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Gambling Problems among Students Attending University in the United Kingdom: Associations with Gender, Financial Hardship and Year of Study

Morgan B Zolkwer, BSc.[1], Glen Dighton, PhD.[2], Bryan F Singer, PhD.[1, 3], Simon Dymond, PhD.[4,5,6*]

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[1]School of Psychology, University of Sussex, UK.
[2]King's Centre for Military Health Research, King's College London, UK.
[3]Sussex Addiction Research and Intervention Centre, University of Sussex, UK.
[4]School of Psychology, Swansea University, UK.
[5]Department of Psychology, Reykjavík University, Iceland.
[6]**ORCiD**: 0000-0003-1319-4492
*Corresponding author: Simon Dymond: s.o.dymond@swansea.ac.uk

Abstract: University students may be at increased risk of gambling related problems. The present study investigated the gambling experience and general wellbeing of domestic and international students attending a higher-education university in the United Kingdom (UK). An online survey consisting of demographic characteristics, gambling experience, problem gambling severity, and general mental health measures was completed by *n*=402 undergraduates. Results indicated that 44% of students engaged in at-risk gambling and 6% in PG. General mental health scores did not differ across gambling severity. Male gender identity was a significant risk-factor for both at-risk and PG. Accessing university financial hardship funds and being in the final year of study were significant risk-factors for problem gambling. Overall, gambling problems are significant concerns for UK university students and the risk of problematic gambling is associated with financial hardship, year of study, and gender.

Keywords: Gambling, Students, Mental Health, Gender, Financial Hardship.

Introduction

Gambling disorder is a nonsubstance-related (behavioural) addiction (American Psychiatric Association, 2013) and a growing public health concern (Wardle et al., 2019). In DSM-5, a diagnosis of past year gambling disorder requires endorsement of at least four of nine symptom domains (Bowden-Jones et al., 2022). Gambling can result in long-lasting harms that impact a range of domains, such as financial, personal, health, employment, relationships, and the wider community (Langham et al., 2016; Rockloff et al., 2022). For instance, financial harms from gambling can lead to the erosion of savings, the loss of assets, increased debt, and the risk of criminal activity. The harms experienced from gambling are indicative of the risk profile associated with the individual's gambling behaviour. The *Problem Gambling Severity Index* (PGSI; Ferris & Wynne, 2001) is widely used to measure at-risk behaviour in problem gambling and categorises responses as non-problem gambling (i.e., gambling with no adverse consequences), 'low-risk' (i.e., gambling with low level of problems with few or no identified negative consequences), 'moderate-risk' (i.e., gambling with a moderate level of problems leading to some negative consequences), and 'problem gambling' (PG; gambling with negative consequences and a possible loss of control), respectively. Indeed, these subclinical threshold problem gambling categories align well with the negative characteristics of gambling disorder and provide a framework to signpost treatment pathways and early intervention with those at heightened vulnerability (Stinchfield, 2014).

University students may be vulnerable to gambling-related problems (Chan et al., 2015; Delfabbro et al., 2006; Mubarak & Blanksby, 2013; Saeid et al., 2018; Williams et al., 2006; Wong et al., 2021). Nowak (2017) estimated rates of problem gambling in students in the USA could be as high as 10.23%, which is at least ten times higher than the estimated problem gambling rate of 1.1% from among the general population of Wales, a country within the United Kingdom (UK; Conolly et al., 2018). Of course, demographic, and cultural differences may partially account for the differences in estimated prevalence rates between students in the USA and the general population of Wales, but it is noteworthy that the proportion vulnerable to gambling-related harm increases to 3·8% when the "at risk" category is included, with the greatest risk evident among those aged 16–24 years old. This suggests that, internationally, students may be at increased risk of gambling harm. Recently, a survey of 2,000 UK university students found that 80% had gambled, with 41% reporting that their gambling had caused a negative impact on their studies (Young Gamers and Gamblers Education Trust, 2021). More than one-third (35%) reported being in debt or taking out payday loans to gamble. The most common motivation to gamble was to make money, with the most popular gambling activities being the National Lottery (32%), online sports betting (25%), and online

