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## Research Article

# Gambling Prevalence and Factors Associated with Gambling Participation among University Students in Uganda

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This paper examines the prevalence of gambling for gain among university students and aims to gain a theory-based understanding and knowledge of the influencing factors of this gambling behaviour based on the University Student Psychosocial Problems Development Theory (USPPDT). Relatively little is known about the factors associated with students' gambling for financial gain, encompassing a student's biosocial/cultural and psycho characteristics informed by a theory. Participants were recruited from two public and three private universities in Uganda. A total of 1101 randomly selected students participated in the study, and 976 (88.6%) completed the survey instruments. The self-reported current prevalence of gambling participation was 281 (28.8%) among university students ( $\geq 19$  years). In agreement with the theory and findings from the study, student demographic characteristics, study program characteristics, student-related health burden characteristics, psychosocial functioning, and antisocial behaviour items were particularly predictive of students' participation in gambling for financial gain. These risk factors for gambling are not presumed to be causation; identifying them points to important implications in terms of prevention and intervention on student gambling behaviour. This points to a considered interplay of different players in designing transversal strategies for a student at risk for gambling.

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## Introduction

### *Contextualizing Gambling in Uganda*

Gambling among the youth in Uganda has increasingly become popular because it is perceived as a platform that has the potential to bring effortless quick cash.

Fifty-seven percent (57%) of Ugandan youth between 17-35 years are reported to have participated in gambling; ranking second to Kenya and being above South Africa, Ghana, Nigeria, and Tanzania among African nations<sup>[1]</sup>. The Uganda Human Rights Commission 20th Annual Report, 2017<sup>[2]</sup> has described the Ugandan situation in the following words:

"In every town in Uganda, awash with sports betting houses packed to capacity

with idle youth, trying out their luck on a game of chance throughout the day. The youth are gambling away their toil, time, resources, and future on games of chance while business owners and the government continue to reap more from profits and taxes, respectively” (p. 66).

Literature has identified a variety of indigenous gaming and betting activities pre-dating the recent gambling forms across Africa. These forms of gambling are associated with the cultural variation in local gambling options, accessibility, and participation<sup>[3][4]</sup>.

The common rendering of the term gambling in the central region of Uganda is “zaala,” literally capturing the proverbial intent of “multiplying something,” or “bringing forth” from the game. “Zaala” is a derogatory term no one would like to be associated with, indicating that the perception of gambling in Uganda is fairly negative from a cross-section of the people. Today, gamblers in Uganda use the term betting, which is milder and more tolerable to the level of characterizing it as a mere game.

Presently, gambling takes place around the clock under different forms: playing cards, sports betting, casino gambling, lotteries/play lotto, slot machines, betting on animals (e.g., horse and dog racing), gaming, online betting, scratch cards and pool betting, virtual soccer, board games, etc.<sup>[5][2]</sup>.

Gambling has been abhorred and considered unacceptable by the community and individual homesteads. This is because, whatever the category of gambling, it is highly associated with far-reaching negative implications at the individual, family, community, and societal levels<sup>[6][7][5]</sup> as well as for cultural and religious considerations. Monotheistic religious beliefs tend to disapprove of gambling<sup>[8]</sup>. Those who endorse it consider monetary reasons, as an option for leisure activities, and as a source of livelihood and/or to escape poverty<sup>[9][10]</sup>.

Nevertheless, in light of technological advancements, the introduction of new modes of gambling, the associated increased national revenue base and job creation, and the extensive availability, advertising, and sanctioning of legalized gambling, the gambling industry has seen unprecedented expansion<sup>[4][2][11]</sup>. Most spectacular is the sheer number of persons, particularly the youth, who spend all their waking time and their meager resources gambling in sports betting houses, which is a cause of concern in the fields of public health, addictions, and security<sup>[5][2]</sup>.

Unfortunately, it has been observed that younger people who get involved in gambling with a low level of knowledge about the risks associated with gambling and ludomania tend to have a limited understanding of the difference between chance, luck, and probability and can therefore be vulnerable to problem gambling<sup>[12]</sup>.

### *Prevalence of Gambling among College Students*

Researchers report gambling as a prevalent behaviour among students<sup>[13][14][15][16][17][18][19]</sup>.

Akinloyan<sup>[13]</sup> indicated that 67.5% of the students at Crawford University, Ogun State (Southwestern Nigeria), who ever gambled, similarly, Koross<sup>[20]</sup> reported 78% among Kenyan university students, and 32.3–50% of students found in Macau studies (e.g., Kam et al.<sup>[16]</sup>; Wu et al.<sup>[18]</sup>) ever gambled. A report by Stuhldreher et al.<sup>[21]</sup> depicted that 67%–76% of college students have gambled in their lifetime, and Ellenbogen, Jacobs, Derevensky, Gupta, and Paskus<sup>[22]</sup> noted that 55% (males 62.4%, females 42.8%) of the sample among U.S. college student-athletes reported gambling during the past. Ackerman and Piper<sup>[23]</sup> reported that nearly 25% of college students gambled at least once a week. In another study, Oster and Knapp<sup>[24]</sup> stated that about 33% of male college students and about 15% of female students gambled at least once a week. Moreover, Seifried, Krenzelok, Turner, and Brett<sup>[19]</sup> have stated that gambling occurs much more on college campuses than most recognize. Despite the overall number of students identified as participating in gambling, this is the most prevalent student behaviour receiving inappropriate attention from the public and institutions of learning<sup>[25][26][27]</sup>.

