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## Strategic vs nonstrategic gambling: Characteristics of pathological gamblers based on gambling preference

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### Abstract

**BACKGROUND**—Although prior studies have examined various clinical characteristics of pathological gambling (PG), limited data exist regarding the clinical correlates of PG based on preferred forms of gambling.

**METHODS**—We grouped patients meeting DSM-IV criteria for pathological gambling into 3 categories of preferred forms of gambling: strategic (eg, cards, dice, sports betting, stock market), nonstrategic (eg, slots, video poker, pull tabs), or both. We then compared the groups' clinical characteristics, gambling severity (using the Yale-Brown Obsessive Compulsive Scale Modified for Pathological Gambling, the Clinical Global Impression–Severity scale, and time and money spent gambling) and psychiatric comorbidity.

**RESULTS**—The 440 patients included in this sample (54.1% females; mean age  $47.69 \pm 11.36$  years) comprised the following groups: strategic ( $n = 56$ ; 12.7%), nonstrategic ( $n = 200$ ; 45.5%), or both ( $n = 184$ ; 41.8%). Nonstrategic gamblers were significantly more likely to be older and female. Money spent gambling, frequency of gambling, gambling severity, and comorbid disorders did not differ significantly among groups.

**CONCLUSIONS**—These preliminary results suggest that preferred form of gambling may be associated with certain age groups and sexes but is not associated with any specific clinical differences.

### Keywords

impulse control disorders; pathological gambling; phenomenology

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## INTRODUCTION

Many people gamble as a hobby or for pleasure,<sup>1</sup> but some individuals develop a recognizable behavioral syndrome classified as pathological gambling (PG). Epidemiologic studies estimate the prevalence of lifetime PG as 0.4% to 1.5% among adults in the United States.<sup>2-4</sup> PG is associated with impaired functioning, financial and interpersonal problems, and health-related problems.<sup>5-7</sup> In addition, co-occurring psychiatric conditions such as substance use (35% to 63%) and mood disorders (34% to 78%) are common in PG.<sup>4,8-10</sup>

In an effort to better characterize PG and provide insight into etiology, prevention, or treatment, we considered that comparing putative subtypes of PG might offer information regarding treatment response or disease course. Many psychiatric disorders have subtypes or course specifiers, which provide information regarding expected course and potential response to treatment. Subtypes of alcohol dependence, for example, have long been considered clinically useful<sup>11,12</sup> and may have predictive power regarding disease course<sup>12,13</sup> or treatment response.<sup>14,15</sup>

Thus far, only limited research has attempted to identify subtypes of PG. Moran<sup>16,17</sup> identified 5 PG subtypes (subcultural, neurotic, impulsive, psychopathic, or symptomatic) based on observations of 50 male pathological gamblers with strategic gambling (horse/dog racing). A different study used principal component analysis to identify 4 primary factors and matched traits associated with PG: psychological distress, sensation seeking, crime and liveliness, and impulsive/antisocial behavior.<sup>18</sup> The authors reported the presence of impulsivity and antisocial behavior as the most clinically useful, predicting the worst disease course.

Studies indicate gambling preference may be clinically significant and provide a means of subtyping individuals with PG. Historically, gambling activities have been divided into 2 groups: strategic and nonstrategic. Nonstrategic games involve little or no decision making or skill, and gamblers cannot influence the outcome of the game. Examples include slot machines, pull tabs, bingo, and keno. By contrast, strategic games allow gamblers to attempt to use knowledge of the game to influence or predict the outcome (eg, poker, blackjack, dog and horse racing, sports betting, and craps/dice games).<sup>19,20</sup> Studies examining preferred style of gambling have found that higher rates of “action” or arousal-seeking behavior are reasons men prefer strategic forms, whereas escape from emotional trauma may underlie women’s preference for nonstrategic forms.<sup>20-22</sup> Gamblers who prefer certain strategic gambling may have a heightened state of arousal<sup>23</sup> and low baseline levels of endorphins.<sup>24</sup> Additionally, recent research suggests that substance-abusing recreational gamblers prefer strategic gambling as a means of gambling for excitement.<sup>25</sup>

Although prior research suggests that gambling preference may inform our understanding of the heterogeneity of PG, these studies have been limited by the dichotomization of gambling into either strategic or nonstrategic. Many gamblers, in fact, have no gambling preference. The National Research Council found that problem gamblers were more likely than recreational gamblers to play all forms of gambling.<sup>5</sup> This suggests that a lack of preferred gambling style might reflect more problematic gambling and thus might be worth examining.

