

Problem Gambling in Chinese American Adolescents: Characteristics and Risk Factors

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Abstract This preliminary study examined the characteristics and risk factors of problem gambling among Chinese American adolescents. A total of 192 Chinese American students (aged 13–19) from 9th to 12th grades were recruited from three high schools in San Francisco, California. Students were administered the South Oaks Gambling Screen Revised for Adolescents (SOGS-RA) and a questionnaire that inquired about demographics, gambling behaviors, substance use, video game playing, and other related domains. This study found that estimated past-year prevalence rate among this adolescent group was 10.92 %, much higher than the rates reported by several national studies, which ranged from 2 % to 6 %. The findings here provide evidence to support ethnic minority status as an important factor associated with problem gambling. Interestingly, there were no gender differences in the rates of at-risk problem gambling (SOG-RA scores 2 and 3), but adolescent males did evidence greater severity than females (scores 4 and above). An urge to win money was reported as the main reason for gambling. Video games playing and substance use was positively associated with problem gambling. Other risk factors commonly found to be associated with problem gambling were not found to be significant, including poor academic performance, having a parent who gambles, and early involvement in gambling. These findings indicate that problem gambling may manifest itself differently in ethnic minority communities and needs to be better understood. Clinical and research implications of the findings are discussed.

Keywords Adolescent gambling · Chinese American · Asian · Chinese · Risk factors · Prevalence · Ethnic minority

Current U.S. trends show an increase in gambling venues, gambling advertisements, and the social acceptability of gambling activities (McGowan 2009; Monaghan and Derevensky 2008). With such developments, more people are gambling and, inevitably, problem gambling is on the rise. Youth are not an exception to these trends; in fact, in most

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cases, the trends seem to be having a greater impact on adolescent gambling behavior. A review of the literature on prevalence studies of problem gambling in the U.S. and Canada revealed that adolescent samples are 2 to 4 times higher than adults (Gupta and Derevensky 1998a; Jacobs 2000; Shaffer and Hall 2001). Moreover, adult pathological gamblers were found to start gambling at a younger age (Shaffer and Hall 1996). Shaffer and Hall (2001) concluded that 3 % to 6 % of adolescents are probable problem gamblers and another 8 % to 21 % are at-risk problem gamblers. The term *problem gambling* refers to a serious form of excessive gambling that is measured in the South Oaks Gambling Screen-Revised for Adolescence (SOGS-RA; Winters et al. 1993) with a cut-point of 4 and above. It is referred to as *probable problem gambling* in some studies. The term *at-risk problem gambling* is used to indicate a significant risk for gambling addiction but at a level less severe than *probable problem gambling*. A recent comprehensive review of prevalence studies conducted in different regions of the U.S. and Canada with the SOGS-RA revealed that approximately 60 % to 80 % of adolescents gambled at least once each year and 2 % to 6 % may be problem gamblers (Volberg et al. 2010; Welte et al. 2008).

Risk Factors

As the prevalence rate of adolescent problem gambling is much higher than in the adult population, we wanted to know if certain adolescent groups are more susceptible to gambling involvement and subsequent disordered gambling. An understanding of risk factors for problem gambling would help the development of prevention and treatment programs for the adolescent population. Most of the findings across studies provided consistent support to a number of risk factors associated with adolescent problem gambling. Earlier studies found adolescents who gambled more were more likely to be male, substance users, have a history of delinquent behaviors, have had early involvement in gambling, perform poorly at school, and have parents who gamble (Volberg 1994; Winters et al. 1993). A recent review of adolescent gambling studies also found that being male, being exposed to gambling at an earlier age, having an impulsive and sensation-seeking personality, substance abuse, poor academic performance, parents and friends who gambled, emotional disturbance, living in a gambling-permissive culture, and ethnic minority status are risk factors for adolescent problem gambling (Dickson et al. 2008; Shead et al. 2010).

In a survey conducted among a randomized sample of adolescents in grades 6–12 from Louisiana schools, problem gambling prevalence differed by gender, school affiliation, ethnicity, and age (Westphal et al. 2000). For example, males were at a significantly higher risk for problem gambling in comparison to females; those who attended public schools indicated more problem gambling behavior than those who attended private schools; and ethnic minorities and older youth were also at a greater risk. The study also found the association of problem gambling with the use of alcohol, tobacco, and marijuana. Another large sample study in Minnesota found the same result that male students gambled significantly more than female students (Stinchfield 2000). The study discovered that 8.2 % of male students gambled daily while only 1 % of female students did.