### **Problem Statement**

Studies in Uganda on gambling mainly draw on the general population, including youth and adults, and rarely focus on university students<sup>[28][6][5][29]</sup>. This observation has been previously noted elsewhere by Shaffer and Hall<sup>[30]</sup> who, looking at 139 gambling studies, found that only 19 focused on the college student population. Given a noticeable change in the psychosocial environment of universities, such as the increasing numbers of campuses and the student population<sup>[31]</sup>, gambling prevalence is expected to rise from various angles within the Uganda campus infrastructure. Research on students’ participation in gambling has established a complex connection

between money and gambling<sup>[32][15]</sup>, where gaining money is also a primary motivator for gambling<sup>[5][33]</sup> <sup>[34]</sup> apart from taking it as an acceptable recreational activity<sup>[35][20]</sup>. Other researchers, including Zalaznick<sup>[32]</sup>, Diehr et al.<sup>[36]</sup>, Macharia<sup>[37]</sup>, and Koross<sup>[20]</sup> have noted that some students are on loans or incur debt to fund their gambling habits and that some end up gambling away college tuition fees. Despite the inextricable connection between money and gambling, there is a dearth of empirical studies examining a theory-based understanding and knowledge of the influencing factors of students participating in gambling for financial gain.

The available research on college student gambling worldwide has concentrated on correlates based on the realm of anecdotal evidence<sup>[38]</sup>. Other researchers, Griffiths and Delfabbro<sup>[39]</sup> have noted that gambling research has been solely confined to narrow areas of singular theoretical perspectives with an assumption that a single explanation or theory can address every aspect of gambling behaviour, and that outside this perspective, it is misguided research. Existing theories informing gambling have been found to have limitations when compared to three increasingly specific levels of analysis in gambling behaviour: social, psychological, and biological. Mutually exclusive theories and adherence to singular perspectives have been labelled as untenable today in gambling research<sup>[39]</sup>.

In this context, the present study aims to establish the prevalence and influencing factors for university students' participation in gambling for financial gain based on the variables within the University Student Psychosocial Problems Development Theory (USPPDT)<sup>[40]</sup> that provide parsimonious and testable assumptions of the study perspectives.

These perspectives underlying the theory offer a combination of different levels of possible analysis, including psychological, biological, and social, creating an inclusive perspective that goes beyond just sociological, situational, and demographic factors<sup>[39]</sup> to explain why some people are more likely to gamble than others, which are commonly used in gambling studies.

Addressing the existing information and research gaps is important in terms of gaining a theory-based understanding and knowledge of the influencing factors of students participating in gambling for financial gain to assist in designing effective preventive

and treatment programs generated from a biopsychological approach.

The study addressed the following questions to predict students' participation in gambling.

1. Do different student demographic characteristics predict students' participation in gambling?
2. Do different study program characteristics predict students' participation in gambling?
3. Do student health-related burdens predict student participation in gambling?
4. Does students' psychosocial functioning predict student participation in gambling?
5. Do different types of antisocial behaviour predict participation in gambling?

## Methods

### *Study design and participants*

The study employed a descriptive, cross-sectional survey technique based on quantitative methodology designed to gather basic facts about the prevalence and factors related to gambling participation for financial gain among undergraduate students from five universities in Uganda. The universities selected for the study were based on having been registered and licensed with the National Council of Higher Education (NCHE university charter) and were thus officially recognized as institutions of higher learning in Uganda. They had to have been operational by the year 2002 as per their dates of commencement. The universities were randomly selected, listed, and categorized into two public and three private universities. A total of 1101 students from 5 schools/faculties of each university were randomly selected using multi-stage cluster random sampling. The study recruited students who had accepted the invitation orally passed over by the research assistants during their lectures with the permission of the different course lecturers. Research assistants who had been trained administered the paper and pencil questionnaires. They explained the objectives of the study to the students and assured them that all information was anonymous, and the issues of voluntary consent, benefits, risks, and viable resources to address potential risks for participation were communicated to the students before the exercise took off. No incentive was given for participating in the study. Nine hundred seventy-six (88.6%) respondents completed the survey instruments. One hundred twenty-five (11.4%) of the questionnaires were excluded for providing insufficient/incomplete data for analysis.

## Measures

### *Factors related to gambling participation*

(a) *Student demographic characteristics, study program characteristics, and the student-related health burden characteristics*

Participants completed a brief demographics questionnaire prepared by the author to capture student demographic characteristics, study program characteristics, and student-related health burden characteristics, which were dichotomized (yes/no), and others were categorical for the analysis (Table 1). The student demographic characteristics included gender, age, religious affiliation, nationality, marital status, parent's income level support, and whether living with parents or not.

The study program characteristics included university students' residence location, program of study, years in university, and education (tuition) sponsorship/funding.

The student health-related burden included any chronic medical condition, previous mental health problems, and one's perception of their individual health.