The goal of our study was to clarify the association between preferred form of gambling and gambling symptomatology, using a large sample of treatment-seeking individuals with PG. Based on previous research,<sup>20,22,25</sup> we hypothesized that: 1) nonstrategic gambling would be more common among women; 2) a lack of preferred gambling choice would be associated with greater gambling severity; and 3) nonstrategic gambling would be associated with

depressive disorders, whereas strategic gambling would be associated with substance use disorders.

## METHODS

### Patients

Participants included adults age  $\geq 18$  meeting current (past 12 months) DSM-IV criteria for PG when evaluated with the Structured Clinical Interview for Pathological Gambling (SCI-PG).<sup>26</sup> Patients were enrolled in 1 of several clinical research trials investigating the effectiveness of pharmacotherapies and psychosocial treatments for PG.<sup>27-33</sup> Although inclusion/exclusion criteria varied from study to study, general inclusion criteria included a current DSM-IV diagnosis of PG and the ability to provide written informed consent. Persons with lifetime psychotic or bipolar disorders were excluded. Other lifetime disorders were not a reason for exclusion. Participants were recruited over a 9-year period (2000 through 2008).

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Boards of the University of Minnesota and Butler Hospital approved the studies and consent statements. All assessments were conducted by board-certified psychiatrists and psychologists familiar with PG treatment. Participants provided written informed consent after receiving a complete description of the study.

### Assessments

At the intake interview, board-certified psychiatrists (J.E.G., S.W.K.) assessed each participant using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)<sup>34</sup> and the Structured Clinical Interview for Pathological Gambling (SCI-PG), a valid and reliable ( $k = 1.00$ ) diagnostic instrument.<sup>26</sup> In addition to a psychiatric assessment, we used a semistructured rater-administered questionnaire to collect detailed information on demographic and clinical features of PG (eg, preferred types of gambling, amount of money lost, triggers to gambling, legal and financial problems related to gambling). All patients included in this analysis were drawn from states where multiple types of gambling (ie, both strategic and nonstrategic) were available.

To determine preferred form of gambling, we asked patients as part of the semistructured clinical interview which form of gambling, if all forms were available to them, they preferred. We also told them that “no preference” was an acceptable answer. The question has not been validated. We did not give the patients a list of gambling forms from which to choose, but merely asked which form of gambling they preferred. If the form of gambling was unfamiliar to us, we researched it and placed it in one of the categories based on the criteria of whether or not the player could potentially influence the outcome through knowledge or prediction of the game. Strategic gambling consisted of poker, blackjack, dog and horse racing, sports betting, and craps/dice games; nonstrategic gambling consisted of slot machines, pull tabs, bingo, and keno. We did not ask which form of gambling they engaged in most often. Because mood state can affect gambling choice,<sup>35</sup> we simply asked which form of gambling they preferred. Therefore, due to availability of forms of gambling, it is possible that a patient preferred 1 form of gambling and yet primarily engaged in a different form of gambling.

We assessed current PG symptom severity using 2 valid and reliable measures:

- The Yale-Brown Obsessive Compulsive Scale Modified for Pathological Gambling (PG-YBOCS)—a valid and reliable 10-question, clinician-administered scale—assesses symptom severity over the past 7 days,<sup>36</sup> with excellent inter-rater

reliabilities on both the urge (ICC = 0.99) and behavior (ICC = 0.98) sub-scales.<sup>36</sup> The first 5 items comprise the urge/thought subscale, and items 6 through 10 comprise the behavior subscale. Each item is rated on a 0 to 4 scale, with higher scores reflecting greater severity.

