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ORIGINAL PAPER

Gambling Problems in a Sample of UK University Students: Associations with Mental Health, Other Addictive Behaviours, and Transdiagnostic Factors

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Abstract
University students may be particularly vulnerable to experiencing gambling-related problems. This study investigated the rate of screening positive for gambling problems in a UK university and associated factors, including demographic, mental health, and trans-diagnostic variables. We analysed cross-sectional data from the Nurture-U student mental health and wellbeing survey (2022–2024 data; $N=2302$). The 3 item NORC DSM-IV Screen (NODS-CLiP) was used to identify positive screen for gambling problems. Variables of interest were anxiety, depression, eating symptoms, self-reported ADHD, problematic use of the internet (PUI), hazardous alcohol use, drug use, compulsivity and suicide attempts. Logistic regression was conducted to examine associations between gambling problems and these measures. Overall, 8.1% of students screened positive for potential gambling problems. When considering associations with comorbid mental disorders and problematic behaviours, positive associations of moderate strength were observed between a positive screen for gambling problems and any drug use (OR 3.00 [95% Confidence Interval 2.09, 4.33]), restrictive eating (OR 2.74 [1.89, 3.99]), PUI (OR 1.04 [1.02, 1.07]) and hazardous drinking (OR 1.5 [1.03, 2.26]), but not for anxiety, depression, binge eating or ADHD. When considering transdiagnostic factors, suicide attempts (OR 2.61 [1.69, 4.04]) and standardised reward drive (OR 1.41 [1.16, 1.72]) were associated with screening positive for gambling problems, while standardised perfectionism had a protective effect (OR 0.59 [0.49, 0.71]). The findings of this study suggest that gambling problems may be common in university students and linked to impairments in reward-driven compulsive behavioural patterns that can extend beyond gambling.

Keywords Gambling problems · University students · Mental health · Addictive behaviours · Behavioural addiction · Student wellbeing

Extended author information available on the last page of the article

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Introduction

Gambling has become an important global public health concern, with problem gambling prevalence varying widely across cultural contexts (0.1–5.5%; Calado et al., 2016), and particularly elevated rates observed in some Asian jurisdictions such as China, Hong Kong, and Macau. These variations may reflect differences in regulation, availability, and cultural attitudes toward gambling, as well as inconsistencies in measurement approaches. Young people are considered especially vulnerable, requiring specific consideration to protect them from harm (UK Department for Culture, Media and Sport, 2023).

Young adults at universities are at heightened risk of gambling harms due to a combination of age-related, developmental, and contextual factors (Ioannidis & Bowden-Jones, 2023; McGivern, 2024). Cognitive features in young adults, including overestimation of control and poor understanding of odds, can increase susceptibility to problematic gambling and chasing losses (Chambers & Potenza, 2003; Blakemore & Choudhury, 2006), which can magnify the typical decision making and inhibitory control deficits seen in gambling disorder and "subclinical" gambling (Ioannidis et al., 2019). University life introduces unique challenges: students often live away from home for the first time, manage personal finances independently, form new social networks, and are exposed to gambling opportunities through peers, sports teams, and online platforms. These factors, combined with higher levels of risk-taking and impulsive decision making in young adulthood, create a context in which gambling behaviours can emerge and escalate (Ioannidis & Bowden-Jones, 2023).

Problem gambling refers to difficulties with repetitive gambling, with negative impacts on the person and/or others (Ferris & Wynne, 2001). Gambling Disorder (often referred to as pathological gambling) is a formal diagnosis that has a more stringent criteria than problem gambling with impairment in functioning and distress present (American Psychiatric Association [APA], 2013). At-risk gambling refers to gambling behaviour that is associated with an increased likelihood of experiencing gambling-related harm, but which does not meet threshold criteria for gambling disorder. A range of measures have been developed to screen for, diagnose and assess gambling problems, with variable sensitivity (Aslan et al., in submission); this means that rates can be difficult to compare across studies.

An international systematic review and meta-analysis (Tran et al., 2024), including studies using a wide range of scales and diagnostic criteria, reported the adult prevalence of any risk gambling as 8.7% (6.6–11.3) and the prevalence of problematic gambling as 1.41% (1.06–1.84), with variable rates in different countries. Dellosa et al. (2024) conducted an international systematic review and meta-analysis of age as a predictor of gambling and found younger adults (18–35-year-olds) were 1.51 times more likely to report problem gambling than middle-aged adults. In the UK, data from the Health Survey for England (PHE, 2021) using the Problem Gambling Severity Index (PGSI) indicate that 2.5% of adults were identified as engaging in at-risk gambling and 0.3% as engaging in problem gambling while 7.5% of young adults aged 16–24 were at-risk gambling and 0.8% problem gambling.