(b) *Psychosocial functioning.*

Psychosocial functioning was assessed using the University Students Evaluation of Psychosocial Problems (USEPP) scale<sup>[41]</sup>. The items assessed included emotional status, academic status, and traumatic status. They were dichotomized (yes/no). The items yielded  $\alpha = 0.77$ .

(c) *Antisocial behavior items*

Antisocial behaviour items were selected from the USEPP and contained the following four items with an internal consistency of  $\alpha = 0.72$ .

1. Involvement in behaviors one should be ashamed of if they became public.
2. Taking sexual advantage of others.
3. Uncontrolled drinking of alcohol.
4. Involvement in one way or the other in academic malpractice.

All these factors (a-c) were selected as the independent variables of study interest.

The USEPP<sup>[41]</sup> has 17 items and was validated against the Hopkins Symptom Check List (HSCL-10) in non-clinical settings. The scale has an internal consistency of 0.81 as measured by Cronbach's alpha, a sensitivity of 99.3%, and a specificity of 99.6% in determining psychological distress. The 17-item USEPP measures

four dimensions of psychosocial problems which form its subscales. They are: Emotional Problems-5 items, ( $\alpha = .70$ ), Traumatic Experiences- 4 items, ( $\alpha = .60$ ), Antisocial Behaviour-5 items ( $\alpha = .73$ ), and Academic Problems-3 items ( $\alpha = .63$ ). Each item in the subscale is rated on a scale from 0 (not at all) to 3 (strongly agree). The USEPP is self-administered. An individual is asked to indicate his/her level of agreement with the items that are current concerns to him/her. The total score has a suggested threshold/cutoff of 18 or higher (in the possible score range of 0-51) to indicate elevated psychosocial status.

### *Gambling participation*

Gambling participation for financial gains status was established by a single item on the University Students Evaluation of Psychosocial Problems (USEPP) scale: "I engage in gambling/betting for financial gain" as antisocial behaviour among university students. The responses were dichotomized into no and yes to capture current non-gambling and gambling respondents. Gambling participation for financial gain status was the dependent variable for the analyses and is synonymously referred to as gambling participation in the study.

## Data Analysis

Binary logistic regression was used in the study because the dependent variable, gambling status, is dichotomous. Descriptive analysis, via cross-tabulations, was computed to estimate the prevalence of participation in gambling among all the respondents. Significant correlates of gambling were identified by chi-square tests.  $p$ -values were obtained to decide whether there was a relationship between scores on individual independent variables and the dependent variable of gambling participation.

Binary logistic regression was then performed separately for all identified significant independent variables to test the unique contribution of one specific variable at a time with respect to modelling gambling participation status and estimating the strength of the effect via odds ratios.

The level of significance was set at 5% throughout the study. All analyses were performed using IBM Statistics SPSS software Version 20.0 (IBM Corporation 1989, 2011).

## Results

### *Prevalence of participation in gambling*

Out of the 976 respondents furnishing complete data sets, 281 (28.8%) self-reported as presently participating in gambling for financial gains. This value is, as one might suspect from the literature review, higher than rates reported for the general population.

Table 1 summarizes the results for the selected factors that were evaluated for a potential relationship to gambling participation status, two of which resulted in statistically significant relationships ( $p < .05$ ). Specifically, the only two variables found not to be related to gambling participation status were: (a) nationality (Ugandan vs. other)  $\chi^2 (1, N = 976) = 1.20, p = .229$ ; and (b) living with parents (yes/no)  $\chi^2 (1, N = 976) = 0.02, p = .896$ .

### *Student demographic characteristics*

For all the items under the student demographic characteristics (Table 1), gender, age, religious affiliation, marital status, and parents' income level all showed statistically significant relationships ( $p < .05$ ) with gambling participation status.

### *Study program characteristics*

For all the items under the study program characteristics, i.e., university residence location,

program of study, years in university, and education sponsorship, statistically significant relationships ( $p < .05$ ) with gambling participation were obtained (Table 1).

### *Student health-related burden characteristics*

For each measure of the student health-related burden characteristics, i.e., any chronic medical condition, previous mental health problem, and perception of individual health (Table 1), statistically significant relationships ( $p < .05$ ) with gambling participation status were found.

### *Psychosocial functioning*

The measures of psychosocial functioning, namely emotional status, academic status, and traumatic status, were significantly different ( $p < .05$ ) between non-participation and participation in gambling.

### *Antisocial behavior*

The measures of antisocial behavior, namely: involvement in behaviors one should be ashamed of if they became public; taking sexual advantage of others; uncontrolled drinking of alcohol; and involvement in academic malpractice (Table 1), were all observed to yield significant relationships ( $p < .05$ ) with gambling participation.

