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Gambling Problems and Comorbidity with Alcohol Use Disorders in Chinese-, Korean-, and White-American College Students

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Abstract

Background and Objectives—This study examined gambling behaviors and the relationship between gambling problems and alcohol use disorders (AUDs) among Chinese-, Korean-, and White-American college students.

Methods—Participants were 678 (179 Chinese, 194 Korean, and 305 White; 50% female) 21 to 26 year-old ($M = 22.0 \pm 1.36$) students attending one university in California. The South Oaks Gambling Screen was administered to assess gambling behavior and the Semi-Structured Assessment for the Genetics of Alcoholism was administered to diagnose lifetime AUDs. Chi-squares and multinomial logistic regressions were conducted to test our hypotheses.

Results—Rates of lifetime ever gambling and weekly gambling were similar across the three ethnic groups, but participation in five types of gambling behavior differed. Chinese had the highest rates of gambling problems followed by Koreans and then Whites. Univariate odds ratios determined being Chinese or Korean, being male, and having an AUD were risk factors for gambling problems. When stratified by gender and ethnicity, having an AUD was not related to gambling problems in women, but was strongly associated with gambling problems in Chinese and White men and modestly associated in Korean men. This was true despite low rates of AUDs in Chinese men.

Discussion and Conclusions—Gambling problems were strongly comorbid with AUDs in Chinese- and White-American men, and moderately comorbid in Korean-American men. No relationship of AUD with gambling problems was found in women.

Scientific Significance—The results highlight the importance of assessing disaggregated Asian-American subgroups with respect to addictive behaviors and their comorbidity.

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Keywords

gambling; alcohol use disorders; Asian Americans; ethnicity; college students

In the *Diagnostic Statistical Manual of Mental Disorders—Fifth Edition (DSM-5)*¹, pathological gambling was reclassified from an Impulse-Control Disorder to an Addiction and Related Disorder. In part, this reclassification was based on the strong associations and many commonalities between substance use disorders and pathological gambling.² Data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a large nationally representative survey of U.S. adults, found the lifetime prevalence of DSM-IV pathological gambling was 0.42% (0.64% in men and 0.23% in women)³; 73% of pathological gamblers also had a DSM-IV alcohol use disorder (AUD; alcohol abuse or dependence), 60% had nicotine dependence, and 38% had a drug use disorder.⁴ Pathological gambling also has been found to have common risk factors with alcohol dependence in twin analyses, with 20% of the genetic and 3% of non-shared environmental variation in pathological gambling accounted for by alcohol dependence risk.⁵

Substantial variability in gambling behavior has been found across racial and ethnic groups. In NESARC, the lifetime prevalence of disordered gambling among Native Americans/Asians (2.3%) and Blacks (2.2%) were almost twice the rate for Whites (1.2%).⁴ In two nationally representative U.S. surveys that administered the South Oaks Gambling Screen (SOGS)⁶, Asians had lower rates of past year pathological gambling compared with Whites, but higher rates of subthreshold gambling problems.^{7–8} Studies conducted among U.S. college student samples have found higher rates of problem gambling in Asians compared with Whites.^{9–10} Studies conducted outside the U.S. and Asia (e.g., New Zealand) also found higher rates of gambling problems in Asians compared with Whites.¹¹ Similar findings have been reported cross-nationally; a review of problem gambling worldwide found the lowest prevalence of problem gambling in Europe, with intermediate rates in North America and Australia, and the highest prevalence in Asia, but with large variability among the Asian countries.¹²

Unlike pathological gambling where Asian Americans have higher rates than White Americans, Asians in the U.S. have lower rates of AUDs than Blacks, Hispanics, Native Americans, and Whites.¹³ Again, however, there are substantial differences among Asian subgroups, with generally lower AUD rates in Chinese and higher rates in Koreans.¹⁴ Consistent with these reports, our laboratory previously reported Chinese-American college students had lower rates of alcohol dependence than Korean- and White-American college students.¹⁵