Reviews of the literature on risk factors for adolescent gambling have established an association between substance use and problem gambling (Dickson et al. 2008; Shead et al. 2010). Many studies have indicated that substance abuse and being male are significant predictors for adolescent problem gambling (Hardoon et al. 2004; Winters et al. 1993; Winters et al. 2002). Impulsivity is a common link between substance abuse and gambling.

Individuals with a high level of impulsivity may be more prone to participating in risky behaviors like gambling without careful consideration of harmful consequences (Moreyra et al. 2002).

Another psychological explanation for risky gambling behavior is the sensation-seeking personality. Sensation seekers look for varied, novel, or complex sensations or experiences though high arousal activities like gambling, reckless driving, and playing video games. Sensation seeking is thought to be associated with gambling as “individuals entertain the risk of monetary loss for the positive reinforcement produced by states of high arousal during the periods of uncertainty, as well as the positive arousal produced by winning” (Zuckerman 1979, p. 211). A study of adult gamblers in France found that pathological gamblers who bet at the racetracks had significantly higher scores on Zuckerman’s Sensation Seeking Scale than those who played games in the cafés (Bonnaire et al. 2009). Utilizing the Zuckerman Sensation Seeking Scale in a study of adolescents, Gupta et al. (2006) indicated that adolescent problem and pathological gamblers reported significant higher scores than social gamblers. They suggested that sensation seeking is a meaningful predictor to problem and pathological gambling. Video game-playing is considered a sensation-seeking behavior. Computer or video games provide different types of sensory stimulation to the players through the features of speed, sound, graphics, and credit reward. It is hypothesized that adolescents who are reliant on video games for stimulation and enjoyment may be at greater risk of becoming involved in gambling. An early study by Gupta and Derevensky (1996) found that high use of video and computer games was significantly associated with high risk for gambling activities, e.g., blackjack. However, another study on the relationship between video game playing and adolescent gambling yielded different findings. In a study of 2,669 adolescents aged 13 to 17 years, the hypothesis that playing video games predicted adolescent problem gambling was not supported (Delfabbro et al. 2009). Although the relationship between video gaming and gambling was significant, the effect was so small that it was negligible after controlling for gender. The study did suggest that gender is a strong predictor for more frequent video game playing and gambling.

Ethnicity and Problem Gambling

Most of the studies investigating risk factors for problem gambling have been done on the Caucasian population. There is a major gap in the literature on the part that ethnicity plays as a risk factor for the development and maintenance of problem gambling. Only a few published studies have discussed the relationship between ethnicity and problem gambling (Stinchfield 2000; Volberg et al. 2001; Welte et al. 2004, 2006; Westphal et al. 2000). Stinchfield (2000) found that ethnic minority high school students gambled more than Caucasian students. Volberg et al. (2010) suggested that individuals born outside the country where they lived were at higher risk for problem gambling. These studies suggest that immigrants and refugees are susceptible to problem gambling. Welte and colleagues (2004) found that some ethnic groups, e.g., African-Americans, Hispanic, and Asians, were at higher risk for problem gambling. Their studies found that the odds of a minority American being a problem gambler were 5 times higher than that of white Americans.

Although the exact prevalence rates of pathological gambling among Asian adults are difficult to ascertain, some studies reported higher rates in Asian communities as compared to the 1 % to 3 % among the general population as reported in a review by Shaffer et al. (1999). For example, prevalence rates of 2.9 % for probable pathological gambling have been reported in a sample of Chinese parents in Australia (Blaszczynski et al. 1998).

Blaszczynski et al. (1998) indicated that problem gambling is an underreported phenomenon and a hidden problem in the Chinese community. In a survey of college students across five U.S. states, racial/ethnic background was one of the significant factors associated with problem gambling, and Asians had the highest rate (12.5 %) compared to all other races surveyed (Lesieur et al. 1991). A 1996 study in Montreal, Canada, found that approximately 19 % of Chinese restaurant workers were probable pathological gamblers (Scalia 2003). Another study conducted in the U.K. among a sample of casino patrons found problem gambling to be significantly higher for those who began gambling at an earlier age and who were Asian (Fisher 2000). A study that assessed gambling rates among Southeast Asian refugees found a 59 % lifetime prevalence rate for pathological gambling (Petry et al. 2003). The findings suggested that male gender and younger age were associated with an increased risk among those interviewed. A recent study on gambling behaviors among Cambodian refugees found a 13.9 % rate for lifetime pathological gambling (Marshall et al. 2009). Marshall et al. (2009) suggested that trauma exposure and marital status may be significant predictors of disordered gambling.