bingo (18%). Other surveys found that 16% (of *n*=2000) were either at moderate-risk or were currently experiencing problem gambling (Young Gamers and Gamblers Education Trust, 2019). Moreover, an earlier survey in 2017 (*n*=1000) found that 59% of students who gambled in the last year were concerned about their financial status and 54% of students who gambled reportedly did so to make money (National Union of Students, 2017). In contrast, 4% of students who gambled were in debt because of their gambling, with 1 in 4 students of those in debt having accumulated debt exceeding £10,000 (National Union of Students, 2017; Young Gamers and Gamblers Education Trust, 2019).

International evidence indicates that students are adversely affected by a range of unique risk factors (Benson et al., 2012; Dowling et al., 2020; Richard et al., 2019; Wong et al., 2021). Young peoples' increased tendency for risky behaviour (Welte et al., 2007) and experiencing stressful life events may predispose them to problematic gambling (Misra & Castillo, 2004; Torrado et al., 2020; Young Gamers and Gamblers Education Trust, 2019). Potential stressors such as lifestyle and accommodation changes, academic/peer pressure, and social conflict are commonly experienced by students (both domestic and international) at the outset of their third-level education journey and throughout. Indeed, the more significant life events that students navigate, such as a change in country or place of residence, the greater the increase in gambling behaviours (Godinho et al., 2018). Other risk factors associated with problematic student gambling include being of the male gender (Mond et al., 2019), having high trait impulsivity (Caldeira et al., 2017), co-occurring anxiety, depression, regular alcohol, and substance use difficulties (Shead et al., 2010; Winters et al., 1998), time spent gambling (King et al., 2010), and international student status (Mond et al., 2019). For instance, Mond et al. found that male international university students studying in Australia were 5.5 times more likely to experience problematic gambling than domestic students. Such findings highlight potential cross-cultural differences in social norms, such as the promotion of opportunities to gamble, and help-seeking for gambling problems and mental health (Moore et al., 2013). This in turn may predispose students from a country where gambling is easily accessible to greater risk of problem gambling when studying in another country where gambling is more difficult to access. The opposite may also be the case; that is, students from countries where gambling is restricted may be at increased risk when studying in countries where there are more opportunities to gamble. These possibilities, combined with the associated risks and stressors which studying abroad entails, may make students especially vulnerable to gambling harm. Mond et al. (2019) found that 62% of international male and female students had their first experience of gambling in their home countries. In a national gambling survey conducted in the USA, Welte et al. (2007) found that, of a sample of 2,630 participants, significantly more males gambled weekly and met Diagnostic Interview Schedule criteria for PG, compared to females. Males may therefore be at

greatest risk of PG, compounded by country of origin and current residential status. As well as increased rates of problematic gambling (Wong et al., 2021), students and young people have also traditionally shown higher rates of at-risk gambling (Grande-Gosende et al., 2019).

Anxiety and depression are associated with increased levels of gambling in both the general (i.e., non-student) and student populations (Dowling et al., 2020; Goodyear-Smith et al., 2006; Moore et al., 2013). Longitudinal research has shown that the more problematic an individual's gambling, the more likely they are to experience comorbid mental health problems (Parhami et al., 2014). Participants who meet criteria for problem gambling also report higher stress than participants from other gambling severity categories (Currie et al., 2012). Those at risk of problem gambling consume more alcohol and/or cannabis than those who reported complete gambling abstinence (Shen et al., 2015). It is notable that measures of overall psychological health have been employed as predictors of problem gambling and alcohol-/substance-use in students (Delfabbro et al., 2006), yet the possible causal relations cannot be inferred from these associations. Therefore, the extent that general wellbeing and factors such as alcohol and substance use can be used to help explain student problematic gambling, remains unclear (Nowak, 2020).