High rates of comorbidity have been found between pathological gambling and AUDs in nationally representative samples and college samples^{4,16,17}, but little is known about the co-occurrence of these behaviors across ethnic groups and particularly within Asian-American subgroups. Acculturation and generational status have been linked to alcohol and gambling behavior, indicating the importance that cultural variables have on the development of these addictive behaviors.^{18,19} Rates of gambling and problem gambling have been hypothesized to be high in Chinese because of a long history of cultural acceptance of gambling.²⁰ Games

such as Mah Jong and other dice games have been part of Chinese culture for centuries and social gambling is approved of for both men and women; even so, compulsive gambling is considered as problematic as other antisocial behaviors in China.²⁰ Whether gambling is as accepted in Korean culture as it is in Chinese culture is less well researched, but like Chinese culture, Korean culture embraces Confucian philosophy, which promotes moderation and restraint and disapproves of excessive behavior in general.²¹ In addition to a cultural acceptance model, some authors have posited a substitution hypothesis to explain high rates of gambling and gambling problems in Chinese--Chinese, who are less likely to drink, are proposed to replace this behavior with gambling and narcotics.^{21,22} The substitution hypothesis, however, would not apply well to Korean men who have high rates of drinking and drinking-related problems.²³ Moreover, data from NESARC has shown the association between pathological gambling and substance use disorders is significantly greater for women than men despite the lower prevalence of both disorders in women⁴, but whether such gender differences exist within Asian-American subgroups remains to be determined.

The purpose of this project was to examine gambling behavior in a sample of Chinese-, Korean-, and White-American college students. This study fills an important gap in the literature by examining both gambling and alcohol behavior in disaggregated Asian subgroups and a White comparison sample at an age when problems with these behaviors emerge and in a group (i.e. college students) with high rates of both problems.^{24,25} We hypothesized that, consistent with previous reports in U.S. college students, Asians would have higher rates of gambling problems than Whites, and consistent with previous reports in Asia, Chinese would have higher rates of gambling problems than Koreans despite having lower rates of alcohol problems as previously reported.¹⁵ Further, we examined the relationship between lifetime gambling problems and AUDs across ethnicity and gender. Given prior findings, we hypothesized the relationship between alcohol and gambling problems would be stronger in women than in men, but we did not have apriori hypotheses regarding these relationships across ethnic groups.

Method

Participants

The sample was comprised of 21–26 year-old students from the University of California, San Diego (UCSD). All participants reported their parents were entirely of Chinese, Korean, or European Caucasian ancestry. The total sample of 678 participants included 179 (51% female) Chinese, 194 (50% female) Korean, and 305 (49% female) White European Americans. The mean age of the sample was 22.0 years ($SD=1.36$) and mean education was 15.2 years ($SD=0.94$). About half of the Chinese (54%) and Koreans (51%) and most of the Whites (93%) were born in the U.S.

Research Design and Procedure

Participants were recruited via advertisements on campus to participate in a paid research study that included an interview, questionnaires, and a small blood sample. Participants had to have lived in the U.S. for at least 3 years and to be proficient in English to participate. Informed written consent for participation was obtained. This research was approved by the

UCSD Human Research Protection Program and had a Certificate of Confidentiality from the U.S. Department of Health and Human Services.

Each participant was interviewed using the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA), a lay interview that has shown good reliability and validity, to diagnose lifetime DSM-IV AUDs.²⁶ The SOGS was administered to assess lifetime and weekly rates of engaging in 12 types of gambling, maximum amount of money ever gambled in one day, and 20 gambling-related problems. The SOGS has shown good sensitivity, validity, and reliability when used with college student samples.^{24,27} Scoring of the SOGS ranges from 0–20, with each problem item weighted equally.⁶ Endorsing one or more items was termed “any gambling problem,” endorsing one to four items was termed “subthreshold gambling problems,” and endorsing five or more items was termed “probable pathological gambling.” Six individuals were missing data that could have altered their gambling problem classification. Omitting these individuals did not alter the pattern of significant relationships among the variables so they were included in the analyses.

Statistical Analyses

Chi-square tests were used to compare rates of gambling behaviors across ethnicity. To correct for multiple comparisons, we used a more stringent criteria of $p < .01$ as significant. Univariate multinomial logistic regressions were conducted to determine the risk of having subthreshold and probable pathological gambling problems based on ethnicity, gender, being U.S. born, and lifetime AUD. The data were then stratified by gender and ethnicity and the relationships of an AUD to subthreshold and probable pathological gambling problems were assessed to determine the similarity of the relationships across these groups. Analyses were conducted in SPSS 21.0.

Results

Descriptives

Chinese, Koreans, and Whites did not differ in having ever gambled (88–92%) or in weekly gambling (7–11%, $p > .33$), but did differ in five lifetime gambling behaviors (see Table 1). No weekly behaviors differed across ethnicity, nor did the maximum amount of money ever gambled on one day.