Variables	N	Non-participation, n (%)	Participation, n (%)	$\chi^2$	df	p-value
All respondents	976	695 (71.2%)	281 (28.8%)			
<b>STUDENT DEMOGRAPHIC CHARACTERISTICS</b>						
Gender				8.92	1	.003*
Male	472	315 (66.7)	157 (33.3)			
Female	504	380 (75.4)	124 (24.6)			
Age				29.33	3	<.001*
19-23	714	529 (74.1)	185(25.9)			
24-28	208	144 (69.4)	64 (30.6)			
29-33	34	13 (37.1)	21 (62.9)			
≥ 34	18	8 (44.5)	10 (55.5)			
Religious affiliation				22.70	4	<.001*
Muslim	217	128 (59.0)	89 (41.0)			
Protestant	272	197 (72.4)	75 (27.6)			
Catholic	281	208 (74.0)	73 (26.0)			
Born age/Pentecostal	190	149 (78.4)	41 (21.6)			
Other	16	13 (81.2)	33 (18.8)			
Nationality				1.20	1	.229
Ugandan	916	656 (71.6)	260 (28.4)			
Other	60	39 (65.0)	21 (35.0)			
Marital status				11.32	2	.003*
Single	856	624 (72.9)	232 (27.1)			
Married	94	53 (56.4)	41 (43.6)			
Others	26	18 (69.2)	8 (30.8)			
Living with parents				0.02	1	.896
Yes	656	468 (71.3)	188 (28.7)			
No	320	227 (70.9)	93 (29.1)			
Income of parents to sponsor a student				20.46	2	<.001*
Yes	311	227 (73.0)	84 (27.0)			
Yes, but with difficulty	495	371 (74.9)	124 (25.1)			
Not able	170	97 (57.1)	73 (42.9)			
<b>STUDY PROGRAM CHARACTERISTICS</b>						
University residence location				48.97	2	<.001*
On-campus	298	167 (56.0)	131 (44.0)			
Off-campus hostel	565	436 (77.2)	129 (22.8)			
Other	113	92 (81.4)	21 (18.6)			

Variables	N	Non-participation, n (%)	Participation, n (%)	$\chi^2$	df	P-value
Study program				65.44	2	<.001*
Day	697	446 (64.0)	251 (36.0)			
Weekend	229	199 (86.9)	30 (13.1)			
Evening	50	50 (100.0)	0 (0)			
Years in university				52.23	4	<.001*
1 <sup>st</sup>	137	70 (51.1)	67 (48.9)			
2 <sup>nd</sup>	412	288 (69.9)	124 (30.1)			
3 <sup>rd</sup>	399	323 (81.0)	76 (19.0)			
4 <sup>th</sup>	21	10 (47.7)	11 (52.3)			
5 <sup>th</sup>	7	4 (57.2)	3 (42.8)			
Education (tuition) sponsorship/funding	53.38	3	<.001*			
Parents	595	450 (75.6)	145 (24.4)			
Relative	200	115 (57.4)	85 (42.5)			
Government	87	46 (52.9)	41 (47.1)			
Other	94	84 (89.4)	10 (10.6)			
<b>STUDENT HEALTH-RELATED BURDEN CHARACTERISTICS</b>						
Any chronic medical condition	22.02	1	<.001*			
Yes	144	79 (54.9)	65 (45.1)			
No	832	616 (74.1)	216 (25.9)			
Previous mental health problem	22.40	1	<.001*			
Yes	64	29 (45.4)	35 (54.6)			
No	912	666 (72.8)	246 (27.2)			
Perception of individual health				34.44	1	<.001*
Poor/fair	301	176 (58.5)	125 (41.5)			
Good/Excellent	675	519 (76.9)	156 (23.1)			
<b>PSYCHOSOCIAL FUNCTIONING</b>						
Emotional status				18.72	1	<.001*
Negative emotional status	635	423 (66.6)	212 (33.4)			
Positive status	341	272 (79.8)	69 (20.2)			
Academic status				18.72	1	.018*
No academic problem	607	416 (68.5)	191 (31.5)			
Presences of academic problems	369	279 (75.6)	90 (24.4)			
Traumatic status				44.80	1	<.001*
Negative status	499	308 (61.7)	191 (38.3)			
Positive status	477	387 (81.1)	90 (18.9)			

Variables	N	Non-participation, n (%)	Participation, n (%)	$\chi^2$	df	p-value
<b>ANTISOCIAL BEHAVIOUR</b>						
Involvement in behaviors one should be ashamed of if they became public	103.28	1	<.001*			
Yes	327	165 (50.5)	162 (49.5)			
No	649	530 (81.6)	119 (18.4)			
Taking sexual advantage of others	157.67	1	<.001*			
Yes	236	92 (39.0)	144 (61.0)			
No	740	603 (81.4)	137 (18.6)			
Uncontrolled drinking of alcohol	102.62	1	<.001*			
Yes	204	87 (42.7)	117 (57.3)			
No	772	608 (78.8)	164 (21.2)			
Involvement in one way or the other in academic malpractice	101.05	1	<.001*			
Yes	195	82 (42.0)	113 (57.9)			
No	781	613 (78.4)	168 (21.6)			

**Table 1.** Prevalence of Gambling and Variables Tested for Relationship to Gambling Participation

*P* values are from chi-square tests of independence for comparing participation in gambling by predictor.

### *Bivariate analysis of influence factors of participation in gambling*

Bivariate analysis (Table 2) shows the contribution of each specific variable (“factor”), individually, towards predicting gambling participation and how strong the observed effect is. This was computed by separate logistic regression to yield the unadjusted or crude Odds Ratios for each of the independent variables with gambling status as the dependent variable.