Several studies have examined Asian adult gambling behavior, but there is a lack of specific studies conducted among Asian youth; in fact, studies on gambling among ethnic adolescents seem to be rare, although Westphal et al.'s (2000) study in Louisiana found that ethnic adolescents had higher prevalence rates of problem gambling than the general populations, with 7.8 % for Asian Americans compared to 5.6 % for Caucasians. In addition, a survey of scratch-card gambling among adolescents in Birmingham, England, who were over 90 % of Asian origin found 42 % of those sampled had bought their own scratch-cards and 12 % met an adapted version of the DSM-IV criteria for pathological gambling (Griffiths 2000). While a few studies have been conducted internationally, our knowledge about problem gambling among Asian American adolescents remains limited. There is a need for further investigations regarding the cultural phenomenon of problem and pathological gambling among Asian American adolescents in the U.S. Such studies would contribute to the development of prevention and early intervention for Asian adolescent gambling disorders.

The Present Study

The purpose of this survey was to examine the severity of problem gambling among Chinese American adolescents. Our second aim was to identify behavioral and psychosocial variables that are associated with gambling by Chinese American adolescents. This study was conducted in San Francisco high schools where approximately 45 % of the student population is Asian.

Method

Participants

Participants were high school students from 9th to 12th grades who participated in health education classes in three San Francisco public high schools. These high schools were selected because of their large Chinese American student population, i.e., 37 % of the population. A total of 350 questionnaires were collected, but only the data from the Chinese sample ($N=192$) were analyzed for this report. The sample had an almost equal number of male ($N=97$) and female ($N=93$) participants. The mean age of participants for the sample was 15.9 years ($SD=1.5$, Range 13 to 19).

Measures

The survey questionnaire included the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA; Winters et al. 1993), questions on demographics, and other psychosocial variables. The SOGS-RA is a self-reported questionnaire with 16 items that measure gambling frequency, gambling activities, and gambling-related behaviors based on the criteria in the DSM-III-R. Participants rate their gambling behavior in their lifetime and in the past year. The SOGS-RA also examines the clinical criteria for problem gambling. For example, an individual would be expressing a loss of control in gambling when he or she answers yes to the item “Have you ever felt, in the past 12 months, that you would like to stop betting money but didn’t think you could?”

The SOGS-RA is a widely used instrument to screen for adolescent gambling problems. The sum of 12 scored items indicates three levels of adolescent’s gambling problem. Level one with SOGS-RA scores indicate level 1 gambling and denote that the person has no problem with gambling. The scores of 2 or 3 indicate level 2 gambling and suggest that the person is an at-risk problem gambler. Level 3 gambling, or scores 4 and above, indicates that the person is a problem gambler or probable pathological gambler.

The SOGS-RA is a valid and reliable instrument for screening adolescent problem gambling behavior (Shaffer and Hall 1996; Wiebe et al. 2000). The study conducted by Winters et al. (2002) found an alpha coefficient of 0.80 for the SOGS-RA in the community sample. However, the SOGS-RA has yet to be validated in the Asian American adolescent population. The present study on gambling by Chinese American adolescents yielded a satisfactory reliability of SOGS-RA with the same Cronbach alpha of 0.80.

The questionnaire of this study also collected data about demographic characteristics such as age, gender, and ethnic background. Other content domains included substance use, playing video games, having a parent who gambles, emotional distress, and the student’s grade point average (GPA). For example, participants were asked if they had used any types of substance in the past 12 months and played computer video games after school.

Procedures

The data for this study were collected in classrooms. Before the administration of the survey, all of the questionnaires, the data collection procedures, and the education materials on adolescent gambling used during the debriefing and workshop were reviewed and approved by the School Health Program Department of the San Francisco School District. Students from health education classes in three San Francisco high schools completed the questionnaires and attended a workshop about teen gambling. Before the educational workshop, the staff explained the purpose, procedures, confidentiality, and possible breaches of confidentiality of the survey to the students. The staff addressed questions raised by the students. Students were told that their participation was voluntary and they could withdraw from participating in the survey at any time. The survey was administered in the presence of a school teacher in class.

