Parameters of undergraduate gambling

Steven L Oster
University of Nevada, Las Vegas

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Parameters of undergraduate gambling

Oster, Steven L., M.A.
University of Nevada, Las Vegas, 1992

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PARAMETERS OF UNDERGRADUATE GAMBLING

by

Steven L. Oster

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

in

Psychology

Department of Psychology
University of Nevada, Las Vegas
December 1992

Running Head: Collegiate Gambling
The thesis of Steven L. Oster for the degree of Master's in Clinical Psychology is approved.

Chairperson, Terry Knapp, Ph.D.

Examining Committee Member, Charles Rasmussen, Ph.D.

Examining Committee Member, P. Diane Turnbough, Ph.D.

Graduate Faculty Representative, John Swetnam, Ph.D.

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Dean of the Graduate College, Ronald W. Smith, Ph.D.

University of Nevada, Las Vegas
December 1992
Abstract

Students from the University of Nevada, Las Vegas were surveyed about gambling behavior. Over 92% of the students under 21 years of age had gambled, with over 50% having gambled in a casino, and 22% gambled weekly. As measured by the South Oaks Gambling Screen (SOGS), 11.2% of the sample scored in the pathological gambling range. Gambling and pathological gambling behaviors displayed a significant relationship to male gender, non-residency status, being over 21 years-old, and getting drunk often. The DSM-III-R, proposed DSM-IV, and the SOGS criteria measured pathological gambling at 5.1%, 4.2%, and 11.2%, respectively. No relationship was found linking the subjects' college major or underage drinking with pathological gambling for the entire sample. The SOGS scores of the UNLV students were consistently higher than found in previous studies. Particularly critical are the elevated scores of non-resident students. Recommendations for future research and the university's role in educating students, especially non-resident students, about the perils of gambling are discussed.
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Parameters of Undergraduate Gambling

Over the past decade, states have shown a growing interest in the legalization of various forms of gambling as a means of supplementing lost or dwindling tax revenues. Currently, there are 48 states that offer some form of legalized gambling; only Utah and Hawaii do not have provisions for state regulated gambling (Migoya & La Fleur, 1989; Rather, 1991). Of these 48 states, 16 have some form of casino gambling (Waddell, 1992). It is estimated that within the next ten years there will be a total of 27 states with legalized casino gambling (Rather, 1991).

According to the Commission on the Review of National Policy Toward Gambling (1976), two major concerns about the proliferation of legalized gambling are increases in the number of illegal gambling activities and increased numbers of pathological gamblers. An unstated corollary is that gambling behavior itself will also continue to rise. The Commission found that in the mid-1970's, 61% of the United States population gambled. By 1989, a Gallup poll reported that the percentage had increased to 81%
of the populace (Hugick, 1989). This increase was mainly attributed to the greater availability of legalized gambling.

Nearly all the research studies to date on gambling behavior have focused on adults (Knapp & Lech, 1987). Hundreds of publications have appeared, running the gamut from the popular trade press to intensive professional inquiries. Their content varies from Freud's (1928) case study of Russian novelist Feodor Dostoevsky; to the comprehensive study by the Commission on the Review of National Policy toward Gambling (1976); to Custer and Milt's (1985) landmark work, When Luck Runs Out; and certainly not last, to recent popular press articles on Pete Rose's gambling problems (Church, 1989) and Michael Jordan's gambling debts (Jordan, 1992). Clearly, interest in adult gambling behavior is unceasing.

The literature is much more limited on underage gamblers. These articles mainly focus on subjects who are adolescents or high school students. Many of the adolescent studies were done in England or Australia where so-called "fruit machines" (similar to slot
machines) are prevalent (Griffiths, 1989, 1990; Huff & Collinson, 1987; and, Ide-Smith & Lea, 1988).
Griffiths (1989) found in an extensive international overview of studies of adolescent gambling behavior that between 49 to 89% of persons age seven through nineteen had gambled at some point in their lives. Also evident from Griffiths' study is the rise in recent years of gambling among adolescents. The oldest study he cites is the Rosenstein and Ruetter survey of 1980. They found that 49.3% of their high school student sample had gambled. The more recent studies reviewed by Griffiths averaged between 64 to 89%. (In Griffiths' 1990 study, he indicates that fruit machine playing adolescents were 66% male. Ides-Smith and Lea reported a 90% level of some sort of gambling activity in their sample of 13-14 year-olds.

The studies in North America of underage gambling behavior have focused largely on high school populations (Acuri, Lester, & Smith, 1985; Jacobs, 1989; Jacobs et al., 1989; Ladouceur & Mireault, 1988; and, Lesieur & Klein, 1987). Acuri, Lester, and Smith found 64% of their Atlantic City high school sample had
gambled in a casino, while 9% did so once a week or more. Jacobs et al., indicated a connection between parental and child gambling-related problems in their Southern California sample. Ladouceur and Mireault found in their Quebec sample that 76% of the subjects had gambled once in their lifetime, 65% within the past year, and 24% at least weekly. In Lesieur and Kline's New Jersey area high school sample, 91% of the students gambled at least once in their lifetime, 86% in the past year, and 32% at least once per week. Pathological gambling (defined as a score of five or more on the South Oaks Gambling Screen) was found in 5.7% of the sample and was correlated with gender (male), parental gambling problems, low grade point average, and the student's extent of gambling.

In regard to college students, there have been only five systematic studies of gambling behavior (Frank, 1990; Lesieur & Blume 1987; Lesieur, et al, in press; Lorenz 1983; and, McKenzie, 1970). As Frank and Cashmere (1988) comment in their paper presented to the Fifth Annual State-wide Conference on Compulsive Gambling of the Council on Gambling of New Jersey,
"College students are used in studies of risk taking, locus of control and other areas of psychology which involve gambling, but not in areas directly relevant to the study of pathological gambling."