Nowak (2018) reported international rates of 10.23% for problematic and 6.13% for pathological gambling among students aged 18–24 based on a meta-analysis of studies using a single measurement tool (South Oaks Gambling Screen); only one study reported rates in the UK (13% probable pathological gambling in a cohort of 209 students who gambled online; Yani- de-Soriano et al., 2012). A survey of 402 undergraduates in South Wales (Zolkwer et al., 2022) reported 44% of students engaged in at-risk gambling and 6%

in problem gambling using the Problem Gambling Severity Index (PGSI). The UK-wide YGAM Student Gambling Survey (2025) reported that 49% of university students gambled in the previous year, with 17% scoring as having gambling problems on the brief PGSI. This highlights that strikingly higher rates of problem gambling are often reported in studies recruiting university students, compared to general rates in the population. However, gambling surveys are likely to attract a higher proportion of people who gamble or specifically recruit gamblers, highlighting the urgent need for further study in representative university populations. More recently a large US survey (N=3659) of university students reported rates of 0.4% gambling disorder and 8.4% problem gambling with representation judged to be adequate (Grant et al., 2019). However, this has not yet been replicated in the UK.

Brief gambling screening tools can be used to identify problem and at-risk gambling in non-specialist services. In student populations it may be particularly important to identify and intervene to reduce harms related to early engagement with gambling in young adults. Brief screening tools are also a helpful tool in research surveys as they have lower participant burden than longer self-report tools or diagnostic interviews and are more likely to be included in broad wellbeing surveys which reduces the self-selection bias often associated with recruiting to gambling specific surveys. Dowling et al. (2019) conducted a systematic review of the diagnostic accuracy of brief screening instruments for at-risk and problem gambling. Eight screening tools were found to have diagnostic accuracy with one of the most extensively studied measures being the NORC DSM-IV Screen for Gambling Problems- Control, Lying, Preoccupation (NODS-CLiP; Toce-Gerstein et al., 2009). Although one study in a UK primary care setting suggested low sensitivity to less severe gambling problems overall (Cowlishaw et al., 2018), the NODS- Clip was evaluated as a sensitive tool to detect gambling problems and at-risk gambling. Dowling et al. found that the life-time oriented questions were more sensitive to detecting at risk gambling than using a current time frame. In a student population measuring lifetime gambling rather than current gambling may also be more helpful as prior gambling may have an ongoing harmful impact on finance, relationships and emotional distress.

Over the past decade, gambling environments have changed considerably. Online gambling platforms, esports betting, and other digital products have expanded rapidly, and these products can be particularly appealing to young people. The COVID-19 pandemic intensified exposure, risk and financial strain (Quinn et al., 2022). This may have influenced rates of gambling problems and highlights the importance of current research in this area.

The relationship of gambling to financial hardship in students is also a concern. The UK-wide YGAM Student Gambling Survey (2025) reported 4.6% spending between £101 and £500 per week, sometimes funded through borrowing or overdrafts. Zolkwer et al. (2022) found people with a gambling problem were five times more likely to access hardship funds at universities.

Mental health challenges in university students are prevalent, with international rates of 13.42% and 16.78% of students reporting severe depression symptoms and severe anxiety, respectively (Paiva et al., 2025). Grant et al. (2019) found a significant association between gambling disorder and substance use problems (strongest for cocaine), generalised anxiety disorder, and post-traumatic stress disorder (and non-significant results for depression, binge-eating and ADHD) in mid-western US university students (N=3659). Problematic use of the internet has also been associated with gambling in Greek adolescents (Tsitsika et al., 2011). Wardle et al. (2021) found suicide attempts to be more frequently reported

by UK young adults who meet the criteria for problem gambling compared to those with no problem (adjusted odds ratio 9.0 in men and 4.9 in women). Transdiagnostic factors of compulsivity and impulsivity have also been shown to be associated with gambling disorder in university students (Grant et al., 2019; Lightsey, 2002).