### *Do different student demographic characteristics predict students’ participation in gambling?*

Assessing the univariate predictors using binary logistic regression of participation in gambling under the student demographic characteristics (Table 2), the results indicate that gender, age, religious affiliation,

marital status, and income of parents to sponsor a student were associated with participation in gambling. The gender predictor suggests that male students were 1.53 times more likely to participate in gambling compared with female students (OR (odds ratio) = 1.53, 95% CI =1.16-2.02,  $p$  =.003). The students in the age group of 29-33 were 4.84 times more likely to participate in gambling than the age group of 19-23 (OR = 4.84, 95% CI = 2.39–9.80,  $p$  <.001), while the age group of  $\geq 34$  was 3.57 times more likely to participate in gambling than those in the age group of 19-23 (OR = 3.57, 95% CI = 1.39–9.19,  $p$  =.008). The religious predictor suggests that Muslims (OR = 0.55; 95% CI =0.38-0.80;  $p$  <.002), Protestants (OR = 0.51; 95% CI =0.35-0.74;  $p$  <.001), Catholics (OR = 0.40; 95% CI =0.26-0.61;  $p$  <.001) were less likely to participate in gambling) compared to those in the category of others. Those who were married were 2.08 times more likely to participate in gambling than those who were single (OR=2.08, 95% CI = 1.35–3.21,  $p$ <.001). Those students whose parents’ income level is not able to sponsor a student were 2.03



times more likely to participate in gambling than those whose parents' income was able to (OR = 2.03, 95% CI = 1.372-3.01,  $p < .001$ ).

### *Do different study program characteristics predict students' participation in gambling?*

The binary logistic regression analyses showed that the variables of university residence location, program of study, and education sponsorship (Table 2) were significantly associated with participation in gambling.

Respondents whose residence was located on campus were 3.44 times more likely to participate in gambling than those at other locations (OR = 3.44, 95% CI = 2.03-5.82,  $p < .001$ ). Those who attended the day program of study were 3.73 times more likely to participate in gambling than those attending the evening program of study (OR = 3.73, 95% CI = 2.47-5.65,  $p < .001$ ). Finally, those whose tuition was paid by parents were 2.71 times (OR = 2.71, 95% CI = 1.37-5.35,  $p < .004$ ), a relative were 6.21 times (OR = 6.21, 95% CI = 3.04 -12.7,  $p < .001$ ), paid by the government were 7.49 times (OR = 7.49, 95% CI = 3.44 - 16.3,  $p < .001$ ), more likely to participate in gambling compared to those whose tuition was got from other sources.

### *Do student health-related burdens predict student participation in gambling?*

The binary logistic regression analyses (Table 2) showed that all three measures of the student health-related burden, namely, any medical health condition, previous mental health condition, and perception of individual health, were significantly associated with participation in gambling.

Assessing the univariate predictors using binary logistic regression of participation in gambling under the student health-related burden characteristics, (Table 2), the results indicate that students who had any chronic medical condition were 2.35 times more likely to participate in gambling than those who did not have the condition (OR = 2.35, 95% CI = 1.63-3.37,  $p < .001$ ). Those who had previous mental health problems were 3.27 times more likely to participate in gambling than those who did not (OR = 3.27, 95% CI = 1.96-5.46,  $p < .001$ ).

Those who indicated a poor/fair perception of individual health were 2.36 times more likely to participate in gambling than those who perceived individual health as good/excellent (OR = 2.36, 95% CI = 1.96-5.46,  $p < .001$ ).

### *Does students' psychosocial functioning predict student participation in gambling?*

The binary logistic regression analyses (Table 2) showed that each of the measures of psychosocial functioning, namely emotional status, academic status, and traumatic status, was significantly associated with student participation in gambling.

Students reporting a negative emotional status were 1.98 times more likely to participate in gambling than those who reported a positive emotional status (OR = 1.98, 95% CI = 1.45-2.70,  $p < .001$ ). Those who indicated that they had no academic problems were 1.42 times more likely to participate in gambling than those who had academic problems (OR = 1.42, 95% CI = 1.06-1.91;  $p = .018$ ). Those reporting having had negative traumatic experiences were 2.67 times more likely to participate in gambling than those who did not (OR = 2.67, 95% CI = 1.99-3.57,  $p < .001$ ).

### *Do different types of antisocial behaviour predict participation in gambling?*

The binary logistic regression analyses showed that two of the measures of antisocial behaviour, namely: involvement in behaviours one should be ashamed of if they became public and taking sexual advantage of others (Table 2), were significantly associated with student participation in gambling.

The students who were involved in behaviours one should be ashamed of if they became public were 1.68 times more likely to participate in gambling than those who were not involved in such behaviours (OR = 1.68, 95% CI = 1.23-2.29,  $p < .001$ ). Those who were taking sexual advantage of others were 1.92 times more likely to participate in gambling than those who were not taking sexual advantage of others (OR = 1.92, 95% CI = 1.35-2.75,  $p < .001$ ).

