	0.154	2.845	0.004**
F-FOMO	0.042	0.108	0.390	0.696
ABIS	0.067	0.036	1.889	0.059

Zero hurdle model coefficients (binomial with logit link):

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	1.144	6.497	0.176	0.860
Male	0.699	0.821	0.852	0.394
HouseholdWealth	0.222	0.208	1.071	0.284
Age	-0.176	0.283	-0.623	0.533
F-FOMO	-0.034	0.106	-0.324	0.746
ABIS	0.007	0.061	0.121	0.904

*p < .05. **p < .01. ***p < .001

Discussion

In this study, we sought to measure financial FOMO and investigate its association with speculative trading activities and problem gambling severity in a cohort of 285 college students. We adapted the FoMOS (Przybylski et al., 2013), a validated measure of social FOMO, to construct F-FOMO, a novel, brief measure of financial FOMO. The development of F-FOMO builds on research efforts to better understand FOMO as a driver of financial behaviors (Baur et al., 2018; Delfabbro et al., 2021; Newall et al., 2022; Oksanen et al., 2022; Stettner, 2020) and

provides direction for researchers seeking to measure FOMO across financially oriented contexts.

In our study, we used F-FOMO to test two overarching hypotheses. First, we wanted to find out whether financial FOMO is related to participation in trading activities. Using binomial regression analysis, we identified a statistically significant link between F-FOMO and stock market trading as well as cryptocurrency trading participation, supporting our first hypothesis. Our results corroborate past research findings which identified behavioral similarities between trading and gambling (Delfabbro et al., 2021; Newall et al., 2022; Oksanen et al., 2022). Notably, our findings focused on college students with a mean average age of 19.3, most of whom were in their first or second year of college enrollment, whereas past research on the topic focused on older adults from a broader age group. Our findings also shed light on the prevalence of trading activities (27.0% for stock market trading and 12.3% for cryptocurrency trading) in a college student sample.

We then sought to test whether financial FOMO is linked to problem gambling, in both traditional gambling and speculative trading domains. We had hypothesized that F-FOMO would be positively linked to PGSI, PGSI-ST, and PGSI-CT. In our results, higher F-FOMO was indeed related to reporting nonzero PGSI scores, suggesting that financial FOMO may be a risk factor for problem gambling. Moreover, higher-F-FOMO was associated with higher PGSI scores when we only accounted for participants with positive PGSI scores, implying that F-FOMO was a meaningful covariate of the severity of problem gambling among individuals who exhibit any sign of problem gambling.

Higher F-FOMO was also linked to reporting nonzero PGSI-ST scores, similarly indicating that financial FOMO may be a risk factor for problem gambling issues among those

who engage in stock trading. There was no significant association between F-FOMO and variance of positive PGSI-ST scores, or between F-FOMO and PGSI-CT scores at any level, however, despite financial FOMO having been frequently discussed in connection to stock market and cryptocurrency trading (Bernard, 2022; Laurent, 2021; Stettner, 2020). These results imply that financial FOMO's link to problem gambling in speculative trading contexts was less robust than its link to problem gambling in the traditional gambling domain.

We believe several factors may have contributed to these weaker links observed in trading domains. For one, the sample sizes of participants who reported positive PGSI-ST (n = 37) and PGSI-CT (n = 11) scores were substantially smaller than the number of participants who reported positive PGSI (n = 77) scores. Additionally, for PGSI-CT in particular, the number of participants who provided PGSI-CT scores (n = 37) was significantly lower than for PGSI (n = 285) and PGSI-ST (n = 77). Only participants who endorsed lifetime stock market/ cryptocurrency trading activity were prompted to complete PGSI-ST/PGSI-CT. It is also possible that in the context of financial trading, which is perceived to be more skill-based and disciplined than traditional forms of gambling (Arthur et al., 2016; Delfabbro et al., 2021), financial FOMO is less likely to be tied to problem gambling behaviors and consequences than it is in traditional gambling contexts such as casino games and slot machines.

This study is not without limitations. Participants in the study were recruited using convenience sampling in introductory psychology classes at a single university, limiting the generalizability of the findings. As discussed earlier, the study's small sample size (n = 285), especially with respect to participants with positive PGSI-CT scores (n = 11), was another weakness of the study. In addition, the F-FOMO measure was based on four items chosen and adapted from a single source. A more extensive measure development and testing process could

have yielded a more comprehensive measure of financial FOMO with a stronger rationale. The study also did not explicitly distinguish between different trading durations (e.g., between day trading and trading over multiple weeks) which may potentially be a covariate of problem gambling in trading contexts. Lastly, it must be noted that given the cross sectional nature of the study, causal relationships cannot be inferred from our results.

Taken together, our findings suggest financial FOMO may be an important construct to consider as a risk factor of problem gambling in traditional gambling domains and, to a smaller degree, in the speculative trading domain. Further development and validation of financial FOMO measures and exploration of the role of financial FOMO in problem gambling behaviors across wider population groups will be necessary to continue advancing our understanding of the financial FOMO-problem gambling connection.

Appendix 1

Financial Fear of Missing Out Scale (F-FOMO)

1. I fear that other people are making more profitable investments than I am.

2. I fear that my friends are making more profitable investments than I am.

3. I get worried when I find out my friends are making more profitable investments than I am.

4. It bothers me when I miss a good investing opportunity.

Response options: Not at all true of me (1), Slightly true of me (2), Moderately true of me (3), Very true of me (4), or Extremely true of me (5).

Appendix 2

Problem Gambling Severity Index in Trading Domains

1. Have you bet more on a trade than you could really afford to lose?
2. Have you needed to trade with larger amounts of money to get the same feeling of excitement?
3. When you lost money from trading, did you go back another day to try to win back the money you lost?
4. Have you borrowed money or sold anything to get money to trade?
5. Have you felt that you might have a problem with trading?
6. Has trading caused you any health problems, including stress or anxiety?
7. Have people criticized your trading or told you that you had a problem, regardless of whether or not you thought it was true?
8. Has your trading caused any financial problems for you or your household?
9. Have you felt guilty about the way you trade or what happens when you trade?

Response options: Never (0), Sometimes (1), Most of the time (2), Almost always (3)

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