The prevalence, risk factors, and intervention evidence for gambling harms in university populations remain under-explored, particularly in the UK, leaving a critical evidence gap for research and policy. To contribute to addressing these gaps, we first estimated rates of gambling problems taking a pragmatic approach by using a screening tool to estimate the number of students at universities who might benefit from further assessment of a gambling problem. We then identified associated risk and protective factors, including demographic, mental health, and trans-diagnostic variables using two regression models, highlighting the unique influence of the different factors.

Methods

Recruitment and Participants

Participants were recruited from the University of Southampton site of the Nurture-U student mental health and wellbeing survey ($N=2302$), an adapted version of the U-Flourish Student Well-Being Survey (Goodday et al., 2019). The outcome variable was only collected at this one site of a five-site study (Marshall et al., 2025) at baseline. Recruitment was via in-person stalls at freshers' fairs and library stalls in the Autumn of 2022, 2023 and 2024. Participants read a participant information sheet prior to completing a consent form. For full study data collection and preparation procedures, see Marshall et al. (2025). Ethical approval was obtained from University of Southampton Psychology Ethics Committee on 13/9/2022 ref: 73,178.

Measures

Outcome Variable The NODS-CLiP is a3-item screening tool derived from the NORC DSM-IV Screen for Gambling Problems, a 17-item tool designed to measure gambling problems in accordance with DSM-IV diagnostic criteria, including both problem and pathological gambling. The NODS-CLiP includes three questions: have you ever tried to control, cut down, or stop gambling and found you couldn't? (Control); have you ever lied to family, friends, or others about how much you gamble or about your gambling losses? (Lying); Have you ever spent a lot of time thinking about gambling, planning your next gambling session, or recovering from past gambling? (Preoccupation)- answering one question or more affirmatively meets the criteria for "possible problem gambling". This measure has been shown to capture almost all cases of gambling disorder and problem gambling (i.e. good sensitivity), but individuals who are in the `at-risk' category can also screen positive (i.e. not necessarily good specificity; Dowling et al., 2019). In its original validation study, the instrument identified 99.3% of pathological gamblers and 93.7% of problem gamblers, yielding an overall sensitivity of 96.2% and specificity estimates ranging from approximately 88% to 95%, depending on the comparison group.

Financial Wellbeing (Group Comparison) was assessed using a single-item question from the Nurture-U survey: "How is your financial situation affecting your wellbeing currently?" Responses were rated on a 5-point scale ranging from very negatively to very positively (scored 1–5). This measure was available for the 2023 and 2024 survey waves but was not collected in 2022.

Predictor Selection Predictors were grouped conceptually into demographic/background factors, mental health/behavioural factors and trans-diagnostic factors.

Demographic/Background Factors included: age, gender (male, female, or non-binary), and ethnic group (Asian Chinese, Asian other, White, mixed or other).

Mental Health/Behavioural Factors included: depression (PHQ-9), generalised anxiety (GAD-7), self-reported binge eating and low-weight/restrictive eating symptoms (items from SCID-5), hazardous drinking (AUDIT), drug use, and problematic internet use (IAT).

Depressive Symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9). The PHQ is a validated 9-item scale asking if DSM-based depressive symptoms were experienced over the past two weeks. Total scores range from 0 to 27, higher scores indicate greater symptom severity, and cut-off of ≥ 10 indicates clinically significant depression (Kroenke et al., 2001). Cronbach's alpha in the current study was 0.89.

Anxiety Symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale with reference to symptoms occurring during the past 2 weeks. Scores range from 0 to 21, higher scores indicate greater symptom severity, with a score of 10 or above indicating moderate to severe anxiety likely to warrant clinical attention (Spitzer et al., 2006). Cronbach's alpha in the current study was 0.90.

Self-Reported Binge Eating and Restrictive Eating Symptoms were screened using two yes/no items from the Structured Clinical Interview for DSM-5 (SCID-5): recent (past 2 weeks) binge eating (loss of control) and recent low body weight relative to others' expectations. (First et al., 2015).

ADHD Diagnosis was assessed using a self-report item (yes/no) asking whether the participant had ever received a diagnosis of ADHD.

Hazardous Drinking was assessed using the 3 item Alcohol Use Disorders Identification Test- Community version (AUDIT-C score range 0–12) with reference to current drinking habits. Standard cut-offs (≥ 4 men, ≥ 3 women; Bush et al., 1998) indicate risk, though higher thresholds are often used in student samples (Skogen et al., 2024). A≥ 5 cut-off was applied to capture increased risk, given no universal threshold.