Variables	N	Non-participation, n (%)	Participation, n (%)	df	p-value	OR	CI 95%
All respondents	976	695 (71.2%)	281 (28.8%)				
<b>Student demographic characteristics</b>							
Gender							
Male	472	315 (66.7)	157 (33.3)	1	0.003	1.53	1.16 – 2.02*
Female	504	380 (75.4)	124 (24.6)	1		<b>Referent</b>	
Age							
19–23	714	529 (74.1)	185(25.9)	3		<b>Referent</b>	
29–33	34	13 (37.1)	21 (62.9)	1	0.001	4.84	2.39– 9.80**
≥ 34	20	8 (40.0)	11 (55.0)	1	0.008	3.57	1.39– 9.19**
Religious affiliation							
Muslim	217	128 (59.0)	89 (41.0)	1	0.002	0.548	0.38 – 0.80*
Protestant	272	197 (72.4)	75 (27.6)	1	0.001	0.505	0.35 – 0.74*
Catholic	281	208 (74.0)	73 (26.0)	1	0.001	0.396	0.26 – 0.61*
Born again	190	149 (78.4)	41 (21.6)	1	0.092	0.332	0.92 – 1.20
Other	16	13 (81.2)	33 (18.8)	1		<b>Referent</b>	
Marital status							
Single	856	624 (72.9)	232 (27.1)	2		<b>Referent</b>	
Married	94	53 (56.4)	41 (43.6)	1	0.001	2.08	1.347 – 3.21*
Others	26	18 (69.2)	8 (30.8)	1	0.679	1.95	0.513 – 2.79
Income of parents to sponsor a student							
Yes	311	227 (73)	84 (27)	2		<b>Referent</b>	
Yes, but with difficulty	495	371 (74.9)	124 (25.1)	1	0.536	0.90	0.65 – 1.25
Not able	170	97 (57.1)	73 (42.9)	1	0.001	2.03	1.37–3.01*
<b>Study program characteristics</b>							
University residence location							
On-campus	298	167 (56)	131 (44.0)	2	0.001	3.44	2.03 – 5.82*
Off-campus hostel	565	436 (77.2)	129 (22.8)	1	0.322	1.30	0.78 – 2.17

Variables	N	Non-participation, n (%)	Participation, n (%)	df	p-value	OR	CI 95%
Other	113	92 (81.4)	21 (18.6)	2		Referent	
Study program							
Day	697	446 (64)	251 (36)	1	0.001	3.73	2.47–5.65*
Weekend	229	199 (86.9)	30 (13.1)	1	0.997	.000	
Evening	50	50 (100)	0 (0)	2		Referent	
Years in university							
1 <sup>st</sup>	137	70 (51.1)	67 (48.9)	4		Referent	
2 <sup>nd</sup>	412	288 (70)	124 (30)	1	0.755	1.28	0.28 – 5.92
3 <sup>rd</sup>	399	323 (81)	76 (19)	1	0.472	0.57	0.13 – 2.60
4 <sup>th</sup>	21	10 (47.7)	11 (52.3)	1	0.134	0.31	0.07 – 1.43
5 <sup>th</sup>	7	4 (57.2)	3 (42.8)	1	0.663	1.47	0.26 – 8.23
Education (tuition) sponsorship/funding							
Parents	595	450 (75.6)	145 (24.4)	3	0.004	2.71	1.37 – 5.35*
Relative	200	115 (57.4)	85 (42.5)	1	0.001	6.21	3.04 – 12.7*
Government	87	46 (52.9)	41 (47.1)	1	0.001	7.49	3.44 – 16.3*
Other	94	84 (89.4)	10 (10.6)	1		Referent	
<b>Student health-related burden characteristics</b>							
Any chronic medical condition							
Yes	144	79 (55)	65 (45)	1	0.001	2.35	1.63–3.37*
No	832	616 (74.1)	216 (25.9)	1		Referent	
Previous mental health problem							
Yes	64	29 (45.4)	35 (54.6)	1	0.001	3.27	1.96–5.46*
No	912	666 (73)	246 (27)	1		Referent	
Perception of individual health							
Poor/fair	301	176 (58.5)	125 (41.5)	1	0.001	2.36	1.96–5.46*
Good/Excellent	675	519 (77)	156 (23)	1		Referent	
<b>Psychosocial functioning</b>							
Emotional status							
Negative emotional status	635	423 (66.6)	212 (33.4)	1	0.001	1.98	1.45–2.70*

Variables	N	Non-participation, n (%)	Participation, n (%)	df	p-value	OR	CI 95%
Positive status	341	272 (79.8)	69 (20.2)	1		Referent	
Academic status							
No academic problem	607	416 (68.5)	191 (31.5)	1	0.018	1.42	1.06-1.91*
Presence of academic problems	369	279 (75.6)	90 (24.4)	1		Referent	
Traumatic status							
Negative status	499	308 (61.7)	191 (38.3)	1	0.001	2.67	1.99-3.57*
Positive status	477	387 (81.1)	90 (18.9)	1		Referent	
<b>ANTISOCIAL BEHAVIOUR</b>							
Yes	327	165 (50.5)	162 (49.5)	1	0.001	1.68	1.23-2.29*
No	649	530 (81.6)	119 (18.4)	1		Referent	
Taking sexual advantage of others							
Yes	236	92 (39.0)	144 (61.0)	1	0.001	1.92	1.35 - 2.75*
No	740	603 (81.4)	137 (18.6)	1		Referent	
Uncontrolled drinking of alcohol							
Yes	204	87 (42.7)	117 (57.3)	1	0.636	1.09	0.78-1.53
No	772	608 (78.8)	164 (21.2)	1		Referent	
Involvement in one way or the other in academic malpractice							
Yes	195	82 (42.0)	113 (58.0)	1	0.278	1.22	0.85 -1.74
No	781	613 (78.4)	168 (21.6)	1		Referent	