McKenzie (1970) presented a study of collegiate poker players. His primary focus was on the status orientation of the participants. He defined higher status players as being more skillful, knowledgeable, and involved in game participation. They could entice new players into the game and increase group cohesiveness via the jargon and mythology peculiar to the game. Lower status players were considered to be losers and easy targets for money making. They were the objects at which the higher status players vented their frustrations during a particularly bad losing streak. While McKenzie’s study was generally descriptive in nature, he did present two interesting findings that are worth noting here. First, the overall grade point average of the poker players was 1.5, as compared to 2.6 for the entire student body. Secondly, of the 30 players who were subjects in the study, eight eventually dropped out of school.
Lorenz's (1983) unpublished doctoral dissertation was an in-depth study of gambling beliefs, experiences and behaviors of college students. Although the sub-groups were too small to lend themselves to reliable statistical analyses, the investigation set the stage for later areas of inquiry. Lorenz employed a descriptive design using an 88-item survey. The student samples were from the University of Nevada, Las Vegas (UNLV) and Georgia State University (GSU). Among the conclusions Lorenz found were that family and friends do contribute to gambling behavior, but in contrary ways between the two samples. UNLV students begin to gamble with family and friends, but maintenance of gambling behavior is environmentally determined (i.e., availability, advertising, etc.). In the GSU sample, family and friends influences had little to do with initial gambling behavior, but was found to be a reinforcer in the maintenance of the behavior (i.e., approval, participation with family and friends, etc.). Gambling behavior generally continued in both samples, which would rule out availability as being the pre-eminent factor in gambling maintenance.
It is suggested that internal factors are more important behavioral cues than external prompts.

Other findings by Lorenz (1983) include the following: (a) 42% of the total sample started to gamble before the age of 18; (b) approximately 67% of the UNLV sample had gambled compared to 47% of the GSU sample; (c) there were disproportionately more Catholics and Jews who scored in the problem and pathological gambling ranges; (d) non-gamblers lived longer in Las Vegas than gamblers; and, (e) GSU respondents began gambling an average of three years earlier than the UNLV subjects.

Lorenz (1983) used the DSM-III (1980) criteria as indicators of "hard signs" of pathological gambling (e.g., writing bad checks, use of loan sharks, defaulting on loans, bail-out by others, missed classes or work time). Borrowed from Custer (1982) were suggested "soft signs" associated with pathological gambling (e.g., being workaholic, bored or uncomfortable around others, and admiration of risk-takers and/or gamblers). Although no particular "hard signs" or "soft signs" were universally
indicative of pathological gambling behavior, Lorenz found that the greater number of "hard signs" usually were accompanied with a greater number of "soft signs." The author recommended that clustering of "hard and soft signs" could be used to distinguish different types of gamblers. It was also suggested that a research instrument be developed to assist in diagnosis and treatment.

Lesieur and Blume (1987) eventually constructed the South Oaks Gambling Screen (SOGS), attempting to use the most reliable and valid mixture of "hard and soft signs." As a part of the validation of the instrument, Lesieur and Blume screened a sample of 384 college students using the SOGS. The authors found that, "Twenty (5%) of the 384 college students were identified as pathological gamblers (tentatively classified as false-positives)" (p. 1186). Upon further verification using the DSM-III-R criteria as a cross-check, five of the group were false-positives and fifteen were probable pathological gamblers (3.9%). No further comments were made regarding the implications of their findings about the student sample.
Frank's 1990 study focused on students who were enrolled in large introductory courses at Stockton State College in Pomona, New Jersey. The author investigated gambling behaviors and preferences, employment, and demographic variables. Frank delineated three major points in the discussion of his findings:

1. Underage gambling in Atlantic City casinos is widespread. Coupling this with consumption of alcoholic beverages supplied at the casinos, he posits that this is a significant social problem.

2. In regards to pathological gambling, Frank advised the following:

   An additional finding of clinical interest is the small but consistent proportion of the sample who report frequent gambling, betting with sizable amounts of money, and gambling in a non-social context. [Six percent scored in the pathological range on the SOGS]. This suggests the need for closer scrutiny of the undergraduate population for potential pathology of gambling behavior (p. 911).
3. Sixty-six percent of the sample reported winning or breaking even when they gambled. This is highly unlikely since all casino games have a negative expected value for the gambler. He suggests there is a possible bias in cognitive information processing which needs further study. The inaccurate recall of wins versus losses becomes a reinforcer which may foster the persistence of gambling behavior in general, and problem or pathological gambling in particular. Clinical interventions with compulsive gambling behavior may be structured around a more objective means of win/loss record keeping than reliance on memory alone. Corney and Cummings (1985) have developed a model of information processing biases and gambling behavior which supports Frank's stance.

Lesiuier, et al. (1991) have recently presented the most comprehensive study of collegiate gambling attempted thus far. Their sample included six colleges and universities in five states with varying degrees of legalized gambling. Their major finding was that the rate of problem and pathological gambling, as measured by the SOGS, is four to eight times higher than what
has been found in the adult population. The range of the rates of pathological gambling vary from 7.6% in New York to 3.6% in Nevada. They equate the problem/pathological gambling behavior of these young adults with illicit drug use that is common in people of this age group. It is viewed as experimental and normal for the group, and participation in such behavior is predicted to dwindle over time, although in a study by Jacobs (1989) which the authors cited, it was his belief that a large percentage of these students were well on the way to disastrous gambling careers. A longitudinal study was recommended by the authors in order to gain a better understanding of those persons at risk for developing problem or pathological gambling related problems.

Interestingly, Lesieur, et al. (1991) found the following:

While rates of gambling, weekly gambling, highest amounts of money spent in one day, and problem gambling were higher in casino states and New York than in Oklahoma and Texas, the rate of
pathological gambling was not predicted by the presence of casino gambling in the state (p. 9). A possible interpretation of this finding is that a pathological gambler's career can continue its debilitating course once it has begun, regardless of the type of legal gaming available in a particular region.