Drug Use was assessed as self-reported past-month use of cannabis, cocaine, other illicit substances, and misuse of prescription or over-the-counter medications. A combined binary variable indicating any/no self-reported drug use was used in our analysis.

Problematic Use of the Internet (PUI) was measured using the total score of the Internet Addiction Test (IAT-10) validated by Tiego et al. (2021) based on 10 items (referring to past month use) from the full IAT (Young, 1998) with responses n/a, rarely, occasionally, often, frequently, always (scored 0–5). As there is no widely agreed upon cut off for PUI, we used the continuous variable.

Compulsivity was measured using the 15 item Cambridge–Chicago Compulsivity Trait Scale (CHI-T; Chamberlain & Grant, 2018). The responses of strongly disagree," "disagree," "neither agree nor disagree," "agree," or "strongly agree." Tiego et al. (2023) recommended a two-factor model with constructs of Perfectionism (9 items) and Reward Drive (3 items).

Suicide Attempts were assessed using an item question from the Columbia Suicide Severity Rating Scale (C-SSRS): "Thinking about your past, have you ever… made any suicide attempts?" (yes/no).

Sample Characteristics and Group Comparisons

Participant demographics, financial wellbeing and predictor measures were summarised using descriptive statistics with frequencies given for no-low risk and moderate-high risk of gambling problems (see Table 1). Chi-square and Cramer's V were used to assess the associations between the outcomes and binary or categorical independent variables; Independent t-tests or Mann–Whitney U tests with Cohen's d were conducted to compare continuous variables between group differences.

Missing Data

Missing values were handled using multiple imputation by chained equations (MICE) in Stata19 (StataCorp, 2025) with ten iterations in each of 40 imputed datasets. Missing data were assumed to arise primarily from gradual survey attrition as participants progressed through the questionnaire, suggesting mechanisms consistent with either Missing at Random (MAR) or Missing Not at Random (MNAR). While separate auxiliary variables were added, the model included a wide range of mental health variables that were theoretically linked to both the study outcomes and potential non-response, supporting the plausibility of the MAR assumption. Multiple logistic regressions were conducted separately on each imputed dataset, and results were pooled using Rubin's rules to obtain final estimates and standard errors.

Multiple Logistic Regression Analysis

In Model 1, multiple logistic regression (all variables entered together) was used to examine the association between the binary outcome of possible gambling problems (no-low versus moderate-high risk) with demographics (age, gender and ethnicity), phenotypically distinct clinical presentations (depressive symptoms, anxiety symptoms, binge-eating symptoms, restrictive eating symptoms self-reported ADHD) and addictive behaviours (alcohol use,