Results

Prevalence of Problem Gambling

The levels of problem gambling in the Chinese American adolescent sample were measured by the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA; Winters, et al. 1993). Table 1 shows the past-year prevalence of at-risk problem gamblers with SOGS-RA

Table 1 SOGS-RA Scores in Chinese American adolescents ($n=183$)

Item Endorsed	<i>n</i>	%	95 % CL
Level 1			
0 Item	112	61.20	[54.14, 68.26]
1 Item	29	15.85	[10.56, 21.14]
Level 2			
2 Items	15	8.20	[4.22, 21.18]
3 Items	7	3.83	[1.05, 6.01]
Level 3			
4 Items	9	4.92	[1.75, 8.05]
5+ Items	11	6.0	[2.57, 9.45]

CI confidence interval

scores of 2 or 3 (level 2) and problem gamblers with SOGS-RA scores of 4 or more (level 3). This survey found that the estimated past-year prevalence of at-risk problem gambling in a Chinese American adolescent sample was 12.03 % ($CI_{95}=7.31, 16.73$). The estimated past-year prevalence of problem gambling was 10.92 % ($CI_{95}=6.41, 15.45$), which is higher than the rates of 2 % to 6 % in national studies (Volberg et al. 2010; Welte et al. 2008).

Gambling Behavior

The current survey found that 66 % of the adolescent sample had gambled at least once in their lifetime while 62 % of the sample reported having gambled in the previous 12 months. The rates were not particularly high, compared to the national and international studies (Volberg et al. 2010; Welte et al. 2008). Table 2 shows the percentage of gambling activities reported by the sample. Of those who reported gambling activities, playing cards for money was the most favored game. Other frequent activities included purchasing raffle tickets and betting money on a game of skill like pool, golf, and an arcade game. A minority of the adolescent sample gambled illegally; 8 % participated in sport betting with a bookie and 12 % in Internet gambling.

Table 2 Gambling Activities of Chinese American adolescents who reported gambling in lifetime ($N=125$)

Gambling Activities	Percentages	95 % CL
Played cards for money	62	[53.49, 70.51]
Purchased raffled tickets	54	[45.26, 62.74]
Money on games of skill like pool, golf, or arcade games	37	[28.52, 45.46]
Bet money on sports teams with friends or relatives	22	[14.74, 29.26]
Flipped coins for money	15	[7.92, 20.08]
Gambled on the internet*	12	[6.30, 17.70]
Bet money on sports teams with a bookie ^a	8	[3.24, 12.76]
Played bingo for money	7	[2.53, 11.47]

CI confidence interval

^aIllegal gambling activity in California

Gender and Age

The literature review indicated that demographic factors such as gender and age predict problem gambling (Johansson, et al. 2009; Shead et al. 2010). Table 2 shows that the SOGS-RA items endorsed by the Chinese American male students ($M=1.47$, $SD=2.25$) were significantly higher than the female students ($M=0.59$, $SD=1.15$), ($F(1, 180)=26.926$, $P<.001$). Interestingly, the percentages of at-risk problem gamblers (i.e., scores 2 and 3 on the SOGS-RA) were not significantly different between the male (10.3 %) and female (12.9 %) adolescent groups. The only significant difference in problem gambling between male and female students was identified in the independent t -test. Of 20 adolescents who scored 4 or higher on the SOGS-RA, 18 were males (90 %) while only 2 were females (10 %).

Many studies have found evidence that early involvement in gambling predicts later gambling problems (e.g., Gupta and Derevensky 1998b; Volberg 1994). However, the correlation between gambling at an early age and problem gambling in later adolescence was not confirmed by this study.

Substance Use and Videogame Playing

Substance use and videogame playing are considered risk factors for problem gambling for both adolescent and adult populations (Johansson et al. 2009; Shead et al. 2010). In this study, participants were asked if they had used substances such as cigarettes, alcohol, marijuana, and cocaine in the past 12 months. Twenty out of 182 Chinese American adolescents reported that they had used alcohol ($N=6$), cigarettes ($N=4$), marijuana ($N=2$), ecstasy ($N=1$), multiple substances ($N=4$), and non-specified ($N=3$). Participants were also asked to report the frequency of daily playing of video games after school. Interestingly, 100 % of the adolescents who were categorized as problem gamblers by SOGS-RA reported playing video games after school while only 25 % of problem gamblers reported substance use in the past 12 months.