Risk of gambling-related problems among students may also differ between course of study. Gainsbury et al. (2012) examined differences in gambling behaviour between Australian university students studying psychology and students from the general population. They found that a significantly larger proportion of psychology students were deemed low-risk gamblers (32%) compared to the general population (25%). Psychology university students were also at lower risk of gambling related problems, compared to students recruited from the general population. The university recruited students differed from the general population in terms of demographics, such as being young, single, female, and on low incomes, and it is therefore important for other international studies to recruit larger, more representative student samples from other disciplines. Combined with Mond et al.'s (2019) findings, one may predict that various factors uniquely affecting student populations such as international or domestic student status, gender, area of study, and time spent studying may impact harmful gambling risk.

Notwithstanding these risk factors, gambling-related borrowing and debt increase with gambling severity (Oksanen et al., 2018; Swanton & Gainsbury, 2020). Increased borrowing and larger gambling losses can lead to increased credit and debt stress, which has been found to partly explain the relationship between comorbid mental health issues and problem gambling (Swanton et al., 2020). One could predict that not only does problematic gambling result in increased debt, but that financial distress status may be a risk factor which combines to increase the likelihood of developing the condition. The available evidence suggests that this may be particularly pertinent for students who are often in debt or in receipt of

maintenance grants and other financial support for course fees and living costs (Shen et al., 2015). Further examination of the relationship between financial distress and problematic gambling in UK students may therefore prove insightful. To date, however, there has been limited empirical attention, in terms of peer-reviewed research, given to rates of problematic gambling and associated risk factors among samples of UK university students (cf. Benson et al., 2012).

The aim of the present exploratory study was to survey past-year problem gambling among a convenience sample of UK students and to determine any association with demographics, student status (international or Home/EU) and general wellbeing.

Method

Participants

Participants were recruited from the student population attending a university in South Wales, UK. A total of 685 responses were received; 283 incomplete responses were removed, which resulted in the responses of n=402 participants for analysis. Mean age was 20.7 years old (SD= 3.41; range = 17 to 56), 216 (53.7%) identified as female, 183 (45.5%) as male, and 3 (0.75%) as 'other' in response to the question "what is your gender?", and the majority (84.4%) reported White ethnicity. Participation was voluntary, however, students recruited via the School of Psychology research participation panel received partial course credit (2 units) for their time. The study was approved by Swansea University School of Psychology Research Ethics Committee.

Measures

An online survey, hosted in Qualtrics, was developed which included demographic characteristics (age, gender), items on year of study, area/subject of study, accommodation type, previous access to university-administered financial hardship funds, student loan amount, and international or 'home/EU' (i.e., domestic) student status (see Supplementary Materials). Further measures of mental health, gambling severity, motivation, and the impact of gambling were obtained as described below.

The *General Health Questionnaire - 12* (GHQ-12; Spitzer et al., 2006) measured current psychological well-being. The greater the score on the GHQ-12, the more psychological difficulties experienced; the total sum of scores range from 0 to 36 and ratings are made with a 4-point scale (0- 'not at all' to 3 - 'much more than usual'). The GHQ-12 has good internal consistency (Cronbach's alpha = 0.78) (Salamana-Younes, et al., 2009), and measures valid psychometric properties (Goldberg et al., 1997). In the present study, Cronbach's alpha was 0.80.

A list of 10 different gambling activities (i.e., buying National Lottery tickets including scratchcards, sports betting, bingo cards/tickets (online or in a bingo hall), fruit and/or slot machines, virtual gambling

machines in a bookmaker's, online poker, online casino (e.g., roulette, blackjack), table games within a casino, betting at the horse/dog racing track, and any other form of gambling) were incorporated to measure forms of gambling activities (e.g., Gambling Commission, 2022). Participants who endorsed spending on any of these activities within the past year were shown follow-up questions concerning gambling severity, motivation, and debt (see Supplementary Materials).