Table 1 Demographics and summary statistics by positive gambling problem screen

	NODS CLiP Score			Missing $N=2302$	Test*
	0	>=1	Total		
N	1,882 (92.1%)	165 (8.06%)	2,047 (100.0%)	255 (11.08%)	
Demographics					
Age Group				32 (1.4%)	17.78 $P<0.000$ V=0.094
18–21	1,205 (64.5%)	83 (52.2%)	1,286 (63.5%)		
22–25	471 (25.2%)	65 (40.8%)	536 (26.4%)		
26+	193 (10.3%)	11 (7.1%)	204(10.1%)		
Gender				3 (0.13%)	9.83 $P=0.002$ V=−0.069
Male	446 (23.7%)	56 (33.9.%)	502 (24.5%)		
Female	1349 (71.7%)	103 (62.4%)	1452 (70.9%)		
Non-binary/prefer not to say	87 (4.6%)	6 (3.6%)	93 (4.6%)		
Ethnic Group				261 (11.3%)	37.08 $P<0.000$ V=0.13
White	1018 (54.2%)	50 (30.7%)	1068 (52.3%)		
Asian Chinese	359 (19.1%)	56 (34.4%)	415 (20.3%)		
Asian Other	305 (16.2%)	34 (20.9%)	339 (16.6%)		
Black, Mixed or other	161 (8.6%)	18 (11.1%)	179 (8.8%)		
Prefer not to say	35 (1.9%)	5 (3.1%)	40 (2.0%)		
Financial wellbeing (rating 1–5)	3.023 (0.834)	2.764 (1.080)	3.001 (0.861)	283 (15.9%)	$P=0.001$ D=0.302
Mental Health Factors					
Anxiety (GAD-7>=10)				155 (6.7%)	0.0336 Ns
0–9	1,370 (73.4%)	117 (74.1%)	1,487 (73.4%)		
>=10	497 (26.6%)	41 (25.9%)	538 (26.6%)		
Depression (PHQ>=10)				177 (7.7%)	4.0488 $P=0.044$ V=0.045
0–9	1,412 (75.8%)	104 (68.4%)	1,516 (75.2%)		
>=10	452 (24.2%)	48 (31.6%)	500 (24.8%)		
Binge eating (SCID item)				145 (6.3%)	14.43 $P<0.001$ V=0.084
No	1493 (79.5%)	108 (66.7%)	1601 (78.4%)		
Yes	386 (20.5%)	54 (33.3%)	440 (21.6%)		
Restricting eating (SCID item)				144 (6.3%)	76.47 $P<0.001$ V=0.19
No	1618 (86.1%)	97 (59.9%)	1715 (84.0%)		
Yes	261 (13.9%)	65 (40.1%)	326 (16.0%)		
ADHD diagnosis				78 (3.39%)	3.40 ns
No	1,792 (96.1%)	149 (93.1%)	1,941 (95.9%)		
Yes	72 (3.9%)	11 (6.9%)	83 (4.1%)		
Addictive Behaviours					
Alcohol use (AUDIT>=5)				204 (8.86%)	15.79 $P<0.000$ V=0.088
0–4	1,380 (73.4%)	94 (58.8%)	1,474 (72.3%)		
>=5	500 (26.6%)	66 (41.2%)	566 (27.7%)		
Any drug use				204 (8.86%)	90.76 $P<0.000$ V=0.211
No	1,590 (84.6%)	88 (54.7%)	1,678 (82.2%)		
Yes	290 (15.4%)	73 (45.3%)	363 (17.8%)		
PUI (IAT-10)					P=<0.001 D=0.134
Mean (SD)	9.56 (7.34)	13.86 (8.98)	9.89 (7.56)	286 (12.4%)	
Transdiagnostic Factors					

Table 1 (continued)

	NODS CLiP Score			Missing *N*=2302	Test*
	0	>=1	Total		
Suicide attempts ever				88 (3.82%)	17.86 *P*<0.000 V-0.094
No	1,702 (90.6%)	129 (80.1%)	1,831 (89.8%)		
Yes	176 (9.4%)	32 (19.9%)	208 (10.2%)		
Compulsivity (CHI-T)					
Perfectionism: Mean (SD)	15.54 (66.48)	9.46 (87.07)	15.06(68.32)	290 (16.24%)	*P*<0.000 D=0.376
Reward Drive: Mean (SD)	5.86 (2.84)	6.26 (2.90)	5.893 (2.85)	290 (16.24%)	*P*=0.091 D=0.149

GAD-7 Generalised Anxiety Disorder 7 item scale, *PHQ-9* Patient Health Questionnaire 9 item depression scale, SCID, *AUDIT* Alcohol Use Disorders Identification Test, *IAT* the Internet Addiction Test, *CHI-T* Cambridge–Chicago Compulsivity Trait Scale. Ns (non-significant) =<0.05 *CHI squared with Cramer's V for categorical variables and T-Test or Mann-Whitney U test for continuous variables with Cohen's D

drug use and PUI). These variables reflect clinically defined symptom and disorder-level constructs.

In Model 2, logistic regression (all variables entered together) was used to examine the association of the binary gambling problem outcome with demographic variables alongside higher order cross-cutting (transdiagnostic) factors, including suicide attempts (a marker of severe psychological distress and dysregulation that spans diagnostic boundaries), compulsivity-reward drive and compulsivity-perfectionism.

Demographic Variable Coding

Age was reported in categories in the demographic table to illustrate group differences. The sample was predominantly younger (18–26), with relatively few older participants, which limited statistical power for categorical analyses. For regression analyses, age was therefore included as a continuous variable to maximize power. Sensitivity analyses using age categories were also conducted to assess the influence of older participants on the model outcome, with results consistent with the continuous specification; therefore, the continuous age variable was retained in the final model.