- The Clinical Global Impression-Severity scale (CGI-S)<sup>37</sup> is a valid and reliable 7-item scale with scores ranging from 1 (“not ill at all”) to 7 (“among the most severely ill”). The CGI-S has demonstrated excellent validity as a measure of PG symptom severity over the past 7 days.<sup>38</sup>

### Data analysis

Based on self-report of preferred gambling type, the participants were divided into 3 groups: strategic gamblers (ie, preferred cards, dice, or sports betting), nonstrategic gamblers (ie, preferred slots, bingo, video poker, or pull-tabs), and gamblers who endorsed no preference for either strategic or nonstrategic gambling. We compared these 3 groups on demographic variables, measures of current gambling severity, and co-occurring disorders. Between-group differences were tested using 1-way ANOVAs and Pearson  $\chi^2$ . Because of age and sex differences, 2-way ANOVA (SPSS UNIANOVA) was used with type of gambling and sex as factors and age as a covariate for most analyses. Multinomial regressions (SPSS NOMREG) were used for primary triggers to gambling and other problems due to gambling.

All comparison tests were 2-tailed. A Bonferroni correction was used to correct for multiple comparisons, yielding an  $\alpha$  level of 0.05 to determine statistical significance. Although limited data reached statistical significance using the Bonferroni correction, we highlight statistical differences at the 0.05  $\alpha$  level as findings with potential clinical significance.

## RESULTS

### Patient characteristics

Four hundred and forty adults with PG (54.1% females; mean age  $47.7 \pm 11.4$ ) were included in the study. Of these, 200 (45.5%; 95% confidence interval [CI]: 40.8% to 50.2%) reported a preference for nonstrategic games, 56 (12.7%; 95% CI: 9.8% to 16.3%) preferred strategic games, and 184 (41.8%; 95% CI: 37.2% to 46.6%) reported no preference for either strategic or nonstrategic gambling.

The nonstrategic gambling group was significantly older than the other 2 groups (TABLE 1). A significant difference in sex also was noted among the groups (TABLE 1). Nonstrategic gamblers were significantly more likely to be female (71.5%) ( $P < .001$ ). Strategic gamblers were more likely, on a trend level, to have at least some college education (79.6%) ( $P = .015$ ).

### Gambling symptomatology

Strategic gamblers reported significantly younger age of first gambling experience ( $22.5 \pm 11.4$  years) ( $P < .001$ ). Nonstrategic gamblers were significantly more likely to gamble while feeling sad, lonely, or bored ( $P < .001$ ). The groups did not differ significantly on measures of gambling severity (TABLE 2).

The rate of reported financial problems was high (78.1%) for all 3 groups. On average, the sample lost 66.8% of their gross yearly income to gambling. Financial problems did not differ significantly among groups. The percentage of gamblers reporting work-related problems (eg, late for work, decreased job performance, absenteeism) or relationship problems (eg, marital discord, not spending time with friends due to gambling) were numerically higher in the nonstrategic group. Bankruptcy (19.1%) and other legal problems

(20.5%) were common throughout the sample, with no significant differences among groups.

### Psychiatric comorbidity

Current psychiatric comorbidity is presented in TABLE 3. We found high rates of co-occurring disorders with PG, with depressive (30.2%) and substance use (24.1%) disorders the most common. From group to group, however, we found no significant differences in comorbidity.

## DISCUSSION

Past studies that examined gambling preference did so as a secondary component of an analysis, with the primary focus on age<sup>39</sup> or sex.<sup>40</sup> This study is the first to examine a large group of treatment-seeking individuals with PG exclusively with respect to gambling preference. For this, we used a broad range of self-report and clinician-based measures. Using a larger sample than prior studies allowed us to more completely assess gambling-related thoughts and behaviors and identify between-group differences related to gambling preference.

Consistent with our first hypothesis, nonstrategic gambling was more common in women with PG. Sociability of certain forms of gambling has been reported as a factor influencing women to choose nonstrategic gambling forms.<sup>41</sup> Strategic games such as poker may be more socially or culturally acceptable among men, with the result that women gravitate to more nonstrategic gambling forms. The nonstrategic gambling group also was significantly older than the strategic group (mean age 50.4 vs 43.8 respectively, which is consistent with previous research examining gambling preference and age.<sup>39</sup> Thus, whether the sex issues associated with nonstrategic gambling apply equally to younger cohorts awaits further examination.