Table 2 reports the frequency of gambling-related problems by ethnicity. Chinese (45%) had the highest rates of any gambling problems, followed by Koreans (39%) and Whites (29%; $p < .001$). Rates of probable pathological gambling were higher for Chinese (6%) and Korean (7%) than for White (2%; $p = .036$). The pattern of results was similar when lifetime non-gamblers ($n = 73$) were excluded from analyses, with 48% of Chinese, 44% of Koreans, and 32% of Whites having any gambling problems, $\chi^2(2,605) = 12.25$, $p = .002$, and 6% of Chinese, 8% of Koreans, and 2% of Whites having probable pathological gambling, $\chi^2(2,605) = 7.41$, $p = .025$.

Endorsement of three specific gambling problems differed across ethnicity. Chinese were more likely to go back to try to win what they had already lost compared with Whites; Chinese and Koreans had higher rates of feeling guilty compared with Whites; and Koreans

were more likely than Chinese or Whites to miss work or school due to gambling. With only gamblers included in the analyses, two additional gambling problems emerged as significantly different at the $p < .01$ level. Chinese and Koreans, compared with Whites, were more likely to feel they had a problem with betting money or gambling, 9% and 10% vs. 3%, respectively; $\chi^2(2,605) = 9.95$, $p = .007$, and that they could not stop gambling, 8% and 8% vs. 2%, respectively; $\chi^2(2,605) = 12.20$, $p = .002$.

Covariate Analyses

Table 3 shows results of multinomial logistic regressions that assess the univariate relationships of ethnicity, gender, having an AUD, and being U.S. born on subthreshold and probable pathological gambling problems. All variables except U.S. born were associated with gambling problems. The interaction of Gender \times AUD for subthreshold gambling problems reached significance ($B = 0.88$, $p = .049$). Thus, the relationship between an AUD and gambling problems, which was predicted to differ across ethnicity, was then analyzed stratified by both ethnicity and gender. No other two- or three-way interactions between gender, ethnicity, AUD, and U.S. born was significant.

Table 4 presents the percentage of Chinese, Korean, and White men and women who had an AUD, subthreshold gambling problems, and probable pathological gambling problems, and the risk of having a gambling problem given an AUD. AUD rates differed across the ethnic groups ($\chi^2 = 34.83$, $2df$, $p < .001$), with Chinese lowest at 10% (6% in women, 14% in men), followed by Koreans at 20% (19% in women, 21% in men) and Whites at 33% (21% in women, 45% in men). In women, having an AUD was not related to subthreshold gambling problems in any ethnic group (ORs ranged from 1.2–1.3, $p > .70$). Rates of probable pathological gambling were too low in women to allow ORs to be calculated, with only 5 (1.5%) women in the study classified as probable pathological gamblers. In logistic regression analyses collapsing the two problem groups in women, results were similar to those presented for subthreshold problems. In men, having an AUD was associated with gambling problems in all three ethnic groups. For Chinese men, having an AUD increased the risk of subthreshold gambling problems by more than 11-fold (OR = 11.61, CI = 1.40–96.91, $p = .023$) and probable pathological problems by more than 13-fold (OR = 13.33, CI = 1.04–170.63, $p = .046$). For Korean men, the risk increased by more than 3-fold (OR = 3.29, CI = 1.06–10.27, $p = .040$) for subthreshold problems and by more than 2-fold (OR = 2.53, CI = 0.51–12.61, $p = .256$) for probable pathological gambling, but the increased risk was only significant for subthreshold gambling problems. For White men, having an AUD increased risk for subthreshold gambling problems by more than 2-fold (OR = 2.29, CI = 1.17–4.47, $p = .016$) and probable pathological gambling by more than 9-fold (OR = 9.36, CI = 1.05–83.66, $p = .045$).

Discussion

As hypothesized, rates of lifetime problem gambling were higher in Asian- compared with White-American college students, but unlike hypothesized rates were not different between Chinese- and Korean-American college students. Chinese had the highest rate of endorsing one or more lifetime gambling-related problem at 45%, followed by Koreans at 39% and

Whites at 29%. These rates are high, but are not inconsistent with reports that college students have higher rates of gambling problems than the total U.S. adult population.^{24,28} The rates of probable pathological gambling in the current study followed a similar trend ($p < .04$), with 6% of Chinese-, 7% of Koreans, and 2% of Whites endorsing probable pathological levels of lifetime gambling problems. These rates are similar to meta-analyses that report pathological gambling rates of 6–8% in college students.^{24,29} They are lower, however, than those previously reported for Asian (13%) and White (4–5%) American college students when split by ethnicity¹⁰, although both the current and earlier studies found Asian-American college students were 2.5 to 3.5 times more likely to be probable pathological gamblers than White-American college students. The finding that Chinese- and Korean-American college students had similar rates of probable pathological gambling is not consistent with studies in Asia that find lower rates of gambling problems in South Korean compared with rates other Asian nations.¹² This is the first study to compare gambling problems in these Asian-American subgroups and indicates the differences seen in Asia are not found in this sample of Chinese- and Korean-American college students.