Gender Due to relatively low frequency of non-binary participants with problem gambling, and in line with ethics approval to prevent potential identification of individuals, this category was combined with `prefer not to say' in the demographics table to protect participant confidentiality. 'Prefer not to say' was imputed as missing for the regression analysis and the non-binary group retained. However, due to the small cell size, results for this group were unstable and should be interpreted with caution.

Ethnicity was included as a categorical variable in analyses. Because the number of Black participants was very small, they were combined with the Mixed/Other category. This approach allowed stable estimates while maintaining representation of minority groups. Prefer not to say options were included in the demographics table then imputed as missing for the regression analysis.

Post-estimation Diagnostics

To evaluate the impact of missing data, several post-estimation diagnostics were performed: multicollinearity among predictors was assessed using the variance inflation factor (VIF); the fraction of missing information (FMI) and relative variance increase (RVI) were examined to quantify the influence of missingness on parameter estimates. A sensitivity analysis using complete case logistic regression was conducted to assess the robustness of the imputed results.

Results

Sample Characteristics and Group Comparisons

Table 1 shows descriptive statistics for demographics, mental health and transdiagnostic factors and indicates missing data and group differences tests (frequencies for each NODS-CLiP item are available in supplementary material 1). 8% (8.1%) of students screened positive for possible gambling problems overall: 6.3% of ages 18–21; 11.6% of those aged 22–25; and 5.4% of aged over 26. 11% (11.15%) of males in the sample screened positive, 7.1% of female screened positive. In students identifying as White ethnicity 4.7% met the threshold for likely problem gambling, compared to 13.49%, 10.03% and 10.06% in Chinese, Asian other, and Mixed and other ethnic groups. Students who met the threshold had significantly lower financial wellbeing with small effect size.

Multiple Logistic Regression Analysis

Table 2 shows the results of the Model 1 regression analysis providing odds ratios for positive gambling problem screen by demographic, addictive behaviour, and mental health self-report measures, with confidence intervals and p values. Moderate relationships are reported here in the text. Gender was included as Male, Female, and Non-binary. Students identifying as Male had 56% higher odds of having a positive screen for problem gambling compared to those identifying as Female (OR 1.56); the estimate for the Non-binary category is unstable due to a very low number of participants with a gambling problem in this group. Students identifying with Chinese, Asian Other and Mixed or Other ethnicities had more than twice the odds compared to White identifying students (OR range 2.04–2.75). Students reporting symptoms of restrictive eating had 2.74 times the odds of screening positive for gambling, while binge eating symptoms, ADHD and other mental health conditions did not meet the threshold for significance. For students reporting any drug use there was three times higher odds (OR 3.00) of positive screen for problem gambling, while students who met the threshold for hazardous drinking had a less strong relationship (OR 1.53) and those reporting PUI had 1.04 time the odds for every one-point increase in IAT score.

Results of the logistic regression for transdiagnostic factors are shown in Table 3. Male gender and non-white ethnicity remain stable risk factors for positive screen for gambling problems. In this model past suicide attempts (OR 2.61) and Reward Drive were associ-

Table 2 Results of multiple logistic regression for mental health and addictive behaviour factors with positive screen for gambling problems (model 1)

Predictor	Adjusted OR	95% CI	*p*
Age	1.00	[0.95, 1.05]	0.924
Gender (Reference Female)			
Male	1.56	[1.09, 2.24]	0.016*
Non-binary	0.22	[0.03, 1.60]	0.133
Ethnicity (Reference White)			
Asian other	2.04	[1.25, 3.34]	0.005**
Asian Chinese	2.75	[1.72, 4.40]	<0.001***
Mixed or Other	2.35	[1.31, 4.19]	0.004**
Mental health and Addictive Behaviours (reference no if categorical)			
GAD (≥10)	0.64	[0.39, 1.04]	0.073
PHQ (≥10)	1.17	[0.72, 1.88]	0.528
AUDIT (≥5)	1.53	[1.03, 2.26]	0.035*
Restriction (SCID yes)	2.74	[1.89, 3.99]	<0.001***
Bing eating (SCID yes)	1.38	[0.93, 2.03]	0.106
Any drug use (yes)	3.00	[2.09, 4.33]	<0.001***
ADHD (MH yes)	1.62	[0.78, 3.37]	0.194
PUI (IAT total score)	1.04	[1.02, 1.07]	<0.001***