Hierarchical regression analyses were conducted to explore whether substance use and videogame playing would account for significant variance of predicted problem gambling (Table 3). After controlling demographic variables of gender and age, substance use contributed significant variance to problem gambling in the second step, $\Delta F=(1, 167)=7.11$, $p<.05$, $\Delta R^2 =$

Table 3 Summary of hierarchical regression analysis of variables predicting problem gambling

	<i>B</i>	<i>SE B</i>	β	R^2	Adj. R^2	ΔR^2	ΔF
Step 1							
Gender	-.98	.28	-.26***	.08	.07	.08	7.25***
Age	.11	.09	.09				
Step 2							
Gender	-.91	.28	-.24***	.12	.10	.04	6.80**
Age	.08	.09	.06				
Sub. Use	.90	.35	.19**				
Step 3							
Gender	-.82	.28	-.22	.14	.12	.03	4.98**
Age	.10	.09	.08				
Sub. Use	.90	.34	.19**				
VG Playing	.21	.09	.16**				

$n=171$. Adj. Adjusted, Sub use Substance Use, VG Playing Videogame Playing** $p<.05$. *** $p=.001$

0.04. After controlling for the variables in the first and second steps, videogame play also contributed significant variance to problem gambling, $\Delta F(1, 166)=4.79, p<.05, \Delta R^2=0.03$.

Reasons for Gambling

Adolescents gamble for various reasons. In this study, the three major reasons for gambling were entertainment (44 %), to win money (23 %), and to seek excitement (22 %). When compared to non-problem gamblers, a significantly higher number of problem gamblers said they gambled to win money ($\chi^2(1, 183)=39.88, p<.001$), for entertainment ($\chi^2(1, 183)=12.01, p<.001$), and for its excitement ($\chi^2(1, 183)=13.72, p<.001$, Table 4). Both males and females rated “money” as the top reason for gambling, but more males than females reported that they gambled for socializing ($\chi^2(1, 189)=9.42, p=.002$) and seeking excitement ($\chi^2(1, 189)=8.02, p=.005$).

Family Variables

This study did not find a significant relationship between a parent who gambles and problem gambling in adolescents. Among those who reported gambling activities in the past 12 months, only 19 % and 13 % of adolescents learned to play gambling activities from their father and mother, respectively. Most of them learned gambling through their friends (63 %) and relatives (32 %).

Discussion

This study confirms that ethnic minority youth are at a higher risk for problem gambling. A problem gambling rate of 10.92 % was found in the present study. Compared to the studies using the SOGS-RA with a cut-point of 4 for problem gambling, the past-year problem gambling prevalence of this study is much higher than the national and international rates of 2 % to 6 % (Volberg et al. 2010; Welte et al. 2008). Volberg et al. (2010) did a comprehensive review of the prevalence studies of adolescent problem gambling that were conducted in North America and Europe. However, that review did not include any studies on Asian adolescent gambling as none had been published (R. A. Volberg, personal communication, November 18, 2010).

Table 4 Difference between non-problem gambling (NP) and problem gambling for reasons for gambling

Items	NP (<i>N</i> =163) n (%)	PG (<i>N</i> =20) n (%)	Pearson chi-square	<i>P</i>	Cramer's <i>V</i>
For entertainment	64 (39 %)	16 (80 %)	12.014	.001	.26
To win money	27 (17 %)	16 (80 %)	39.88	.000	.46
To seek excitement	30 (18 %)	11 (55 %)	13.72	.000	.27
As a hobby	8 (5 %)	7 (35 %)	21.44	.000	.34
To socialize	13 (8 %)	3 (15 %)	1.10	.29	.08
Other reasons	10 (6 %)	4 (20 %)	4.85	.28	.16
Out of curiosity	10 (6 %)	1 (5 %)	.04	.84	.02
To distract myself form daily problems	2 (1 %)	1 (5 %)	1.57	.21	.09

Our findings are consistent with previous gambling studies of ethnic minority youth, suggesting a relationship between ethnicity and problem gambling (e.g., Stinchfield 2000; Welte et al. 2006; Westphal et al. 2000). We believe that the Chinese culture may account for the greater risk for problem gambling among Chinese American adults and adolescents. Over centuries, moderate gambling has been a socially acceptable form of entertainment in Chinese society. Many Chinese children are exposed to gambling activities such as mahjong, pai gow, card games, lottery, horse racing, and sport betting at an early young age. They are even allowed to play mahjong and card games that involve actual monetary bets during major holidays and festivals. Moreover, gambling is often glorified and romanticized in television and the movies in the Chinese and Asian societies. It has been hypothesized that societies with greater acceptance and less stigma of gambling tend to have a higher rate of problem gambling (Raylu and Oei 2004; Volberg et al. 2010).