As previous studies of adolescent gambling have found, gender is a significant factor in college gambling behavior. As suggested by Custer and Milt (1985), and supported by the findings of other authors (Griffiths, 1989; Ladouceur & Mireault, 1988; and, Lesieur & Klein, 1987), male pathological gambling behavior begins earlier. Males outnumber females by a four to one ratio in this age group of gamblers as compared to a two to one ratio in adult population studies (Sommers, 1988; Volberg & Steadman, 1988, 1989). Escapism from relationship problems and traumas in adulthood were offered as explanations for women developing pathological gambling behavior later in life than men, but no reasons were given for the propensity
of males to develop pathological gambling problems at a much younger age (Lesieur, et al, in press).

Smith and Abt (1984) offer some insight into young male gambling behavior:

Often the games we play mirror, if only obliquely, our real lives, and in the context of play the suspense, conflict and uncertainty of life become easier to manage....Competetiveness and aggressiveness are traits that are cultivated in males as part of their socialization process and may be seen in the culture of American childhood....Perhaps the idea of competition, influenced by varying degrees of skill tempered by chance, accounts for the popularity of certain gambling-like games among young boys and for the prevalence of gambling behavior among adult males (pp. 124-126).

Lesieur, et al. (1991) also express the idea that addictive-like behaviors, such as excessive gambling, excessive alcohol or drug use, and overeating are in some way related. Causality or progression are not directly indicated. Several hypotheses are given,
including a physiological or psychological need for external stimulation; socially learned behaviors; or, the use of strict social control may be ineffective with some of these individuals. The authors further hypothesize that the need for external stimulation extends to a more global pattern of risk taking and anti-social behavior. They include gambling, getting drunk, illegal drug use, arrests for non-traffic offenses, and receiving parking tickets as indicators of a larger clinical picture. Recommendations in the college setting include a greater sensitivity by university counselors to problem and pathological gambling behaviors. Academic progress may be impeded and other behavioral problems may arise. It is suggested that gambling related problems may be indicators of other troubles that should be addressed in treatment.

Excluding the articles mentioned above, little clinical investigation has been attempted on the subject of actual college gambling behavior. This is particularly surprising in light of the finding by the Commission in 1976 that those in the 18-24 year old age
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group gamble more than any other age group. Mok and Hraba (1991) support this as they found that age is negatively related to gambling behavior. Further, in a study performed in the Netherlands, approximately half of the people seeking help for gambling related problems were under the age of 25 (Hermkens & Kok, 1990). And, as Rather (1991) pointed out, gamblers have the highest suicide attempt rate of all the addictions. Experimental studies have been performed with college students in a laboratory setting (Blascovich et al., 1973; Blascovich et al, 1976; and, Ginsburg et al., 1976) but, the generalizations about gambling behavior that can be made from laboratory studies are tenuous at best. As Anderson and Brown (1984) demonstrated, there are significant differences between real and artificial gambling situations.

There is growing anecdotal evidence that suggests further clinical study of college gambling behavior is imperative. Two recent newspaper articles are particularly pertinent. First, Rhode Island State Police uncovered a sports betting network operated between the University of Rhode Island and Bryant
college campuses (Rhoden, 1992). Officials believed that parlay cards had been distributed in 9 to 12 states, involving other college campuses and that the weekly betting amount exceeded $100,000. The article indicated that student gambling rings have been discovered at Michigan State, Florida, South Carolina, Texas, Arkansas, and Maine Universities. Consequences of student participation ranged from reprimands and suspensions to involvement with the legal system. Administrators and athletic officials are concerned with student-athlete involvement. At Bryant five basketball players had a total of $54,000 in gambling debts. Although most of the wagering was placed on major college and professional sports, officials fear point shaving scandals similar to what occurred at Tulane University and the University of San Francisco. Other concerns include peripheral illegal acts associated with bookmaking such as organized crime links, extortion, and various strong arm collection practices.

Second, was a bizarre story appearing in the Las Vegas Review-Journal about a bank robber in Las Vegas
who was nicknamed "The Vaulter" by local authorities (UNLV Student, 1992). The modus operandi of the robber was to jump over the counter, rob the bank tellers, and then flee. A 22-year-old University of Nevada, Las Vegas student and fraternity member was recently convicted in connection with a bank robbery. FBI officials indicated that he was a suspect in as many as nine local bank robberies which netted $100,000 in stolen cash. The student was described as, "...a very, very heavy gambler," by the U.S. Attorney's Office and it was believed that he robbed banks to support his gambling habit. It was reported that he gambled $146,000, losing over $50,000 in a four-month span at one casino.

The focus of this paper is on the transitional period that young adults go through as they begin their college careers and become more independent. There are many choices that become available to this group as they are coming of age. Particularly in the city of Las Vegas, these people come in greater contact with different recreational opportunities. Specifically,
college age students begin to get more access to the various forms of casino gambling.

The areas of interest that this paper addresses are presented in the following hypotheses:

1. Underage gambling of college students is prevalent as reported by Lorenz (1983) and Frank (1988). Frank found that of the students who gambled, 66% were under 21 years of age. A comparable proportion is expected from the UNLV sample.

2. It is believed that the proportion of students who are underage and drink alcoholic beverages in establishments that serve liquor will be similar to the proportion of underage students who have gambled in a casino. The purpose of this inquiry is to investigate illegal risk-taking behaviors with an addictive substance (alcohol) versus an addictive behavior (gambling).

3. This inquiry is concerned with the identification of probable pathological gamblers in the survey. Custer and Milt (1982) stated that a predilection toward pathological gambling begins at an early age. At the point when young people become
college students, some of these precursors are probably already present. But, with increased independence and availability of gambling, this may be a critical time in the incubation of adult gambling problems. Previous studies by Frank (1988) and Lesieur et al. (1991) have found that 6% and 5.5%, respectively, scored in the pathological gambling range as delineated by the South Oaks Gambling Screen (SOGS) (i.e., a score of five or higher). Lesieur et al. also reported that 15% of his overall sample scored a three or higher, indicative of some form of gambling problem. Similar proportions are expected from the UNLV sample.

4. Students who are identified as probable pathological gamblers by the SOGS will also be identified by the DSM-III-R (1987) criteria and the proposed DSM-IV (1991) criteria for pathological gambling. It is important that a testing instrument like the SOGS reliably identify the same individuals who would be diagnosed by the accepted criteria established by the professional community.