OR Odds Ratio, []=95% Confidence Intervals, *GAD-7* Generalized Anxiety Disorder 7 item scale, *PHQ-9* Patient Health Questionnaire 9 item depression scale, *SCOFF* Sick, Control, One, Fat, Food, *AUDIT* Alcohol Use Disorders Identification Test, *IAT* the Internet Addiction Test. Ns (non-significant) *=<0.05 **=<0.01 ***<0.001

Table 3 Results of multiple logistic regression for transdiagnostic factors with possible gambling problems (model 2)

Predictor	Adjusted OR	95% CI	*p*
Age	0.98	[0.94, 1.03]	0.483
Gender (Reference Female)			
Male	1.75	[1.24, 2.46]	0.001**
Non-binary	0.24	[0.03, 1.77]	0.161
Ethnicity			
Asian other	2.18	[1.39, 3.40]	0.001**
Asian Chinese	2.95	[1.97, 4.43]	<0.001***
Mixed or other	1.95	[1.11, 3.42]	0.019*
Transdiagnostic Factors			
Perfectionism (CHI-T construct standardised)	0.59	[0.49, 0.71]	<0.001***
Reward drive (CHI-T construct standardised))	1.41	[1.16, 1.72]	<0.001***
Suicide attempt (yes with reference no)	2.61	[1.69, 4.04]	<0.001***

OR Odds Ratio, []=95% Confidence Intervals, *CHI-T* Cambridge–Chicago Compulsivity Trait Scale. Ns (non-significant) =<0.05 *=<0.05 **=<0.01 ***<0.001

ated with screening positive for problem gambling, while Perfectionism had a protective effect. Specifically, a one standard deviation increase in Reward Drive was associated with 41% higher odds of screening positive for problem gambling (OR = 1.41). In contrast, a one standard deviation increases in Perfectionism corresponded to 60% lower odds (OR = 0.60).

Post-estimation Diagnostics

For both models, sensitivity analyses using complete case data produced effect estimates.

consistent in direction and magnitude with those obtained from the multiple imputed datasets, with no substantive changes in statistical significance. VIF values (Model 1 VIF 1.02–2.04; Model 2 VIF (1.01–1.26) indicated no problematic multicollinearity, and FMI and RVI values were within acceptable ranges (Model 1 FMI 0.29, RVI 0.21; Model 2 FMI 0.29, RVI 0.22), suggesting that missing data did not materially influence the regression estimates.

Discussion

In this paper we describe the rates of positive screens for gambling problems (using the NODS-CLiP) in a UK South England University, and whether those screening positive reported different levels of financial stress. In two regression analyses, we investigated whether mental health conditions, addictive behaviours, and transdiagnostic factors were associated with gambling problems.

About 8% of the students in this study scored as at-risk for gambling problems. The actual rate of problem gambling could be lower in our sample, however, as some at-risk cases may be false positives, potentially yielding an estimate more in line with Zolkwer et al. (2022) who reported a rate of 6% in a South Wales university sample. This finding suggests that students at this university could be experiencing a high rate of gambling problems, which warrants further attention given previous evidence in the UK showing that problematic gambling in university students is more prevalent than in young adults not at university (0.8% reported by PHE, 2021).

It is important for UK gambling services and policymakers to be aware that approximately 8% of the student population may benefit from more detailed assessment for a gambling problem. It could be beneficial for gambling services to record and report referrals for university students, to more clearly understand the pathways students engage with for help with gambling. Furthermore, the association of gambling problems with financial difficulty in UK students as evidenced in this study and elsewhere (YGAM, 2025; Zolkwer et al., 2022) suggests that university financial services could benefit from staff training to identify and correctly refer students at risk of gambling problems. Furthermore, the association between suicidal behaviour and a positive screen for gambling problems in this group highlights the importance of identifying and addressing gambling risk and problems at universities. Longitudinal research could clarify whether suicide attempts are a consequence of gambling problems, a reflection of severe psychopathology with impulsivity in students who gamble, or both.