Sex differences in PG may be particularly important in terms of prevention and treatment. Although women in general gamble less than men, female gamblers have shown poorer measures of mental health when compared with male gamblers.<sup>40,42</sup> Additionally, the association between gambling problems and co-occurring psychiatric conditions generally is stronger for women than men.<sup>42</sup> Although the observed sex difference in gambling choice may be primarily biologic,<sup>43</sup> previous investigations indicate significant social and cultural influences.<sup>44</sup> Some researchers have speculated that the rapid action of slot machine gambling, for example, may contribute to the faster onset of gambling in women.<sup>20</sup> Because women tend to progress from an initial gambling experience to a pathologic form of gambling addiction more quickly than men,<sup>20,45</sup> understanding how preferred forms of gambling differ between women and men may aid in the development of different prevention and treatment strategies based on sex and gambling preference.

Contrary to our second hypothesis, gamblers who lacked a preference for a particular form of gambling did not report more severe gambling symptoms. Gambling preference has been associated with faster progression to problematic gambling<sup>46</sup> and with differences between problem gambling compared to recreational gambling.<sup>47,48</sup> Our findings, however, suggest that among pathological gamblers the preferred form of gambling is not associated with greater severity of the disorder. One possible explanation is that the range of gambling symptom severity in this sample is too narrow to detect these differences. Another explanation might be that preferred form of gambling plays a larger role in the development of a gambling problem and not in maintenance of the disorder.

Contrary to our third hypothesis, PG patients who preferred nonstrategic gambling were not significantly more likely to have a depressive disorder. Many individuals with PG gamble secondary to dysphoria, and dysphoria or depression often is associated with a desire for social isolation.<sup>49-51</sup> Nonstrategic gambling allows a person to escape feeling sad or depressed while not interacting directly with others, and pathological gamblers with depressive symptoms have reported choosing forms of gambling that promoted this isolation.<sup>49,50,52</sup> Although depressive disorders affected one-fourth to one-third of PG patients in this study, these rates were not significantly associated with any particular form of gambling. One possible explanation is that gambling behavior may be linked to a primary depressive disorder rather than a reflection of a primary personality feature (eg, lower risk-taking), and any form of gambling activity functions as an escape or mood elevating behavior.

Strategic gambling was not associated with higher rates of substance use disorders. Previous research on strategic gambling with psychophysiologic measures has shown increased risk-taking behavior and overall deficiencies in decision-making behaviors associated with strategic forms of gambling.<sup>53</sup> Previous research also has found that sensation-seeking gamblers had higher rates of substance or alcohol abuse or dependence<sup>25,54</sup> and that engaging in either gambling or substance abuse because of negative mood states is common.<sup>55</sup> The idea of an impulsive/sensation-seeking gambler who enjoys the risk-taking associated with strategic gambling and substance use, however, was not endorsed by our data. In fact, higher rates of daily nicotine use trended toward significance in the nonstrategic group ( $P = .023$ ), a finding consistent with prior research.<sup>56</sup> This difference seems largely attributable to slot machine and bingo gambling. These forms of gambling typically occur in casinos, halls, or other venues in which groups congregate. Public health concerns related to first- and second-hand smoke have led to recent restrictions on smoking within some but not all such venues. The potential impact that such restrictions have on gambling behaviors warrants investigation.

### Limitations and future directions

This study has several limitations. First, no standard exists for subtyping methods of pathological gambling. Thus, our subtyping criteria were based on reported gambling preference and whether the person could potentially influence the game's outcome through choice or the outcome was left to chance (as in slot play). Future studies could explore our criteria and the Blaszczynski and Nower (2002) pathways model, which suggests 3 subgroups of pathological gamblers based on emotional, biologic, and ecologic factors.<sup>57</sup> Second, because a treatment-seeking sample was used the results might or might not apply to nontreatment-seeking individuals with PG. Third, lack of ethnic/racial diversity in our sample may suggest that these findings will not apply to members of different ethnic and cultural groups. Fourth, the patients were recruited over several years from a variety of venues without control groups being taken from these various settings. Although this methodology may have introduced some bias, heterogeneity of place and time may reflect "real world" gambling pathology. Fifth, the low rates of certain co-occurring disorders limit our ability to investigate the relationships between preferred form of gambling and psychiatric comorbidities. Sixth, because certain information relied upon subjective recall (eg, amount of income lost gambling) certain data may over- or under-estimate actual amounts. Seventh, the study excluded individuals with lifetime bipolar disorder. Because gambling may occur during manic episodes this study fails to capture a comorbidity that may relate to preferred form of gambling. Finally, almost 4 times as many patients endorsed nonstrategic compared with strategic forms of gambling, which may have biased our results. Despite the limitations the study has multiple strengths, including the large sample of

treatment-seeking pathological gamblers and the use of both self-report and clinician-administered measures with strong psychometric properties and established norms.