5. Lorenz (1983) reported that the self-identified gamblers in the Las Vegas sample resided
there an average of one year less than the non-gamblers. Analogously, it is believed that students who are non-residents of Las Vegas may be more at risk for pathological gambling than resident students. As the Gambling Commission (1976) found, there was a significantly higher rate of probable compulsive gambling among Nevadans who moved to Nevada for reasons other than gambling. So too, these students may be at risk.

As a corollary to residency status, it is believed that students who have lived in Las Vegas less than two years are more likely to be pathological gamblers than those who have lived here for more than two years. As Lesieur et al. (1991) demonstrated, New York students had the highest rate of pathological gambling (7.6%) and Nevada students had the lowest rate (3.6%). It is postulated that some type of habituation may be occurring (Lorenz, 1983). This may also lend credence to the stated belief by Lesieur et al. that over time young people may learn from their mistakes and modify their behavior accordingly.
6. In a letter to this author giving permission to use the SOGS testing instrument, Dr. Lesieur (1991) recommended a final hypothesis: that business majors were more likely to have problems with gambling than students from other departments. As an extension of this idea, this study will also look at students who are enrolled in the Hotel College as they are more likely to have direct contact with area casinos vis-a-vis practica, internships, and employment. Finally, a combination of the Hotel and Business colleges will be compared to the remainder of the sample. If there are significant findings for the individual programs being studied, then a stronger significant result would be expected with the combination.
Method

Subjects

Students who voluntarily participated in this study were sampled from Introductory Psychology classes at the University of Nevada, Las Vegas. The questionnaire administration occurred over a two semester period in the Fall of 1991 and the Spring of 1992. Introductory Psychology classes were chosen because of the wide range of disciplines that include such a course as a part of their core requirements. Also, as a major focus of this paper is underage gambling behavior, such courses allow access to a greater proportion of students under the age of 21.

The gambling milieu that Las Vegas has to offer makes this subject pool particularly intriguing. Gambling devices such as video poker and slot machines are accessible to the students within 100 yards of the campus. The Las Vegas Strip is one mile away from the campus proper. Although the majority of students are from Las Vegas, many of the non-resident underclassmen live in the residence halls on the campus grounds. This allows easy access to nearby convenience stores,
restaurants, bars, and other establishments that offer some form of gambling.

**Apparatus**

The testing instrument was a 127-item questionnaire (see Appendix A). Included within it was the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987), used with the permission of Dr. Lesieur (1991); the criteria from the DSM-III-R for Pathological Gambling Disorder (American Psychiatric Association, 1987); and the proposed DSM-IV criteria for Pathological Gambling Disorder (Lesieur and Rosenthal, 1991; Lesieur, 1991). Other questions probed a variety of reasons for gambling; concurrent behaviors while gambling; socio-demographic data; substance use and abuse (licit and illicit); and, queries regarding depression and suicide. A copy of the questionnaire can be found in the Appendix.

The subjects recorded their first 100 answers on machine scorable Scantron forms #2052. The answers were mainly of a yes or no format, or a Likert-like 'A' through 'E' schemata. A Scantron 8080 reading device was used to score each form. Results were transferred
to a series of floppy disks via an IBM PS-2 computer. The final 27 questions were to be answered on the test instrument itself. These were mainly open-ended questions employed to discern a more exact range of answers. The statistics were performed using the university mainframe computer with the statistical package SPSS-X (1986, rev. 1990).

Procedure

The subjects were informed that this experiment concerned the gambling behavior of college students. They were given the approximate expected time it took to complete the questionnaire (15-20 mins.). Informed consent and anonymity for all participants was also explained. The subjects were instructed to complete the protocol during class time. The forms were distributed as the subjects finished an exam or after a brief lecture. The students returned the materials after completing the protocol as they left the room.
Results

Of the 580 questionnaires distributed, 544 were completed for a return rate of 93.7%. The majority of the unreturned questionnaires appeared to be from students who misunderstood the instructions to complete the protocol during class time and return it before leaving. Others chose not to complete it once they began. None of the questionnaires were summarily dismissed as pertinent data could be gleaned from all or part of the protocols.

Demographic data include the following: 49.4% male (n = 269) and 49.9% (n = 271) female; subjects ranged in age from 17 to 72 with a mean of 22.07 (SD = 6.72); 57.4% (n = 312) were under the age of 21 while 39.5% (n = 232) were 21 and older. The racial make-up of the sample was 68.2% white; 4.6% black; 7.9% hispanic; 7.7% Asian; .9% American Indian; and 10.6% others or mixed race. Residency status revealed 86.0% were instate residents while 13.1% were non-resident students. The religious background of the sample revealed 33.8% Catholic; 13.6% Protestant; 6.4% Mormon; 19.4% other Christian religions; 12.5% Atheist or agnostic; 2.4%
Jewish; 7.4% other religions; 2.6% no background.
There were 5.7% of the sample whose families had an
average annual income of $25,000 or less; 21.0% from
families earning $25,001-$50,000; 18.9% from families
earning $50,001-$75,000; 16.1% parents earned
$75,001-$100,000; 9.2% earned over $100,000; and 29%
did not respond. The median income was $78,880.

The resultant statistics for each hypothesis are
as follows:

1. The focus of this hypothesis was on the
prevalence rate of underage gambling of college
students. Of the students who gambled, 56.3% were
underage. In determining if they ever had gambled,
92.0% of the underage students had at some time. It
was also found that 22.4% of the under age students
gambled weekly. Regarding casino gambling, 50.6% of
the underage sub-group had gambled in a casino.

2. This hypothesis concerned two illegal
risk-taking behaviors: the drinking of an alcoholic
beverage while underage in an establishment that served
alcohol; and gambling in a casino while under the age
of 21. It was determined that 72.4% of the subjects
had drunk illegally and 51.4% had gambled illegally. But no significant relationship between the two behaviors was found for the entire sample. Nor was there a significant result when the under 21 sub-group was analyzed. However, when controlling for age of the respondents, those who were 21 or older at the time of the survey did demonstrate a significant relationship, $X^2(1, N = 214) = 12.92, p < .001$.