The *Problem Gambling Severity Index* (PGSI; Ferris & Wynne, 2001) was included to measure the severity of gambling behaviours. The PGSI consists of 9 items and answers are reported on a 4-point scale of 'never', 'sometimes', 'most of the time', and 'almost always'. Scores of 0 were categorised as 'non-problem gambling', scores of 1 to 2 as 'low-risk gambling', scores of 3 to 7 as 'moderate-risk gambling, and scores of 8+ as 'problem-gambling'. The PGSI has good predictive and concurrent validity and good reliability when administered to students (Loo et al., 2011). In the present study, Cronbach's alpha was 0.87.

Gambling motivation was assessed against themes found to be common among students (i.e., "to escape problems", "to make money", "for a big win", "to socialise", "fun/enjoyment" or "none of these"; Griffiths, 2002). Participants were also asked if they were currently or had ever been in debt because of gambling ("yes", "no", "prefer not to say"), had ever missed lectures/seminars because of gambling ("nearly always", "most times", "sometimes", "never"), and where they spent most of their time gambling (casinos, in betting shops, bingo halls, online sports betting, online table betting (casino style) or other).

Procedure

Participants were recruited via campus-wide email announcements and from an exhibitor stand in the foyer of the university library with a laptop available for data collection. Email calls stated that the aim of the survey was to "investigate gambling attitudes and behaviours in students". Data were collected across several months in academic years 2017/2018 and 2018/2019. All participants were fully debriefed on completion and provided with access to sources of further support, if needed.

Statistical analysis

Previous research using the PGSI has combined the moderate-risk and problem gambling categories (Young et al., 2008) into a *high-risk* category (PGSI scores >3), other studies have employed the categories of 'no gambling problems' (PGSI 0), 'at-risk gambling' (1−4), and 'problem gambling' (≥5) (Cowlishaw et al., 2017), while others have treated the original four PGSI categories separately (Shen et al., 2015). We adopted a compromise approach, categorising responses into non-problem gambling (PGSI scores of 0), at-risk gambling (PGSI 1-7), and problem gambling (PGSI ≥8), respectively.

Primary analyses were performed using binary logistic regression models. Analysis was performed separately for each gambling behaviour severity category of the PGSI. Unadjusted associations between gender, access to hardship funds, international study, size of loan, year of study, age, GHQ-12, accommodation type, and area of study were examined separately as covariate predictors, with PGSI categories as the dependant variable. Casewise listing of residuals > 2 standard deviations were used to identify outliers, which were then removed. No Cook's distance values > 1 were recorded. Chi-square tests of association were used to identify significant associations between specific gambling motivations and PGSI category, and between gambling activities and PGSI category, respectively. Analyses were conducted using SPSS.

Results

The mean time taken to complete the survey was 8.34 minutes (SD=16.06). Out of the 402 complete cases, 8 students reported no past year gambling, 201 (50.0%) scored '0' on the PGSI (non-problem gambling), and there were over two times as many of these cases identifying as female (*n*=140) than male (*n*=60). A further 177 cases (44%) were classified in the at-risk gambling group, most of whom (56.8%) identified as the male gender. Finally, 24 cases (6.0%) met the criteria for problem-gambling, 19 of whom (10.38%) identified as male (Table 1). General mental health scores (GHQ-12) were distributed relatively equally across PGSI categories (average scores: non-problem gambling, 17.86; at-risk gambling, 17.46; problem gambling, 19.25). See Table 2 for more information on participant characteristics.

Table 1

Number and proportion of participants from each gender in each PGSI category

	Non-problem gambling (PGSI score 0)			At-risk gambling (PGSI score 1-7)			Problem gambling (PGSI score ≥8)		
	n	%	Age, M (SD)	n	%	Age, M (SD)	n	%	Age, M (SD)
Total	201	50.00	20.81 (4.03)	177	44.03	20.64 (2.80)	24	6.00	20.57 (1.38)
Male	60	32.79	20.95 (4.12)	104	56.83	20.40 (1.27)	19	10.38	20.47 (1.47)
Female	140	64.81	20.75 (4.00)	72	0.33	21.00 (4.07)	4	1.85	21 (0.82)
Other	1	0.33	20	1	0	19	1	0.33	25