## CONCLUSIONS

Our results suggest that age and sex affect pathological gamblers' preferred forms of gambling, but severity of gambling symptoms and psychiatric comorbidities do not. Pathological gamblers might have such high gambling symptom severity and rates of co-occurring disorders that subtyping based on gambling preference provides little information in this group. Future research could investigate whether subtyping based on gambling preference has more utility in predicting outcomes in recreational and problem gamblers as opposed to pathological gamblers.

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**TABLE 1**  
Demographics of 440 pathological gamblers based on preferred type of gambling behavior

	Nonstrategic only n = 200	Strategic only n = 56	Both types n = 184	Statistic <sup>d</sup>	P value
<b>Age (± SD), years</b>	50.4 (11.77)	43.82 (10.43)	45.9 (10.49)	$F = 11.768$	<.001 <sup>b,c</sup>
<b>Sex</b>					
Female	143 (71.5)	17 (30.4)	78 (42.4)	47.255	<.001
Male	57 (28.5)	39 (69.6)	106 (57.6)		
<b>Marital status<sup>d</sup></b>					
Single	54 (27.0)	21 (38.2)	59 (33.0)	3.148	.207
Married/divorced/widowed	146 (73.0)	34 (61.8)	120 (67.0)		
<b>Race</b>					
White	188 (94.0)	52 (92.9)	145 (78.8)	3.456 <sup>c</sup>	.178
African American	4 (2.0)	1 (1.8)	6 (3.3)		
Latino/Hispanic	3 (1.5)	2 (3.6)	2 (1.1)		
Asian	1 (0.5)	0 (0.0)	3 (1.6)		
Native American	1 (0.5)	0 (0.0)	4 (2.2)		
<unknown>	3 (1.5)	1 (1.8)	24 (13.0)		
<b>Education<sup>d</sup></b>					
High school or less	72 (39.6)	11 (20.4)	71 (42.0)	8.464	.015
At least some college	110 (60.4)	43 (79.6)	98 (58.0)		

<sup>a</sup>Statistic:  $\chi^2$  with  $df = 2$ ; except for age where it was a one-way ANOVA ( $F = 11.768$ ;  $df = 2,435$ ).

<sup>b</sup>Nonstrategic only vs Strategic only  $P < .05$ .

<sup>c</sup>Nonstrategic only vs Both  $P < .05$ .

<sup>d</sup>“n”s for marital status and education differ from overall “n”s because those missing data were excluded:

Marital: Nonstrategic = 200; Strategic = 55; Both = 179

Education: Nonstrategic = 182; Strategic = 54; Both = 169.

All variables are n (%) unless otherwise stated.