3. The rates of problem and pathological gambling are of interest in this hypothesis as measured by the South Oaks Gambling Screen (SOGS). In the overall sample, 11.2% of the subjects scored in the pathological range (a score of five or higher). As for the rates of problem gamblers (those who scored a three or higher on the SOGS), this study found 23.7% of the subjects were placed in the problem range. Again breaking it down along gender lines, 32.7% of the males and 15.1% of the females had scores in the problem range. This relationship proved to be significant, $X^2(1, N = 544) = 16.02, p < .001$.

4. The purpose of this hypothesis was to compare the rates of pathological gambling as measured by three
different indices (i.e., the SOGS, the DSM-III-R criteria, and the proposed DSM-IV criteria). As mentioned in the previous result, the SOGS indicated that 11.2% of the sample scored in the pathological range. By the DSM-III-R criteria, 5.1% scored in the pathological range. Employing the proposed DSM-IV criteria, 4.2% scored in the pathological range. Using multiple Chi-Square comparisons, only one reached the significant level. A comparison of the DSM-III-R criteria by the DSM-IV criteria, controlling for the SOGS pathological range was significant, $X^2(1, N = 61) = 11.63, p < .001)$. See Table 1 for further clarification.

As can be seen, of the 61 subjects identified by the SOGS as pathological gamblers, 32 were not found by either the DSM-III-R or proposed DSM-IV criteria. A significant moderate correlation between the two criteria was found, as would be expected ($\phi = .47, n = 61, p < .001$).
Table 1. DSM-III-R Criteria by Proposed DSM-IV Criteria

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<tr>
<td>Total</td>
<td>68.9</td>
</tr>
</tbody>
</table>
5. The area of interest of this hypothesis was that self identified non-resident students may be more at risk for pathological gambling than resident students. As measured by the SOGS, there was a significant relationship found $X^2 (1, N = 539) = 9.01$, $p < .01)$. Of the resident students, 9.6% were identified in the pathological range as compared to 22.5% of the non-resident students.

As a further investigation into the possible effects of habituation due to longer term residence in Las Vegas, it was also postulated that students who lived in Las Vegas less than two years may be more prone to pathological gambling than those who have lived here two years or longer. No significant relationship was found to support this hypothesis.

6. The final hypothesis pertained to the idea that certain college majors would attract disparate amounts of students who would be more prone to become pathological gamblers. Specifically, it was believed that students enrolled in the Hotel College and/or those in the Business College would be more likely to become heavily involved in gambling. No significant
relationships were found in either individual or grouped comparisons. Table 2 has the percentages of possible pathological gamblers as identified by the SOGS and the colleges in which they are enrolled.

Table 2. Rates of Pathological Gambling as Measured by the SOGS Contrasted with College Major

<table>
<thead>
<tr>
<th>College</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>11.4</td>
</tr>
<tr>
<td>Education</td>
<td>12.2</td>
</tr>
<tr>
<td>Engineering</td>
<td>5.0</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>14.3</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>0.0</td>
</tr>
<tr>
<td>Hotel</td>
<td>15.6</td>
</tr>
<tr>
<td>Human Performance</td>
<td>16.7</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>11.5</td>
</tr>
<tr>
<td>Science &amp; Math</td>
<td>2.0</td>
</tr>
<tr>
<td>Undeclared</td>
<td>11.5</td>
</tr>
<tr>
<td>Not Defined</td>
<td>23.1</td>
</tr>
</tbody>
</table>

Other significant findings would include an association between pathological gambling and male gender. When the sample was divided by gender it was discovered that 17.1% of the males and 5.5% of the females had scores in the pathological range. This relationship was found to be significant, $X^2(1, N = 539) = 16.88, p < .001$. Pathology was related to male gender for students who were under 21 years of age.
Pathological gambling was significantly related to male students who are instate residents, $X^2(1, N = 467) = 14.93, p < .001$. No significance was found for gender and pathology of non-resident students, as 25.0% of the males and 17.4% of the females were identified as probable pathological gamblers.

Gender was also associated with gambling behavior in general. A significant relationship was found between males who have ever gambled, $X^2(1, N = 540) = 7.35, p < .01$; gambled during the past year $X^2(1, N = 540) = 5.62, p < .02$; and during the past month $X^2(1, N = 540) = 17.22, p < .001$. Curiously, no significant association was found for gambling during the past week and gender, although the difference between the two sub-groups was over two to one. While 37.2% of the males gambled weekly, 16.2% of the females gambled during the same time period.

Age differences and pathological gambling were significantly associated as 7.4% of the subjects who were under 21 years versus 16.4% of those 21 and older
Collegiate Gambling

scored in the pathological range $X^2(1, N = 544) = 9.96, p < .01$. Other significant relationships with older age include: has the subject gambled within the past year $X^2(1, N = 544) = 6.47, p < .02$; gambled within the past month $X^2(1, N = 544) = 4.87, p < .05$; and, gambled within the past week $X^2(1, N = 544) = 6.16, p < .02$. All measures display a positive correlation with the older age group.

A significant relationship was found between gambling during the past month and residency status as 73.2% of the non-residents had gambled compared to 58.3% of the resident students $X^2(1, N = 539) = 5.12, p < .05$. But, no relationship was found between residency and having ever gambled, gambling within the past year, or gambling in the past week.

SOGS scores were associated with frequency of getting drunk as 15.8% of those who got drunk often scored in the pathological range as compared to 3.9% of the heavy drinkers who did not $X^2(1, N = 518) = 12.20, p < .001$.

No relationships were found between SOGS scores and overeating, arrests other than traffic offenses,
parental home ownership, parental death, parental death before the subject turned 15 years-old, high school or college grade point average, suicidal thoughts or attempts, self reported depression, the use of illegal drugs, parental drinking, childhood happiness, parental separation, type of neighborhood the subject grew up in, or religious background.