Chinese- and Korean-Americans gamblers were more likely to endorse several intrapersonal gambling-related problems than White Americans, including feeling they had a gambling problem, feeling guilty about gambling, and feeling they could not stop gambling. All ethnic groups in this study had similar rates of lifetime gambling (88–92%) and weekly gambling (11% of Chinese, 10% of Korean, and 7% White Americans), suggesting greater intrapersonal problems in Asian Americans at similar levels of gambling. Prior studies also have reported higher gambling problems in Asians Americans compared with White Americans despite similar to lower rates of gambling behavior in Asians.^{7,8,30} The higher endorsement of intrapersonal problems in Asian Americans also is consistent with Australian studies that found Chinese gamblers were more likely to think their gambling was a problem compared with other ethnic groups.^{19,31} Both Chinese and Korean cultures embrace Confucian philosophy, which promotes moderation and restraint and disapproves of excessive behavior in general²²; thus, it is possible that Chinese and Korean Americans may have greater awareness of their gambling behaviors being in excess or causing problems, or may consider gambling behaviors as problematic at a lower level of engagement compared with White Americans (see Tang et al.³²). In the current study, being born in the U.S. was not related to lifetime gambling problems. Additional research on U.S. samples is needed to understand the complex relationship that cultural values as well as changes in these values over time have on gambling behavior.

Gender differences in rates of gambling problems were found in all three ethnic groups, with the ratio of problems ranging from 1.5 in Chinese, 2.0 in Korean, and 2.7 in White Americans. Studies in Taiwan, Hong Kong, South Korea, Australia, and the United States report similar higher rates of gambling problems in men compared with women.^{7,8,21,30,33–35} When combined, only 2% of our total sample of women had probable pathological gambling compared with 8% of men, consistent with previous reports on U.S. college students that found 2% of women and 10% of men had probable pathological gambling^{10,24}, and with gender differences for gambling in young adults in general.³³

Problem Gambling and Drinking Associations

Our results provide evidence for the comorbidity of gambling problems and AUDs in all ethnic groups, despite differences in rates of AUDs and gambling problems across groups. As anticipated from our report examining alcohol dependence in a subset of this sample¹⁵, Chinese had lower rates of AUDs compared with Koreans and Whites. Novel to this report, our results indicate having an AUD was more strongly associated with gambling problems in Chinese men than in Korean and White American men. Chinese men with an AUD were over 11 times likely to have a gambling problem and over 13 times more likely to have probable pathological gambling than Chinese men without an AUD. This finding is inconsistent with the substitution hypothesis to explain high rates of gambling problems in Chinese.^{21,22} Chinese men were not substituting gambling problems for AUDs, but instead had very high overlap of these addictive behaviors. This finding is more consistent with a model of general addiction and problem behavior theory and with the generalizability of overlapping genetic propensity for these disorders.^{2,4,5,17}

Our findings in Korean men that having an AUD was associated with about a three-fold higher risk for subthreshold gambling problems, but not with probable pathological gambling problems indicates a different relationship between alcohol and gambling problems than in Chinese men. Heavy and problem drinking are more common in Korean men compared with Chinese men²³, so having an AUD may be more indicative of a stronger propensity toward other addictive disorders in Chinese than in Korean men (e.g., see Petry et al.⁴ for discussion).

White men with an AUD were about twice as likely to have a subthreshold gambling problem and over nine-fold more likely to have probable pathological gambling than White men without an AUD. Having an AUD was about three times more common in the White men than the Chinese men and about twice more common than for the Korean men. White men, however, were about half as likely as Chinese men and about one third as likely as Korean men to have probable pathological gambling. Thus, rates of AUDs and gambling behavior as well as their associations with one another differed across the three groups of men studied.