It has been widely assumed that Asian American adolescents are model minority students who are well adjusted in school and who experience much fewer behavioral and emotional problems. When they experience psychological distress, it is believed by many that they are capable of overcoming the problems either by themselves or with their families' support, instead of seeking professional help (Chiu 2008). However, our findings indicate that the past-year prevalence rate of 10.92 % for problem gambling among Chinese American adolescents is even greater than that of other ethnic minority adolescent groups, for example, 9.4 % for Hispanics, 7.7 % for African Americans, and 6.5 % for Native Americans (Westphal et al. 2000). Although only 66 % of adolescents reported gambling at least once in the past 12 months, there is a particular concern that a total of 16 % of the sample who reported gambling were involved in illegal gambling activities (e.g., sport betting, internet gambling). The gambling problems experienced by Chinese American adolescents can be masked by their outstanding academic performance. The average GPA of participants was 3.14. Unlike other studies that suggest that a low GPA or poor academic performance predicts problem gambling (Dickson et al. 2008; Stinchfield 2000; Winters et al. 1993), this study found no relationship between GPA and SOGS-RA scores. This study has provided empirical evidence to demythologize the stereotype of a model minority for Chinese American adolescents. Our findings call for attention to the prevention of problem gambling among Chinese American Adolescents.

Male students reported higher gambling activities than females. This result is consistent with other studies that suggest gender correlates with gambling behaviors. An interesting finding in the present study indicates that both male and female students have the same risk for problem gambling, but being male is a strong predictor for problem gambling. Of 20 Chinese American adolescents who met the SOG-RA criteria for problem gambling, 90 % of them were male and only 10 % were female. Adolescents cited "to win money," "to seek entertainment," and "to seek excitement" as their top three reasons for gambling. The desire "to win money" explains more variance in problem gambling. Although there was no significant difference between males and females in their cited reasons for gambling, it is interesting to note that more males than females gamble as a way to socialize.

Family variables are considered to be important in understanding adolescent gambling. Several studies have found that having a parent who gambles is a risk factor for adolescent problem gambling (Gupta and Derevensky 1997; Hardoon et al. 2004; Winters et al. 1993). It is also often suggested that parents who have a greater acceptance of gambling will increase the risk that their children will have problem gambling. This study, however, did not confirm the relationship between problem gambling and a parent who gambles.

Other studies have shown similar findings. The study by Welte et al. (2006) indicated that having a parent who gambles is not a significant predictor of problem gambling. For those

Chinese American adolescents who reported gambling in this study, the majority of them learned to gamble from their friends instead of their parents. This suggests that gambling is a socially acceptable activity among adolescents. Public education at school and in social clubs about the consequences of teen gambling would be an effective prevention strategy for problem gambling. Preventive efforts should occur in peer counseling programs as well.

Other risk factors including substance use and computer videogame playing were found to be associated with the risk for gambling. In this study, videogame playing appears to have a strong association with problem gambling. The problem gamblers reported playing video games 4 times more than using substances. Video gaming may play an important role in the development and/or maintenance of the interest in gambling. This study provides evidence to support further investigation of the correlation between sensation seeking and problem gambling. Video games have varied sensory stimulation including visual/graphics, kinesthetic/speed, auditory/sound, and gratification/winning. In recent years, excessive videogame playing has become a significant behavioral problem in many Asian countries (Chiu et al. 2004; Gentile, et al. 2011). This finding has led to the development of specific prevention efforts on certain types of adolescents (King et al. 2010; Griffiths 2009; Griffiths and Meredith 2009).

This study explores gambling behavior in Chinese American adolescents. Their risk for problem gambling was found to be high. However, we should interpret the data with the limitations of this study in mind. The sample of this study comprised about 200 Chinese American youth living in the same urban city, San Francisco. The prevalence rate found in this study should not be generalized to other Asian American groups. Cultural variability among different Asian American groups is often overlooked. The gambling and problem gambling in Asian American adolescent populations should be further investigated.

Many common risk factors were found to be associated with problem gambling; however, this study was not designed to measure all these correlates comprehensively. Some factors such as substance use, videogame playing, emotional distress, and life dissatisfaction were only measured by one to two items on the questionnaire. Due to these limited items of self-reporting measures of risk factors in this study, no conclusion about the relationship between these risk factors and problem gambling should be drawn. The use of objective and standardized measures in a longitudinal study would be helpful in determining the roles of risk factors in developing and maintaining disordered gambling.