Added data that may be of interest would be the rates of participation of college students in various types of gambling behavior. This data was generated from the initial portion of the South Oaks Gambling Screen. Some changes were made in order to get a broader view of gambling participation. This does not affect the scoring of the screen for pathological gambling, which is in the latter portion of the questionnaire. The data is reviewed in Table 3.

Table 4 reviews the different rates of participation in gambling split along gender lines. For the purpose of greater contrast, the only rates that will be included are if they ever played and weekly participation.
Table 3. Gambling Behavior of UNLV Students (percentages)

<table>
<thead>
<tr>
<th>Types of Gambling</th>
<th>Within Ever Played</th>
<th>Within the past</th>
<th>Within the past or or month</th>
<th>Once a week or year</th>
</tr>
</thead>
<tbody>
<tr>
<td>played cards for money</td>
<td>58.4% 21.3% 10.3% 5.0%</td>
<td>21.0 6.1 2.4 .7</td>
<td>4.9 1.7 .6 .2</td>
<td></td>
</tr>
<tr>
<td>bet on horses, dogs, or other animals (at the track, off-track betting, or at a race book)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bet on horses, dogs or other animals (with a bookie)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bet on sports (at a sports book, or at jai alai)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bet on sports (with a bookie)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>played dice games for money (with friends)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

--------------continued-----------------
played dice games for money (at a casino) | 20.2  | 7.7  | 5.3  | 2.2 |
bet at a casino (legal) | 34.2  | 9.9  | 12.1 | 6.6 |
bet at a casino (illegal) | 31.0  | 11.6 | 7.5  | 3.9 |
riverboat gambling | 3.3   | 1.5  | .4   | .2  |
bet on lotteries | 43.0  | 20.8 | 3.7  | 1.3 |
played the numbers | 19.8  | 10.3 | 3.1  | .4  |
played bingo | 39.5  | 11.4 | 2.0  | 1.1 |
played the stock and/or commodities market | 14.2  | 5.1  | 2.0  | 1.7 |
played slot machines | 76.7  | 26.1 | 26.8 | 12.5 |
played video-poker | 77.0  | 22.6 | 29.6 | 17.6 |
played other gambling machines | 45.8  | 16.9 | 15.8 | 7.4 |
bowled, shot pool, played golf, or played some other game of skill for money | 44.8  | 15.8 | 9.9  | 5.3 |
any gambling at all | 94.1  | 86.7 | 60.2 | 26.7 |
Table 4. Gambling Behavior of Male and Female UNLV Students (percentages)

<table>
<thead>
<tr>
<th>Types of Gambling</th>
<th>Once a week</th>
<th>Ever Played</th>
<th>or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>played cards for money</td>
<td>82.1%</td>
<td>45.9%</td>
<td>9.3%</td>
</tr>
<tr>
<td>bet on horses, dogs, or other animals (at the track, off-track betting, or at a race book)</td>
<td>24.9</td>
<td>16.7</td>
<td>1.1</td>
</tr>
<tr>
<td>bet on sports (at a sports book, or at jai alai)</td>
<td>50.4</td>
<td>22.6</td>
<td>13.3</td>
</tr>
<tr>
<td>played dice games for money (with friends)</td>
<td>29.9</td>
<td>20.0</td>
<td>1.1</td>
</tr>
<tr>
<td>played dice games for money (at a casino)</td>
<td>26.4</td>
<td>13.7</td>
<td>3.3</td>
</tr>
</tbody>
</table>

-----------------------continued----------------------
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>bet at a casino (legal)</td>
<td>41.8</td>
<td>26.9</td>
<td>9.3</td>
<td>3.7</td>
</tr>
<tr>
<td>bet at a casino (illegal)</td>
<td>39.0</td>
<td>23.3</td>
<td>7.1</td>
<td>0.7</td>
</tr>
<tr>
<td>riverboat gambling</td>
<td>5.2</td>
<td>1.4</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>bet on lotteries</td>
<td>45.2</td>
<td>41.5</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>played the numbers</td>
<td>23.4</td>
<td>15.2</td>
<td>0.8</td>
<td>0.0</td>
</tr>
<tr>
<td>played bingo</td>
<td>40.1</td>
<td>40.0</td>
<td>0.4</td>
<td>1.9</td>
</tr>
<tr>
<td>played the stock and/or commodities market</td>
<td>18.4</td>
<td>10.4</td>
<td>2.6</td>
<td>0.7</td>
</tr>
<tr>
<td>played slot machines</td>
<td>78.4</td>
<td>76.9</td>
<td>17.2</td>
<td>7.8</td>
</tr>
<tr>
<td>played video-poker</td>
<td>82.5</td>
<td>72.2</td>
<td>24.9</td>
<td>10.4</td>
</tr>
<tr>
<td>played other gambling</td>
<td>52.8</td>
<td>38.6</td>
<td>9.2</td>
<td>5.1</td>
</tr>
<tr>
<td>bowled, shot pool, played</td>
<td>63.6</td>
<td>26.7</td>
<td>7.4</td>
<td>3.0</td>
</tr>
<tr>
<td>golf, or played some other game of skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for money</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>any gambling at all</td>
<td>97.0</td>
<td>91.1</td>
<td>37.2</td>
<td>16.2</td>
</tr>
</tbody>
</table>
DISCUSSION

The results of this study indicate that gambling behavior in general, and particularly, problem and pathological gambling are widespread phenomena among the student population at the University of Nevada, Las Vegas. Regardless of age, sex, or residency status participation is frequent. There are several anomalies peculiar to the UNLV sample that demand the attention of researchers. A review of the initial hypotheses will help to delineate some of these findings, and comparisons with previous research will assist in putting the results in perspective.

Regarding the first hypothesis which dealt with underage gambling, there are two different ways to interpret the data, both with ominous impact. First, Frank and Cashmere (1988) found that 66% of the students who gambled were underage. The present study revealed that 56.3% of the students who gambled were underage. These findings represent the widespread participation in gambling endeavors by young people. As Custer and Milt (1985) intimated, the greater the
participation in gambling, the greater the likelihood of problem or pathological gambling.