Male students were more likely than female students to screen positive for gambling problems, and students with non-white ethnicity had more than double the rates of meeting the gambling screening threshold. These findings suggest that targeted prevention and support strategies may be warranted, with particular attention to gender-specific risk factors and the unique needs of non-white students, to ensure that university services effectively address and mitigate gambling-related harm. Problem gambling positive screening rates peaked in the 22–25-year age group (11.8%) and then dropped to 5.4% in those students aged 26 and over. This is likely due to the characteristics of adult students who enter studies at a relatively older age, as this prevalence drop does not follow the expected rates of gam-

bling disorder across the lifespan, which are not expected to drop in this age group (Tran et al., 2024). Nevertheless, since our approach was cross sectional and we did not examine duration of study in this sample, longitudinal research could evaluate whether this prevalence drop is due to students with gambling problems dropping out of their studies, suicide, natural recovery over time, or a combination of these factors.

A positive screen for gambling problems in our student sample was moderately associated with restrictive eating symptoms, drug and alcohol use and problematic use of the internet. A stronger relationship between substance use and gambling than between common mental health issues and gambling was also reported in a Midwest US university sample by Grant et al. (2019). Alcohol use was only weakly significant potentially influenced by high social drinking in students generally masking the extent of a potential association of problematic alcohol use with gambling. This profile suggests that students with gambling problems are also likely to experience problems with other addictive behaviours. Student wellbeing services commonly use assessment and outcome tools that track common mental health issues and could be missing the identification of problems related to behavioural addictions. Grant et al. (2019) found no significant relationship with binge eating for gambling disorder in line with our results, but we were able to show that more restrictive patterns of eating are associated with screening positive for gambling problems.

Researchers in the field of behavioural addictions have suggested that that there may be common underlying factors driving addictive behaviours, accounting for why they often co-occur (e.g., Robbins & Clark, 2015; Fineberg et al., 2024). Impulsivity and compulsivity are widely considered transdiagnostic mechanisms underlying addictive behaviours. Early stages of addiction can be characterised by impulsive reward-seeking, whereas chronic addiction reflects compulsive, habit-driven behaviour maintained despite negative consequences (Robbins & Clark, 2015). We found that the transdiagnostic compulsivity factor of higher reward drive was associated with a positive screen for gambling problems, but that perfectionism was protective. Grant et al. (2019) found an association with gambling disorder and higher overall compulsivity but did not find an association with the at-risk group. Grant et al. (2019) did not examine the perfectionism and reward drive sub factors separately. As the NODS-CLiP identifies a wider range of at risk and people with problem gambling our finding supports the theory that reward drive can be central even to the early development of problem gambling in students. That perfectionism may also serve as a protective factor is a novel finding that warrants further research and highlights the utility of exploring the two constructs.

Restrictive eating was associated with a positive screen for gambling problems despite higher perfectionism, suggesting some forms of perfectionism may increase risk while others may be protective; alternatively, factors such as self-neglect may underlie this relationship.

Limitations

This study employed a cross-sectional design so that the findings do not imply causal or directional relationships. Recruiting from a single university limited generalizability across UK institutions with potentially diverse demographics and gaming cultures. Due to a small number of Black participants, categories were combined, potentially masking risk tendencies in this group. Self-report measures can potentially overestimate or underestimate prevalence. The NODS-CLiP is not a diagnostic instrument but a screening tool, and as discussed earlier identifies at-risk as well as problem gambling. A limitation is that the tool was

designed to identify DSM-IV pathological gambling rather than DSM-5 gambling disorder, though the criteria remained fairly similar across diagnostic manual versions. Although we had a large overall sample size adequate for the analysis undertaken there is always the possibility of selective biases linked to the participants willing to take part in the study. The study team's recruitment strategy aimed to enhance inclusivity to mitigate this. Nevertheless, the findings should be replicated across more universities in the UK, ideally embedded within multi-site mental health surveys.

Conclusion

We identified 8% of this UK student population as having screened positive for gambling problems. The findings of this study highlight the importance of exploring high rates of gambling problems in university students, particularly in light of the association between gambling problems and lower financial wellbeing plus suicide attempts. These students may experience problematic behavioural patterns that can also include other challenges such as restrictive eating, substance use, and problematic internet use.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s10899-026-10534-y.

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Data Availability Data supporting the findings of this study are available from the corresponding author upon reasonable request.

Declarations

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Competing Interests There are no other competing interests.

Ethics Statement Ethical approval was obtained from University of Southampton Faculty of Medicine Ethics Board (73178). This study was conducted in accordance with relevant institutional guidelines and regulations at all sites. Participants received an information sheet and were required to provide informed consent before completing the survey; within the consent form participants agreed for their anonymized data to be published.

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