Table 2

Descriptive statistics for demographic variables

	Total		Non-problem gambling (PGSI score 0)		At-risk gambling (PGSI score 1-7)		Problem gambling (PGSI score ≥8)	
	n	%	*n*	%	*n*	%	*n*	%
Accessed hardship fund	18	4.48	7	38.89	7	38.89	4	22.22
International student	20	4.98	9	45.00	9	45.00	2	10.00
Year of study								
Year 1	73	18.16	34	45.21	38	52.05	1	1.37
Year 2	164	40.80	95	58.54	62	37.80	7	4.27
Year 3	146	36.32	64	43.84	66	45.21	16	10.96
Year 4	19	4.73	8	42.11	11	57.89	0	0
Accommodation type								
Halls of residence	57	14.18	25	43.86	30	56.63	2	3.51
Private rented room	219	54.48	105	47.95	99	45.20	15	6.85
Home	70	17.41	44	62.86	22	31.43	4	5.71
Private rented flat	37	9.20	17	45.95	19	51.35	1	2.70
Other	19	4.74	10	52.63	7	36.84	2	10.53
Area of study								
Arts and humanities	46	11.44	24	52.17	19	41.30	3	6.52
Management	46	11.44	14	30.43	27	58.70	5	10.87
Natural sciences	53	13.18	23	43.40	26	49.06	4	7.55
Human and health sciences	193	48.01	113	58.55	71	36.79	9	4.66
Medicine	4	0.99	1	25.00	2	50.00	1	25.00
Law	34	8.46	14	41.18	19	55.88	1	2.94
Engineering	25	6.22	11	44.00	13	52.00	1	4.00

Binary logistic regression models were used to analyse predictors of non-problem gambling behaviour and found three significant variables: (1) living at home with a parent/guardian (students living at home were twice as likely to report non-problem gambling), (2) studying Management, and (3) identifying as female; that is, these students were significantly more likely to score ‘0’ on the PGSI (Table 3).

Table 3

Logistic regression models for student non-problem gambling, at-risk gambling, and problem gambling.

	Non-problem gambling (PGSI score 0)			At-risk gambling (PGSI score 1-7)			Problem gambling (PGSI score ≥ 8)		
	OR (95% CIs)	LB	UB	OR (95% CIs)	LB	UB	OR (95% CIs)	LB	UB
Gender (n = 402)	.26***	.17	.39	2.69***	1.79	4.05	3.07*	1.25	7.58
Accessed hardship fund (n = 18)	.63	.24	1.66	.79	.30	2.09	5.20**	1.57	17.25
International student (n = 20)	.818	.33	2.02	1.03	.42	2.55	1.82	.40	8.34
Size of loan (n = 402)	.60	.11	.98	.60	.12	.99	.77	.41	2.01
Year of study (n = 402)	.88	.69	1.12	1.01	.80	1.29	1.79*	1.05	3.04
Age (n = 402)	1.02	.96	1.08	.99	.92	1.05	1.00	.89	1.13
GHQ12 score (n = 402)	1.01	.97	1.06	.97	.93	1.02	1.08	.98	1.18
Accommodation type									
Halls of residence (n = 57)	.70	.40	1.23	1.91	.66	5.54	2.02	.45	9.12
Private rented room (n = 219)	1.27	.70	2.28	.76	.42	1.36	1.67	.29	9.45
Home (n = 70)	2.33*	.64	3.28	.41	.20	.85	.76	.07	8.74
Private rented flat (n = 37)	1.17	.51	2.69	.95	.42	2.12	1.67	.29	9.45
Other (n = 19)	1.53	.54	4.34	.53	.18	1.53	3.24	.42	24.73
Area of study									
Art and humanities (n = 46)	1.45	.55	3.84	1.13	.51	2.11	1.75	.39	7.79
Management (n = 46)	.40*	.17	.94	2.02	.88	4.63	1.17	.29	5.53
Natural sciences (n = 53)	.70	.32	1.56	1.48	.67	3.27	1.10	.05	6.93
Human and health sciences (n = 193)	1.30	.68	2.47	0.83	.43	1.59	4.78	.37	61.06
Medicine (n = 4)	.31	.03	3.16	1.42	.18	10.99	.43	.04	4.37
Law (n = 34)	.57	.23	1.40	1.80	.74	4.41	.60	.06	6.06
Engineering (n = 25)	.72	.27	1.92	1.54	.58	4.10	.01	.00	1.00

Note: LB = lower bound, UB = upper bound, * = significant at <.05, ** = significant at <.01, *** = significant at <.001, Home = living with parent or guardian.