**TABLE 2**  
Clinical characteristics of 440 pathological gamblers based on preferred type of gambling behavior

	Nonstrategic only	Strategic only	Both types	Type of gambling statistic <sup>a</sup>	Type of gambling P value	Sex P value	Sex by gambling P value	Age P value
Age when started gambling, years	34.1 (13.9)	22.5 (11.4)	26.8 (13.3)	6.362 (2,332)	.002 <sup>b,c</sup>	.004	.136	<.001
Age when gambling became a problem, years	42.6 (12.9)	30.6 (11.0)	36.8 (12.3)	6.981 (2,311)	.001 <sup>b,d</sup>	.075	.046	<.001
Hours spent gambling per week	17.0 (13.7)	13.4 (9.8)	12.6 (12.4)	3.273 (2,160)	.040 <sup>c</sup>	.538	.754	.014
Total amount of money lost during past year (in thousands of US dollars)	15.7 (23.5)	19.4 (20.8)	20.6 (23.1)	1.833 (2,295)	.162	.885	.451	NS
Percentage of annual income lost to gambling during the past 12 months	62.7 (80.8)	62.7 (84.2)	72.8 (168.5)	0.544 (2,219)	.581	.411	.487	NS
PG-YBOCS total score	20.0 (5.8)	19.1 (4.9)	20.4 (5.1)	1.390 (2,264)	.251	.220	.512	NS
PG-YBOCS-Urge/Thought subscale score	9.3 (3.3)	8.3 (3.5)	9.1 (3.2)	3.045 (2,384)	.049 <sup>b,d</sup>	.349	.159	NS
PG-YBOCS-Behavior subscale score	9.8 (4.1)	9.2 (3.3)	10.0 (3.7)	0.791 (2,264)	.454	.098	.910	NS
Clinical Global Impression-Severity scale	4.8 (0.93)	4.6 (0.68)	4.8 (0.88)	3.714 (2,366)	.025 <sup>c,d</sup>	.123	.011	NS
<b>Primary triggers to gambling behavior, n (%)</b>								
Having money	55 (27.5)	10 (17.9)	43 (23.4)	2.133	.344	<.001		<.001
Sad/lonely/bored/stress	82 (41.0)	20 (35.7)	41 (22.3)	13.159	.001	<.001		<.001
Billboards/advertisements	45 (22.5)	11 (19.6)	30 (16.3)	1.433	.489	<.001		<.001
<b>Problems due to gambling, n (%)</b>								
Financial	151 (75.5)	40 (71.4)	153 (83.2)	5.635	.060	<.001		<.001
Work	37 (18.5)	4 (7.1)	23 (12.5)	4.622	.099	<.001		<.001
Relationship	92 (46.0)	20 (35.7)	79 (42.9)	1.451	.484	<.001		<.001
Housing	25 (12.5)	8 (14.3)	20 (10.9)	0.704	.703	.001		<.001

<sup>a</sup> Statistic for type of gambling factor: 2-way ANOVA (SPSS UNIANOVA) type of gambling and sex as factors with age as covariate. Statistic shown is *F* and (degrees of freedom), except for Primary triggers to gambling. Other problems due to gambling, and Reasons for gambling were Multinomial regressions (SPSS NOMREG) Statistic shown is  $\chi^2$  with *df* = 2 for Likelihood Ratio Tests.

<sup>b</sup> Nonstrategic only vs Strategic only  $P < .05$ .

<sup>c</sup> Nonstrategic only vs Both  $P < .05$ .

<sup>d</sup> Strategic only vs Both  $P < .05$ .

All variables are mean ( $\pm$  SD) unless otherwise noted.

NS The covariate age was nonsignificant and therefore was excluded from the model.

PG-YBOCS: Yale-Brown Obsessive Compulsive Scale modified for Pathological Gambling.

**TABLE 3**  
 Current rates of psychiatric comorbidity in 440 pathological gamblers based on preferred type of gambling behavior

	Nonstrategic only (n = 200)	Strategic only (n = 56)	Both types (n = 184)	Statistic <sup>a</sup>	Type of gambling P value	Sex P value	Age P value
Any depressive disorder <sup>b</sup>	75 (37.5)	16 (28.6)	42 (22.8)	8.172	.017	<.001	<.001
Any anxiety disorder <sup>c</sup>	32 (16.0)	7 (12.5)	12 (6.5)	7.857	.020	<.001	<.001
Any substance use disorder <sup>d</sup>	49 (24.5)	12 (21.4)	45 (24.5)	1.580	.454	<.001	<.001
Daily nicotine use	90 (45.0)	16 (28.6)	91 (49.5)	8.082	.018	<.001	<.001

<sup>a</sup> Statistic for type of gambling factor: Multinomial regressions (SPSS NOMREG). Statistic shown is  $\chi^2$  with  $df = 2$  for Likelihood Ratio Tests.

<sup>b</sup> Any depressive disorder = major depressive disorder and depressive disorder not otherwise specified (NOS).

<sup>c</sup> Any anxiety disorder = posttraumatic stress disorder, panic disorder, obsessive-compulsive disorder, social phobia, generalized anxiety disorder, and anxiety disorder NOS.

<sup>d</sup> Any substance use disorder = alcohol use disorder and drug use disorders.

All variables are n (%).