References

- Blaszczynski, A., Huynh, S., Dumlao, V. J., & Farrell, E. (1998). Problem gambling within a Chinese speaking community. *Journal of Gambling Studies*, 14, 359–380.
- Bonnaire, C., Bungener, C., & Varescon, I. (2009). Subtypes of French pathological gamblers: comparison of sensation seeking, alexithymia and depression scores. *Journal of Gambling Studies*, 25, 455–471.
- Chiu, E. Y. (2008). Assessment and psychotherapy with Asian Americans. In C. Negy (Ed.), *Cross-cultural psychotherapy: toward a critical understanding of diverse clients* (2nd ed., pp. 207–235). Nevada: Bent Tree Press.
- Chiu, S. I., Lee, J., & Huang, D. (2004). Video game addiction in children and teenagers in Taiwan. *Cyberpsychology & Behavior*, 7, 571–581.
- Delfabbro, P., King, D., Lambos, C., & Puglies, S. (2009). Is video-game playing a risk factor for pathological gambling in Australian adolescents? *Journal of Gambling Studies*, 25, 391–405.
- Dickson, L. M., Derevensky, J. L., & Gupta, R. (2008). Youth gambling problems: examining risk and protective factors. *International Journal of Gambling Studies*, 8, 25–47.
- Fisher, S. (2000). Measuring the prevalence of sector-specific problem gambling: a study of casino patrons. *Journal of Gambling Studies*, 16, 25–51.

- Gentile, D. A., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., & Khoo, A. (2011). Pathological video game use among youths: a two-year longitudinal study. *Pediatrics*, *127*, 319–329.
- Griffiths, M. D. (2000). Scratchcard gambling among adolescent males. *Journal of Gambling Studies*, *16*, 79–91.
- Griffiths, M. D. (2009). Online computer gaming: advice for parents and teachers. *Education and Health*, *27*, 3–6.
- Griffiths, M. D., & Meredith, A. (2009). Videogame addiction and its treatment. *Journal of Contemporary Psychotherapy*, *39*, 247–253.
- Gupta, R., & Derevensky, J. L. (1996). The relationship between gambling and video-game playing behavior in children and adolescents. *Journal of Gambling Studies*, *12*, 203–209.
- Gupta, R., & Derevensky, J. L. (1997). Familial and social influences on juvenile gambling. *Journal of Gambling Studies*, *13*, 179–192.
- Gupta, R., & Derevensky, J. L. (1998a). Adolescent gambling behavior: a prevalence study and examination of the correlates associated with excessive gambling. *Journal of Gambling Studies*, *14*, 227–244.
- Gupta, R., & Derevensky, J. L. (1998b). An empirical examination of Jacob's general theory of addiction: do adolescent gamblers fit the theory? *Journal of Gambling Studies*, *13*, 179–192.
- Gupta, R., Derevensky, J. L., & Ellenbogen, S. (2006). Personality characteristics and risk-taking tendencies among adolescent gamblers. *Canadian Journal of Behavioural Science*, *38*, 201–213.
- Hardoon, K., Gupta, R., & Derevensky, J. L. (2004). Psychosocial variables associated with adolescent gambling. *Psychology of Addictive Behaviors*, *18*, 170–179.
- Jacobs, D. F. (2000). Juvenile gambling in North America: an analysis of long-term trends and future prospects. *Journal of Gambling Studies*, *16*, 119–152.
- Johansson, A., Grant, J. E., Kim, S. W., Odlaug, B. L., & Götestam, K. G. (2009). Risk factors for problematic gambling: a critical literature review. *Journal of Gambling Studies*, *25*, 69–72.
- King, D. L., Delfabbro, P. H., & Griffiths, M. D. (2010). Cognitive behavioral therapy for problematic video game players: conceptual considerations and practice issues. *Journal of Cybertherapy And Rehabilitation*, *3*, 261–273.
- Lesieur, H. R., Cross, J., Frank, M., Welch, M., White, C. M., Rubenstein, G., Moseley, K., & Mark, M. (1991). Gambling and pathological gambling among university students. *Addictive Behaviors*, *16*, 517–527.
- Marshall, G. N., Elliott, M. N., & Schell, T. L. (2009). Prevalence and correlates of lifetime disordered gambling in Cambodian refugees residing in Long Beach, CA. *Journal of Immigrant and Minority Health*, *11*, 35–40.
- McGowan, R. A. (2009). The current climate of gambling in the United States. In A. Browne-Miller (Ed.), *The Praeger international collection on addiction* (Behavioral addiction from concepts to compulsion, Vol. 4, pp. 3–18). Santa Barbara, CA: Praeger.
- Monaghan, S., & Derevensky, J. L. (2008). An appraisal of the impact of the depiction of gambling in society on youth. *International Journal of Mental Health and Addiction*, *6*, 537–550.
- Moreyra, P., Ibáñez, A., Liebowitz, M. R., Sáiz-Ruiz, J., & Blanco, C. (2002). Pathological gambling: addiction or obsession. *Psychiatric Annals*, *32*(3), 161–166.
- Petry, N. M., Armentano, C., Kuoch, T., Norinth, T., & Smith, L. (2003). Gambling participation and problems among South East Asian refugees to the United States. *Psychiatric Services*, *54*, 1142–1148.
- Raylu, N., & Oei, T. P. (2004). Role of culture in gambling and problem gambling. *Clinical Psychology Review*, *23*, 1087–1114.
- Scalia, R. (2003, November 11). Montreal's Chinese battle own addictions. Retrieved from http://www.responsiblegambling.org/articles/Montreal_chinese_battle_own_addictions.pdf
- Shaffer, H. J., & Hall, M. N. (1996). Estimating the prevalence of adolescent gambling disorders: a quantitative synthesis and guide toward standard gambling nomenclature. *Journal of Gambling Studies*, *12*, 193–214.
- Shaffer, H. J., & Hall, M. N. (2001). Updating and refining prevalence estimates of disordered gambling behavior in the United States and Canada. *Canadian Journal of Public Health*, *92*, 168–172.
- Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1999). Estimating the prevalence of disorder gambling behavior in the United States and Canada: a research synthesis. *American Journal of Public Health*, *89*, 1369–1376.
- Shead, N. W., Derevensky, J. L., & Gupta, R. (2010). Risk and protective factors associated with youth problem gambling. *International Journal of Adolescent Medicine and Health*, *22*, 39–58.
- Stinchfield, R. (2000). Gambling and correlates of gambling among Minnesota public high school students. *Journal of Gambling Studies*, *16*, 153–173.
- Volberg, R. A. (1994). The prevalence and demographics of pathological gamblers: the implication for public health. *American Journal of Public Health*, *84*, 237–241.
- Volberg, R. A., Abbot, M. W., Rönning, S., & Munck, I. M. E. (2001). Prevalence and risks of pathological gambling in Sweden. *Acta Psychiatrica Scandinavica*, *104*, 250–256.
- Volberg, R. A., Gupta, R., Griffins, M. D., Ólason, D. T., & Delfabbro, P. (2010). An international perspective on youth gambling prevalence studies. *International Journal of Adolescent Medicine and Health*, *22*, 3–38.

- Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M., & Parker, J. (2004). Risk factors for pathological gambling. *Addictive Behaviors, 29*, 323–335.
- Welte, J. W., Wieczorek, W. F., Barnes, G. M., & Tidwell, M. (2006). Multiple risks factors for frequent and problem gambling: individual, social, and ecological. *Journal of Applied Social Psychology, 36*, 1548–1568.
- Welte, J. W., Barnes, G. M., Tidwell, M., & Hoffman, J. H. (2008). The prevalence of problem gambling among U.S. adolescents and young adults: results from a national survey. *Journal of Gambling Studies, 24*, 119–133.
- Westphal, J. R., Rush, J. A., Stevens, L., & Johnson, L. J. (2000). Gambling behavior of Louisiana students in grade 6 through 12. *Psychiatric Services, 51*, 96–99.
- Wiebe, J. M. D., Cox, B. J., & Mehmel, B. G. (2000). The South Oaks Gambling Screen Revised for Adolescents (SOGS-RA): further psychometric findings from a community sample. *Journal of Gambling Studies, 16*, 275–288.
- Winters, K. C., Stinchfield, R. D., & Fulkerson, J. (1993). Toward the development of an adolescent gambling problem scale. *Journal of Gambling Studies, 8*, 63–84.
- Winters, K. C., Stinchfield, R. D., Botzet, A., & Anderson, A. (2002). A prospective study of youth gambling behaviors. *Psychology of Addictive Behaviors, 16*, 3–9.
- Zuckerman, M. (1979). *Sensation seeking: beyond the optimal level of arousal*. Hillsdale, NJ: Lawrence Erlbaum.