Gender significantly predicted no gambling problems, at-risk gambling, and problem gambling (Table 3). That is, male students were three times more likely to exhibit PG than females and were significantly more than twice as likely to meet at-risk gambling criteria. As well as gender, we identified that having previously accessed university-based hardship funding and one's current year of study also significantly predicted problem gambling. Applying for, and accessing, the university-administered financial hardship fund made it more than five times more likely that students would experience problematic gambling, while students in their final year of study were almost twice as likely to score 8+ on the PGSI (Table 3).

Table 4

Descriptive and Chi-square statistics for self-reported gambling motivation

Gambling Motivation	Total	PGSI category			Degrees of freedom	x^2	*p*
		Non-problem gambling (PGSI score 0)	At-risk gambling (PGSI score 1-7)	Problem gambling (PGSI score ≥8)			
To escape	8	0	3	5	2	47.85	<.001
To make money	151	38	95	18	2	63.76	<.001
For a big win	105	24	62	19	2	63.22	<.001
To socialise	132	50	70	12	2	12.58	.002
Fun/enjoyment	299	130	150	19	2	20.20	<.001
None of the above	36	32	4	0	2	24.05	<.001
Gambling Activities							
National lottery tickets	220	106	98	16	2	1.73	.421
Betting on sporting events	197	64	109	24	2	59.87	<.001
Bingo cards/tickets	90	50	31	9	2	6.29	.043
Fruit and/or slot machines	110	35	57	18	2	42.01	<.001
Virtual gambling machines	44	6	26	12	2	52.93	<.001
Online poker	61	7	43	11	2	49.94	<.001
Online casino	73	4	52	17	2	94.35	<.001
Table games in casino	102	27	64	11	2	31.02	<.001

Betting on horse and/or dog racing	121	40	61	20	2	43.56	<.001
Any other gambling activity	97	25	56	16	2	43.87	<.001

Additionally, we identified significant associations between specific gambling motivation, activities, and PGSI category (Table 4). That is, students' gambling motivations (to escape, to make money, for a big win, to socialise, and for fun and enjoyment, respectively) were all associated with gambling severity. Significantly more students from the PG category endorsed gambling to escape, while more 'at-risk' students tended to endorse gambling to make money/for a big win, to socialise, and for fun/enjoyment than from any other category. As Table 4 shows, further significant associations were reported between the three PGSI categories and all forms of gambling activities except for purchasing National Lottery tickets (including scratchcards). Significantly more students from the at-risk category bet on sporting events, slot machines, virtual gambling machines, online poker and casino, and on horse/dog racing than students from any other category. These findings suggest a potential trajectory of future gambling related harms among students scoring at risk on the PGSI.

Discussion

We found that of a sample of 402 students, 50% met PGSI criteria for non-problem gambling, 44% met criteria for at-risk gambling, and 6% had PGSI scores indicative of problem gambling. The elevated estimated rate of problem gambling found in our sample is in line with the current understanding that students are at greater risk of gambling harm than the general population (Nowak, 2017).

Males had the greatest likelihood of being characterised as at-risk or problematic gamblers. This echoes the findings of Mond et al. (2019) and highlights that the male gender is a risk factor for problem gambling not confined to adults outside of full-time education. Findings departed from those of Shead et al. (2010), Winters et al. (1998), and Moore et al. (2013), who identified lower mental and general health as risk factors for problem gambling. The lack of support for established risk factors such as anxiety, depression, and regular alcohol and substance use could be partly explained by the increased prevalence of anxiety and depression found in student populations (Lipson et al., 2019). Indeed, because of this, our analysis may have been underpowered and therefore unable to detect differences in mental health disorders between the general student population and students exhibiting harmful gambling behaviours. Further research which utilises larger sample sizes is needed to further delineate mental health problems as a risk factor for problem gambling in students.