Rates of probable pathological gambling were too low in women to allow for testing of the relationship of pathological gambling and AUDs, but having an AUD was not significantly associated with subthreshold levels of gambling problems in women in any of the ethnic groups. Prior results from NESARC showed a stronger association of substance use and gambling problems in women than in men, despite their lower rates of both AUDs and gambling disorders.⁴ Differences between our findings and NESARC may be due in part to sample differences (e.g., ethnicity, age, college student sample) or measurement issues (e.g., gambling instrument). The odds ratios in our analyses were not suggestive of the problematic gambling-AUD relationship being stronger in women than in men, but larger samples that can examine both ethnicity and gender in combination are needed to understand these relationships.³³

The reasons for these ethnic and gender group differences in rates of addictive behaviors and their comorbidity require further investigation. Our prior research found that differences in

rates of alcohol dependence in these three ethnic groups were partially accounted for by differences in rates of possessing an alcohol metabolizing gene variant *ALDH2*2* and conduct disorder, but were not due to differential relationships of these two factors with alcohol dependence across ethnic groups.¹⁵ The current study, however, found disparity both in rates of gambling problems (i.e. main effects) and differences in the association of AUDs with gambling problems (i.e. interaction effects) across ethnic groups. AUDs are relatively rare in Chinese men and may represent more aberrant behavior that puts them at greater risk for other addictive behaviors than it does in groups where AUDs are more common. Whether this represents a stronger genetic propensity toward addictive behaviors or increased susceptibility via environmental factors is not known. Twin studies, conducted on primarily on White males, have found both genetic and non-shared environmental variation in pathological gambling are partially accounted for by alcohol dependence risk⁵, but it cannot be assumed that the same etiological processes operate in different racial, ethnic, and gender groups. Additional studies that include a broad range of genetic, cultural, religious, familial, personality, and psychosocial risk and protective factors are needed to better understand the complex processes involved in the development of these behaviors. Examining addictive behaviors conjointly in understudied ethnic groups with different prevalence rates of risk and protective factors, as well as potentially differential interplay of these factors with one another, is an important step toward revealing mechanistic pathways underlying risk. It is only through such research that we can provide more effective prevention and intervention to reduce health disparities in U.S. minority groups.

Limitations and Conclusions

Several limitations should be considered when interpreting the results of this study. First, our only measure of gambling behavior was the SOGS, a self-report measure that has high sensitivity but also high rates of false positives,²⁸ so that rates of gambling problems may be overestimated. Second, the sample is of restricted age and includes only individuals at one American university, which limits the generalizability of the findings. Third, we did not examine acculturation, generational status, gender issues such as masculinity, qualitative data, or whether the SOGS had equivalent implications across ethnic groups, but these are areas for future research to elucidate underlying reasons for ethnic group differences in gambling and its association with AUDs.

Despite these limitations, this study found Chinese-Americans had high rates of gambling problems despite low rates of AUDs compared with Korean and White Americans. Chinese and Koreans were more likely to endorse intrapersonal problems related to gambling. In addition, having an AUD was more strongly associated with gambling problems in Chinese and White men than in Korean men, but no relationship of AUD with gambling problems was found in women.

There is a common perception that Asian Americans are at low risk for mental disorders,, but this is not true for all addictive behaviors or for all Asian subgroups. Findings from this study stress the importance of studying disaggregated Asian-American subgroups with respect to addictive behaviors and their comorbidity, and the need to better understand gender differences within ethnic groups in relation to addictive behaviors. The findings also

have important implications for prevention and treatment. Due to the particularly strong comorbidity between AUDs and probable pathological gambling in males, it would behoove clinicians to assess for additional gambling problems and AUDs when one of these has been identified. For clinicians treating Asian American young adults for gambling and/or other addictive behaviors, particular attention should be focused upon assessing and treating feelings of guilt, being unable to stop gambling, and overall beliefs regarding how gambling problems are defined and what this means to each individual client for reducing gambling-related harm.

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Table 1
 Gambling Behavior Percentages in Chinese, Korean, and White American College Students

Rates	Chinese (n = 179)	Korean (n = 194)	White (n = 305)	χ^2	df	p
Ever gambled	92	88	88	2.20	2	.333
Gambled weekly	11	10	7	2.07	2	.356
Type of gambling (ever performed)						
Play cards for money	55	51	54	0.63		.730
Bet on horses or animals	10	5	26 ^a	47.23		<.001*
Bet on sports	12	16	20	5.56		.062
Played dice games	16	20	21	1.83		.401
Gambled in casino	62	54	70 ^a	12.43		.002*
Played numbers/lottery	52	43	52	4.37		.113
Bingo for money	8	5	17 ^a	21.03		<.001*
Stock/options/commodities	28	12 ^a	25	15.29		<.001*
Slots/gambling machines	58	54	64	5.06		.080
Game of skill for money	19 ^a	33	28	10.50		.005*
Pull tabs/paper games not lotteries	6	10	11	3.67		.160
Other form	3	7	6	3.70		.157
Most money ever gambled [†]						
\$1	6	8	8	7.56		.672
>\$1-\$10	27	23	25			
>\$10-\$100	49	46	49			
>\$100-\$1,000	16	20	17			
>\$1,000-\$10,000	2	2	1			
>\$10,000	0	1	0			