Secondly, 50.6% of the underage students in the UNLV sample had gambled in a casino. It may be that some of these students are dropping loose coins into slot or video poker machines as they pass through a casino, in which case they are not high profile players and less likely to be detected. Others may be regular gamblers who enjoy the thrill of tasting the forbidden fruit. As it was determined, 22.4% of the underage sub-group gambled weekly. The reinforcements received by underage patrons (e.g., the thrill of wagering, free cocktails and other inducements, and an environment geared toward exciting the senses), may also contribute to gambling problems. Further study must be done to better understand the frequency and depth of underage gambling in casinos. Although age controls are in place, their efficacy must be called into question. Education of young people may be a viable alternative to help curb underage gambling.

In regard to the second hypothesis, underage drinking in legal establishments that serve alcohol
versus underage casino gambling, no significant
difference was found for the entire sample and for the
under 21 years of age students, as was expected. But,
for the students 21 and older the null hypothesis was
rejected. The reason that this result achieved
significance, it would appear, was that many of the
older age students did not have the opportunity to
gamble in a casino when they were under 21 years-old.
As was found in the separate contingency tables, 56.7%
of the underage students versus 43.9% of the older
students participated in casino gambling, while the
percentage of underage drinking was nearly identical,
71.8% versus 73.4%, respectively.

The overview of illicit underage behavior (i.e.,
drinking and gambling) raises the same concerns
referred to in the case of the first hypothesis.
Namely, underage participation in illegal acts such as
drinking and gambling may put that particular
population at risk for developing problems later in
life. This is not even considering the problems
involved with illicit participation while they are
underage. A review of the efficacy of present
restraints and the education of children of the perils involved with impulsive and addictive behaviors are needed.

Pathological gambling behavior was the focus of the third hypothesis. Previous studies by Frank (1990) and Lesieur et al. (1991) have found rates of 6% and 5.5%, respectively, of probable pathological gambling behavior of college students as scored on the SOGS. Lesieur et al. also stated that 15% of his sample were in the problem range. This study found an overall rate of 11.2% of the student sample fell into the pathological range using the SOGS, while 23.7% were identified as problem gamblers.

A comparison of rates of problem and pathological gambling at institutions in other states may help to clarify the present results. Table 5 contains the results of Lesieur et al. (1991) as contrasted with the findings in the UNLV sample. The sample of 1,771 students who Lesieur et al. surveyed contained 56% females to 44.5% males and they ranged in age from 16 to 57 years with a mean of 22.3 (SD = 5.1).
Table 5. Rates of Problem and Pathological Gambling
(percentages)

<table>
<thead>
<tr>
<th></th>
<th>Problem Gambling</th>
<th></th>
<th>Pathological Gambling</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Male Female</td>
<td>Total</td>
<td>Male Female</td>
<td>Total</td>
</tr>
<tr>
<td>UNLV*</td>
<td>N=540 N=269 N=271</td>
<td>N=540 N=269 N=271</td>
<td>23.7% 32.7% 15.1%</td>
<td>11.2% 17.1% 5.5%</td>
</tr>
<tr>
<td>New York**</td>
<td>N = 444</td>
<td>N = 444</td>
<td>18% 30% 9%</td>
<td>8% 12% 4%</td>
</tr>
<tr>
<td>New Jersey**</td>
<td>N = 227</td>
<td>N = 227</td>
<td>16% 26% 8%</td>
<td>6% 12% 1%</td>
</tr>
<tr>
<td>Nevada**</td>
<td>N = 219</td>
<td>N = 219</td>
<td>16% 20% 12%</td>
<td>4% 6% 1.5%</td>
</tr>
<tr>
<td>Oklahoma**</td>
<td>N = 583</td>
<td>N = 583</td>
<td>11% 19% 4%</td>
<td>5% 8.5% 2%</td>
</tr>
<tr>
<td>Texas**</td>
<td>N = 299</td>
<td>N = 299</td>
<td>12% 18% 8%</td>
<td>5% 9% 3%</td>
</tr>
<tr>
<td>5-State Average**</td>
<td>15% 25% 8%</td>
<td>5.5% 9.5% 2.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Oster (1993)
**Lesieur et al. (1991)
Clearly, the UNLV percentages are elevated over the other percentages across the board. These results were unexpected, but there may be several reasons for this anomaly.

First, there were four questions from the survey that appeared to have had a particular impact upon the UNLV sample and may have affected the final tally, as an affirmative answer would load the pathological scale. To the question, "Did you ever gamble more than you intended to?", 43% answered affirmatively. To the question, "Have you ever felt guilty about the way you gamble or what happens when you gamble?", 23.9% answered yes. To the question, "Have people criticized your gambling?", there were 19.5% affirmatives. And finally, "Have you ever claimed to be winning money gambling but weren't really?", 16.6% gave yes answers. This may have weighted the scores of the students and shoved them into the pathological range. With the omnipresent availability of gambling in Las Vegas, students may be more likely to have affirmative responses to more questions than in other areas where gaming machines and gambling are not as available.
Another interpretation that also must be considered is that the rate of pathological gambling may actually be higher. The aforementioned reasons could also hold true for this explanation. Perhaps a higher cut-off score may better identify pathological gamblers. A score of seven or higher produced 6.8% in that range, while eight or more yielded 5.0%. Additional research on another sample is needed to verify the percentages found.

The fourth hypothesis refers to the comparison between the South Oaks Gambling Screen, the DSM-III-R criteria for pathological gambling, and the Proposed DSM-IV criteria for pathological gambling. As reported in the results section the various scores that indicated probable pathological gambling were 11.2%, 5.1%, and 4.2% for the SOGS, DSM-III-R, and DSM-IV criteria, respectively. Although it was hypothesized that the null hypothesis would not be rejected, there clearly was some difference in what was being measured when one indice was twice the percentage of the other two. Only one Chi-Square comparison reached significance, with a rather dubious result (Table 1).
In comparing the DSM-III-R versus the DSM-IV criteria for only the 61 subjects who were identified by the SOGS as being in the pathological range, over 50% of this sub-group were found to be in the non-pathologic range according to both DSM criteria. Furthermore, only 14 of the 61 subjects were identified as being in the pathologic range by both measures. The contingency coefficients ranged from a low of .45 to a high of .75, even though only a .47 reached the significant level. It appears that the same thing is being measured, but on a continuum. Perhaps the UNLV sample is an anomolous group affected by the pervasiveness of gambling opportunities that skew the results. This may seem to be a unique situation. But, with the growing availability of different gambling venues around the country, researchers and diagnosticians must be ready to re-evaluate the criteria. Some fine tuning may need to be done to better identify the at risk population. An item analysis of the different criteria might be justified.