In seeking to explain how students might be at heightened risk of gambling harm, it is important to consider the impact that prevailing financial management conditions likely exert in some students' lives. For instance, in Wales, where data collection occurred, eligible students are entitled to tuition fee loans (which are paid directly to the university) and means-tested maintenance loans and grants to help with living costs (which are paid in 3 instalments directly to students, usually at the start of term); loans are repayable with interest after completing degree study while grants need not be repaid. Receipt of a large sum of money at the outset of one's university study, in a new or unfamiliar living environment, and without parental oversight may predispose a significant minority of students to gambling harm. These risk factors may be exacerbated by social pressures and norms present with meeting a new peer group; indeed, Savolainen et al. (2021) found that social group norms and online social identity were risk factors for problem gambling among young adults and students. The impact of social pressures and norms may be more acute among subgroups of students such as student-athletes (Wang et al., 2021) and further highlights the complex interplay between student status, social norms, and financial management on vulnerability to gambling harm among students.

Students studying internationally were not found to be at greater risk of problematic gambling than students studying in their own country (Dowling et al., 2020). This contrasts with Mond et al. (2019) who found international students studying in Australia were significantly more likely to experience problem gambling. Yet, students from a country with easier access to gambling, and higher rates of problematic gambling, are at greater risk of harmful gambling when studying in a country with reduced access to gambling opportunities and lower rates of problem gambling (Dowling et al., 2020; Kim, 2012). Indeed, we found that our sample of UK students already had relatively high rates of problematic gambling when compared to other international samples (Shen et al., 2015). Thus, the effect of international student status as a potential risk factor may not have been adequately detected here and warrants further research attention.

Accessing university hardship funds significantly predicted problem gambling. Seeking emergency financial support while studying may be an indicator and risk factor for problem gambling among students. When seeking financial support, students must pass affordability checks and provide copies of bank account transactions where gambling-based expenditures or large cash withdrawals may be identified. Financial harms, such as debt problems and the need to borrow money to overcome gambling-related financial hardship, represent opportunities for early intervention before problems mount and both gambling and borrowing increase (Swanton & Gainsbury, 2020). Specific help and support should therefore be provided by universities to students who apply for hardship funds and who have evidence of potentially problematic patterns of gambling expenditure. It may also be salutary to screen all such applicants

for problematic gambling and to refer to local treatment and support services.

Time spent studying was a risk factor for problem gambling. Students in their third and final (undergraduate) year may use gambling as a coping mechanism for the emotional stressors they encounter as they near the completion of their studies (Buchanan et al., 2020). Also, cumulatively, by year 3, students will have had to navigate considerable change and are facing the prospect of seeking employment or applying for postgraduate study. Additionally, by this time in their studies, students' most common motivation to gamble ('for fun and enjoyment') likely remains the most important in terms of the social functions of gambling, albeit with a peer group largely set to change on graduation. Taken together, our findings indicate that final year students should be considered a vulnerable population for gambling-related problems.

The most common motivation to gamble was to make money (Young Gamers and Gamblers Education Trust, 2021). Moving to a university from a financially weak/unstable background may also increase gambling risk because of the perceived role of gambling as a means of relieving financial stress. Fun and enjoyment were the modal motivations in students scoring as non-problem gambling and low-risk gambling on the PGSI, respectively. Gambling to escape self-reported distress was most prevalent in students meeting criteria for problem gambling (20.83%). In this way, the main motivation which originally attracts students to gambling may be fun and enjoyment, but as they gamble more frequently, gambling becomes a form of coping mechanism leading to gambling that is escape- or avoidance-maintained. Educational and awareness-raising initiatives should therefore emphasise the potentially harmful pathways from gambling for fun and enjoyment to using gambling to cope with (escape or avoid) distress (financial and/or emotional) in student populations (Weatherly et al., 2014). Interestingly, our study did not see differences in general mental health scores (GHQ-12) across PGSI categories; this lack of effect may be related to the large proportion of female participants in our study, compared to previous work (Shen et al., 2015).