**Table 2.** Results of binary logistic regression of influence factors of participation in gambling

OR odds ratio, CI confidence interval

\* Significant ORs

## Discussion

The study was designed to establish the prevalence and to gain a theory-based understanding and knowledge of the factors associated with gambling participation for financial gain among university students.

The self-reported prevalence of gambling participation for financial gain was 281 (28.8%) among university students ( $\geq 19$  years).

With regard to student demographic characteristics predicting students' participation in gambling for financial gain, we found that males were at increased odds of participating in gambling than their female

counterparts, supporting results from previous studies<sup>[25][13][16][20][42][21]</sup>.

The study also confirmed that out of the 281 students identified as participating in gambling, the age group 19–23 had the majority of students who gambled, 185 (65.8%). Like other studies<sup>[13]</sup> on university students, the age group 20–24 had the majority of students (65.4%) who gambled, and Köksoy Vayisoğlu, Öncü, and Güven<sup>[43]</sup> reported that 41.4% of the students who were between 18 and 21 years old have gambled at least once in their life. The predominance of the observed age group (18–24) in gambling can be explained as still being in a period of undergoing self-exploration and experimentation, often in newfound independence, taking advantage to enjoy many opportunities even if lacking social capital with respect to risk in potentially damaging behaviours like gambling<sup>[36][44]</sup>.

On religious affiliation, the study adds a contribution to the literature as it has been noted that the role of religious affiliation with gambling has been rarely investigated, and more so among students<sup>[45][46]</sup>. The findings indicated, like previous studies by Ghandour and El Sayed<sup>[46]</sup> and Welte, et al.<sup>[45]</sup> that religion as a cognitive construct (individual belonging to a religious faith), contrary to the behaviour measure of religiosity, was a significant predictor of participating in gambling. The adherents to the Muslim religion (41.0%) participated in gambling more than any members of the different religions. This finding is different from other studies that found participation in gambling was least prevalent among Muslims<sup>[47][13]</sup>. Being Muslim, Protestant, or Catholic did not translate into increased odds of gambling participation, making a distinction between religious faith and behavioural measures of religiosity of an individual. This is a similar observation noted by earlier studies<sup>[46][47]</sup>. This result may allude to the religiosity of the students, which was not directly tested in the study. Studies on behavioural measures of religiosity, like the practice of faith, being religious, for instance, and gambling, were protective factors against involvement in gambling<sup>[48][49]</sup>.

In terms of marital status, overall, our findings are different from previous research. In the current study, it has been observed that married students gambled more. This is a surprising finding, as most literature suggests the opposite. Earlier research noted that single people gambled more<sup>[50][43][20][51][52][53][54]</sup>.

The finding that the students whose parents' income was not able to sponsor them at university were associated with participation in gambling matches

previous findings of Soteriades and DiFranza<sup>[55]</sup>, Gibbs Van Brunschot<sup>[56]</sup>, Legleye et al.<sup>[57]</sup> and Zolkwer et al.<sup>[14]</sup> who noted that parents' low socioeconomic status (SES), coming from a financially weak/unstable background, is correlated with adolescents' involvement in gambling as a way to overcome poverty, relieve financial stress, and gain respect at all costs. The Young Gamers and Gamblers Education Trust<sup>[33]</sup> noted that making money was the most common motive for gambling among university students. Macharia<sup>[37]</sup> suggested that there are students who expect to make quick money, overcome poverty, and financial difficulties, and end up gambling away college tuition fees. Yet, as Gibbs Van Brunschot<sup>[56]</sup> noted, the students involved in gambling expose themselves to potential loss or gain.

On our second question exploring the different study program characteristics predicting students' participation in gambling, students whose residence was located on campus were found to be at greater risk of gambling than students who lived at other locations. The findings from the current study are consistent with a previous study by Acheampong, Sarpong, and Mahamah<sup>[58]</sup>. This could be supported by the observations of Seifried, Kren-zelok, Turner, and Brett<sup>[19]</sup> and Yuan, Yuan, and Janes<sup>[59]</sup>, that at the university campus and most probably, the neighborhood centres, gambling opportunities may be more available.

Those who attended the day program of study were more involved in gambling than those attending other programs. Literature examining these characteristics in gambling research among students is sparse, suggesting that most researchers did not measure those factors. Bell and Boldero<sup>[60]</sup> noted that the most commonly researched demographic characteristics studied among students who gamble include marital status, ethnicity, age, attendance, college/university, socioeconomic levels, unemployment, and sex. The characteristics in this study add to the literature about the inclusiveness of the issues that surround a student and make them privy to risky behaviours like gambling.