The fifth hypothesis stated that the non-resident student population would be more at risk to become
pathological gamblers that the resident students. The research appears to support this belief. As 9.6% of the resident students tested out to be in the pathologic range according to the SOGS, well over twice that percentage, 22.5% of the non-residents were identified. Although there was no difference found for the length of residency, there was a significant effect that non-resident status seemed to have on gambling behavior. And this effect was not gender related as 25.0% of the males and 17.4% of the female non-residents tested out in the pathological range. It would appear that the female non-resident students are just as susceptible as the males. Perhaps the novelty of the gaming environment is a contributor. Also, the loosening of parental restrictions may make it easier for the neophytes to gamble and be less conscious of the long term ramifications of their behavior.

Previous research by the Gambling Commission (1976) has shown a higher rate of probable compulsive gambling among Nevadans who moved to Nevada for reasons other than gambling. Students appear to be no different. Without further research that specifically addresses
this sub-group no clear-cut answer is possible. A longitudinal study of the non-resident students would help to see if, as Lesieur et al. (1991) stated, "Whether these youth are 'sowing wild oats' or their high rates are a portent of things to come," (p. 8).

The final hypothesis dealt with the belief that students who were majoring in Hotel Administration and/or Business would be more likely to become pathological gamblers than their academic peers. No statistically significant finding was discovered to support this view. Once again, the pervasiveness of the gambling environment may be a factor in this particular sample as all students are inundated with advertisements, enticements, availability, and accessibility. Possibly a better measure of the relationship of a college major to pathological gambling would be to examine students who are in upper level courses in their particular major. In using Psychology 101 courses it is possible to get a good cross section of students, but many of them will change their majors several times before their junior or senior year.
An interesting caveat to the investigation into college major and pathological gambling was the finding that those students who did not indicate what their major would be had by far the highest rate of identified probable pathological gamblers at 23.1%. It is possible that these students are not as goal oriented as the other students and more willing to attempt other means to try to improve their lot in life. An alternative explanation may be that these students do not have a solid grasp of the communations and permutations involved in gambling. Some support for this view may arise from a look at the 'hard science' students. Those who identified themselves as Engineering, Health Sciences, and Science & Math majors had 5.0%, 0.0%, and 2.0%, respectively, rates of probable gambling. These lower percentages may stem from a greater understanding of the statistics involved in the gambling world. A more in depth study of college majors and gambling behavior may illuminate these differences.

Regarding some of the other findings of this study, it has previously been established that there is
a correlation between male gender and pathological gambling behavior (Custer & Milt, 1985; Gambling Commission, 1976; Lesieur & Klein, 1987; and, Lesieur et al., in press). That has been verified in in the UNLV study. Males gambled significantly more often than females have ever gambled, within the past year, and within the past month. As Smith and Abt (1984) commented, competitiveness and aggressiveness are key factors in understanding male gambling behavior. The socialization of men in this society makes these desirable qualities, but only if they are expressed in an acceptable fashion. Gambling may give these young men the feeling that they are controlling fate, that they can out perform peers, and sense of masculine bravado, false as it may be.

Age differences displayed a consistent relationship as older students gambled more frequently in all categories. Simply, the older students have had greater opportunity to gamble. With this greater opportunity, they are more likely to continue to gamble because of the various reinforcers that they encounter.
There were many other variables investigated that other studies found to be significantly related to gambling problems. No relationship was found to exist in this survey of UNLV students to any of the other variables tested as was reviewed in the results. It would seem that at least some of the other variables would display some significant relationship. The problem here might be that since there were so many subjects identified as pathological gamblers, the attributes of the group became more homogenous. Thus, the ability to differentiate contributing factors to pathological gambling became muddled, if not lost.

In conclusion, gambling behavior and pathological gambling behavior are pervasive among the UNLV student population. The measures of pathological gambling differ as to exact percentages, but problems do exist. One major finding of this paper is the susceptibility of the non-resident students to become problem or pathological gamblers. Whether it be a lack of social controls or the need for stimulation, these students are getting more of an education than they or their parents expect. Acknowledgement and attempts to
rectify the problems should be addressed by the university administration. Not that they will be able to eradicate the problems, but education may help forewarn the students and forestall the problems. Their academic success may hinge on being in command of the facts regarding addictive behaviors in general. Over the past several years, education about drug and alcohol abuse has been on the rise across the country. But, the field of pathological gambling behavior is relatively recent. Our understanding of this addiction is growing yearly, but there is enough knowledge at present to better prepare the students.

As a part of the student orientation package, a seminar should be included on the perils of problem gambling. During this transitional stage into adulthood, students may become more aware of the potential hazards related to gambling and hence, be better able to make choices regarding what could potentially be ruinous to their academic career and life. At the very least, students should be made aware of the availability of psychologists and counselors who are on campus and can assist them with gambling related
problems. When only three subjects reported that they had sought help for gambling problems, it is imperative to let them know that assistance is available.

Probably the most important finding that this paper has to offer is the high rate of pathological gambling as measured by the South Oaks Gambling Screen. As compared to other studies that used the same instrument, the percentages of the UNLV sample far exceed all other findings thus far. It begs for more research to be done at UNLV. The implications seem clear. Of all the places that offer a myriad of gambling games, Las Vegas has the greatest availability of all forms of gambling. The more that gambling is available, the more there will be gambling behavior and pathological gambling. Other states that ratify gambling initiatives should be aware of the implications for their young people.
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