* to control for multiple comparisons, significance accepted at $p < .01$;

[†] gamblers only, $n = 605$, $df = 10$;

^a significantly different from other two ethnic groups;

^b significantly different from each other

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Table 2
 Gambling Problem Percentage in Chinese, Korean, and White American College Students

	Chinese (n = 179)	Korean (n = 194)	White (n = 305)	χ^2	df	p
<i>Rates</i>						
Any gambling problem	45 ^b	39	29 ^b	14.23		.001*
Probable pathological gambling	6	7	2	6.66		.036
<i>Specific problems</i>						
Go back to win what you lost (ever)	32 ^b	24	16 ^b	16.88		<.001*
(most or every time you lost)	6 ^b	4	1 ^b	8.84		.012
Feel have had a gambling problem	8	9	3	8.81		.012 [†]
Claim you win when you don't	8	9	7	1.34		.513
Gamble more than intend	33	29	23	6.51		.039
People said you had a problem	6	7	3	4.25		.119
Felt guilty about gambling	20	19	8 ^a	17.47		<.001*
Felt couldn't stop gambling	7	7	2	10.83		.026 [†]
Have hidden signs of gambling	1	2	2	1.10		.578
Argued over gambling money	1	1	1	0.05		.978
Borrowed money and not repaid	0	2	1	3.47		.176
Lost time from work or school	2	6 ^a	1	11.43		.003*
<i>Borrowed money for gambling from</i>						
Household	4	5	1	6.91		.032
Spouse	1	0	0	2.80		.246
Other relatives	2	2	2	0.08		.960
Banks/loan companies	2	3	0	4.81		.090
Credit cards	2	4	1	7.09		.029
Loan sharks	1	0	0	2.79		.248
Stocks/bonds/securities	1	1	0	0.17		.918
Sold property	0	1	0	0.86		.650
Checking account	1	1	0	1.24		.538
Credit line with bookie	1	2	0	2.51		.285

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	Chinese (<i>n</i> = 179)	Korean (<i>n</i> = 194)	White (<i>n</i> = 305)	χ^2	<i>df</i>	<i>p</i>
Credit line with casino	1	1	0	3.25		.197

* to control for multiple comparisons, significance accepted at $p < .01$;

χ^2 become significant at $p < .01$ when tested with gamblers only, $n = 605$;

^a significantly different from other two ethnic groups;

^b significantly different from each other

Table 3

Univariate Odds Ratios (OR) and 95% Confidence Intervals (CI) for Having Subthreshold and Probable Pathological Gambling Problems

	Subthreshold Gambling Problem		Probable Pathological Gambling	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
Ethnicity				
White Americans	1.00 (reference)		1.00 (reference)	
Chinese Americans	1.91 (1.28–2.85)	.001	3.48 (1.31–9.25)	.012
Korean Americans	1.43 (0.96–2.13)	.078	3.42 (1.33–8.79)	.011
Gender	3.03 (2.15–4.27)	<.001	7.82 (2.94–20.74)	<.001
AUD	2.00 (1.37–2.92)	<.001	2.47 (1.14–5.35)	.023

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Table 4 Percentages and Odds Ratios (OR) for Subthreshold and Probable Pathological Gambling Problems Based on Having an Alcohol Use Disorder (AUD) and Stratified by Ethnicity and Gender

	AUD		Subthreshold		Probable Pathological	
	%	OR	%	OR	%	OR
Chinese American						
Women (<i>n</i> = 90)	6	1.29	.790	3	--	
Men (<i>n</i> = 89)	14	11.61	.023	9	13.33	.046
Korean American						
Women (<i>n</i> = 96)	19	1.19	.782	1	--	
Men (<i>n</i> = 98)	21	3.29	.040	12	2.53	.256
White American						
Women (<i>n</i> = 150)	21	1.23	.715	1	--	
Men (<i>n</i> = 155)	45	2.29	.016	4	9.36	.045

Note. ORs for Probable Pathological Gambling could not be calculated in women due to low frequency of response.