Our study indicates that students whose tuition was paid by parents, a relative, or the government were more likely to participate in gambling compared to those whose tuition was from other sources. This finding indicates that the students in this category have access to money from readily available resources that can increase their chances of engaging in gambling, as observed in other studies<sup>[58][32][50][43][61]</sup>. It may also

include different reasons like additional financial rewards, seeking entertainment, killing time, being perceived as a normal leisure activity, socialization, boredom relief, and peer influence, unlike those whose main aim is to make money due to financial difficulties<sup>[62][16][20][56][63]</sup>.

Regarding our third research aim on health-related burdens predicting student participation in gambling, the results indicate that students who had any chronic medical condition and a poor/fair perception of their individual health participated in gambling more than those who did not have such conditions. This revealed that having a low perceived health status was significantly associated with gambling compared to those who felt physically healthy. This observation is similar to a study by Räsänen, Lintonen, Tolvanen, & Konu<sup>[64]</sup> who concluded that overall poor health and risk-taking predicted increased gambling.

Having previous mental health problems was significantly more predictive of participation in gambling than those who did not. This observation is similar to the finding of Stuhldreher, Stuhldreher, and Forrest<sup>[21]</sup> who documented compromised mental health dispositions with gambling among undergraduates.

On students' psychosocial functioning predicting student participation, our study indicates that students who reported a negative emotional status, had no academic problems, and had negative traumatic experiences outcomes were significantly associated with participation in gambling, emphasizing that these are not psychosocial risk variables. This finding is partly similar to the findings of Köksoy Vayisoğlu, Öncü, and Güven<sup>[43]</sup> who established that university students who were not diagnosed with a psychological problem (n =180, 53.3% of 338) participated in gambling more than those who had the problem. The significant difference in the results can be stated as most studies on gambling employed a gambling variable-oriented approach as a predictor to explain the outcome variables associated with mental health problems and reported compromised psychological states like rates of anxiety, depression, low self-esteem, delinquency, and substance use for those in gambling<sup>[65][66][67][68][69][70]</sup>. This study looked at gambling as an outcome variable in relation to the studied predictor characteristics of the students.

The last study question on the different types of antisocial behaviour predicting participation in gambling, two of the measures of antisocial behaviour, namely: involvement in behaviours one should be

ashamed of if they became public and taking sexual advantage of others, were significantly associated with student participation in gambling. Research has also consistently established a positive association of risk correlates of conduct disorders with gambling<sup>[21][71][72]</sup> although it has been observed that few studies focus on adolescents with a problem behaviour of antisocial behaviour<sup>[66]</sup>. This suggests that antisocial behaviour studied in this study has antecedent explanatory factors in common with risk correlates of conduct disorders in explaining gambling participation. However, those who indicated that they did not have the antisocial behaviour under study were much higher than those who had the risky behaviours that predicted participation in gambling (n=530 (81.6%) vs n=119 (18.4%) and (n=603 (81.4%) vs n=137 (18.6%). This can be interpreted along with Stuhldreher, Stuhldreher, and Forrest's<sup>[21]</sup> observation that for any illegal or undesirable behaviour, people tend to underreport.

## Limitations and Future Research

There are limitations in this research that warrant future discussion. First, the study used participants' self-reports of their gambling behaviour for financial gain. This might have had personal bias, as gambling is not culturally accepted with open hands despite assurances of their confidentiality. The data were collected before the Covid-19 pandemic, and the present results may not reflect equivalent experiences of the difficulties of this season impinging on situational imperatives of students' behaviour of gambling for financial gain. The instrument used to collect data was asking a respondent's current engagement in gambling for financial gain. This might have left out those who had gambled previously and those gambling for other reasons, leading to the capture of not very accurate figures of students involved in gambling. Future research should focus on these limitations and look at the different gambling problems faced by students involved in gambling and the current transversal strategies to address gambling, which is an increasing concern on university campuses.

## Conclusion

The study employed the University Student Psychosocial Problems Development Theory (USPPDT) to gain a theory-based understanding and knowledge of the influencing factors of students participating in gambling for financial gain. The self-reported current prevalence of gambling participation was 281 (28.8%) out of (n= 976) among university students ( $\geq 19$  years) in

Uganda. In agreement with the theory and findings from the study, student demographic characteristics, study program characteristics, student-related health burden characteristics, psychosocial functioning, and antisocial behaviour items were particularly predictive of students' participation in gambling. These risk factors for gambling for financial gain are not presumed as causation; identifying them points to important implications in terms of prevention and intervention on student gambling behaviour. Furthermore, the study fills a gap in the literature by focusing on university students in Uganda, since little research has examined gambling within this population guided by a theory that postulates university student issues with gambling as being multi-dimensional. This study has contributed to the literature by establishing and exploring significant characteristics of a student that reflect the biological, social/cultural, and psychological aspects of life related to gambling behaviour. This points to a considered interplay of different players in designing transversal strategies for a student at risk for gambling. By establishing a profound understanding of how risky behaviour like gambling can be addressed, it is assumed that the long-lasting consequences of gambling in the areas of academic career, personal life, health, employment, finances, concerned significant others, and the wider community will need to be mitigated.

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