The most common gambling activity was purchasing National Lottery tickets - 54.73% of students reported having done so in the past year (Nowak, 2017; Shen et al., 2015). By far the most popular form of gambling engaged in by students with scores indicating problem gambling was sports betting. Students, and all other consumers of sports betting, are exposed to frequent gambling advertisements which may maintain established gambling behaviours among regular gamblers, rather than promoting uptake among non-gamblers (Derevensky et al., 2009). Future research should examine sports betting in greater detail. For instance, understanding the transition from low-risk to moderate-risk, and moderate-risk to problem gambling sports betting will help to target better signposting and treatment interventions. Similarly, surveying students' attitudes of harm minimisation tools (e.g., bank gambling transaction blocks) would also aid understanding

of the relationship between problem gambling in students and the availability of sports betting.

There are several recommendations that arise from these findings, but perhaps the most pertinent is that screening for problematic gambling among students should be considered by university administrators, admissions tutors, student wellbeing clinicians, and others (Blank et al., 2021). Several validated screening tools exist which are brief and convenient to administer by non-specialists (Dowling et al., 2017, 2019). Doing so would not only help signpost students at risk of gambling harm to appropriate sources of treatment and support but may also be cost-effective in terms of savings from course withdrawal, repeated years of study, and related living costs. Screening students for potential gambling problems and providing suitable training for all university-based professionals who interact with students during their studies about gambling harms and how to detect them, may lead to reduced problem gambling rates and diminished need for costly future intervention with this population.

Limitations

The present study has several limitations. First, the present sample size, while sufficiently robust for purposes of analysis, may not have been large enough to be considered representative of the population. Second, sample recruitment for a cross-sectional survey design such as this may not have been entirely random, and the high level of at-risk males may not be representative of the general (non-student) population. Self-selection bias may have occurred in response to recruitment calls for a study investigating "gambling attitudes and behaviours in students". The sample also included students participating for partial course credit and others doing so voluntarily, which may have impacted on the responses obtained. Third, our survey focused on the experiences of undergraduate, not (post)graduate, students who may experience additional financial distress and hence may be prone to gambling harm, during their studies. Fourth, our demographic measures could have better detected sub-populations of students, such as student-athletes, that may be at greater risk of gambling harm than other students (Nowak, 2018). Fifth, our analysis employed a largely regression-based, correlational design and hence we are unable to make causal statements. Finally, mediating factors (e.g., financial distress) between the predictor and outcome variables were not identified and warrant further attention (Oksanen et al., 2018).

Conclusion

In line with the current understanding of the increased prevalence of problem gambling among men, students identifying as male were also at increased risk of problem gambling. The distribution of scores from the PGSI categories differed among this student sample when compared to the public, with the present sample indicating increased rates of problematic

gambling. The finding that problem gambling rates increased as time attending university increased highlights the need for early detection and intervention with students presenting low- and moderate-risk gambling early in their degrees. Access to hardship funds significantly predicted problem gambling and further stresses the importance of providing support for students who are struggling financially. Our findings that the most common form of gambling among students was buying lottery tickets, and that sports betting was the most common gambling activity among problem gamblers, warrant further attention.

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Declaration of conflict of interest
None declared.

Availability of data and material

The data that support the findings of this study are available on request from the corresponding author.

Author's contributions

SD conceived of the study. MZ and GD conducted the analyses and wrote the first draft of the paper. SD and BS revised the first draft. All authors approved of the final version.

Ethics and informed consent

The Swansea University School of Psychology Research Ethics Committee approved the project, "Gambling attitudes and behaviours in students," on October 1st 2017.

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