Mental health and gambling in urban female adolescents

Silvia S. Martins, M.D.Ph.D.[a,*], **Carla L. Storr, Ph.D**[a], **Nicholas S. Ialongo, Ph.D.**[a], and **Howard D. Chilcoat, Ph.D.**[a,b]

aDepartment of Mental Health, Johns Hopkins Bloomberg School of Public Health

bGlaxoSmithKline Worldwide Epidemiology.

Abstract

This study explores differences in mental health and behavioral disturbances between female gamblers versus nongamblers from a community sample of 232 female urban youth. Female adolescent recreational gambling was associated with high levels of childhood hyperactivity measured at age 6, past-year substance use, and past-year anxiety symptoms.

Keywords

recreational gambling; urban youth; female adolescents; substance use; problem behaviors; anxiety symptoms; depressive symptoms

Introduction

Adolescent gambling has been linked to a wide array of mental health and behavioral disturbances [1-3]. Little is known about characteristics associated with gambling in urban, predominantly African-American youth despite the high rates of gambling problems among African-Americans [4]. Research has indicated that gender considerations are important in understanding youth gambling and the relationship between gambling and psychiatric problems in adolescents [1-2]. Because the prevalence of gambling and gambling problems are usually lower among females, female adolescent gamblers are largely understudied. Substance use and internalizing behaviors have been associated with gambling among girls [2]. This study explores differences in substance use, emotional problems (depression and anxiety symptoms) and behavioral problems (childhood aggression, impulsivity and hyperactivity) as a function of being a gambler among a community sample of females growing up in an urban environment.

Methods

Sample

Since 1993, a cohort of 678 students (47% girls) beginning first grade in 27 classrooms in 9 urban public elementary schools in the western half of Baltimore, MD, have been assessed annually as part of a group randomized prevention trial that targeted academic achievement

---

and aggression [5]. A randomized block design was employed, with schools serving as the clustering factor. Details about the sample design and trial are available elsewhere [5]. In 2004, when most of the cohort was in 11th grade, 73% (n=232) of the original female cohort participated in a 60-90 minute self-administered computer with audio interview: 90% African American, mean age 17.0 years. Tracking was not limited to those still attending school. Study protocols were approved by institutional review boards (IRB) of Johns Hopkins University. Parental signed consent and child assent were obtained.

Measures

Assessed in 2004—Adolescents with past-year gambling behaviors and problems were identified by their score on The South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA) [6]. A score of 1 or greater indicates any past-year gambling behavior (e.g., 0=nongambler). A score equal to 1 is a gambler with no gambling-related problems. Several gambling- related problems are experienced by at-risk gamblers (score 2-3) and problem gamblers (score 4 or more). Our internal consistency reliability was comparable to other samples, alpha=0.71. A 45-item assessment, The Baltimore How I Feel Adolescent Version (BHIF-AY), measured the frequency of emotional problems over the preceding two weeks on a four-point scale from "never" (0) to "most times" (3) (alpha=.89 for depressive symptoms; alpha=.79 for anxiety symptoms) [7]. High levels of depressive and anxious feelings were calculated by dividing the symptom scores at the mean (data was skewed to the left). Past-year substance use was assessed via questions from the Monitoring the Future National Survey [8]. Illegal drug use included any use of: marijuana, cocaine, crack, heroin, ecstasy (3,4-methilenodioximethamphetamine, MDMA), hallucinogens, or inhalants.

Baseline and previous waves—Data was gleaned from previous survey rounds in order to assess the association of gambling with early childhood problem behaviors. When the child was in first grade, parents rated their child's adaptation to family/home task demands over the preceding three week period using a 4-point frequency scale (1 = almost never to 4 = almost always) [10]). The sum of the items in the domains of aggressive/disruptive behavior (11 items), students' self-regulation (impulsivity) (3 items), and motor control (hyperactivity) (3 items) were tertiled (low, moderate, high). Substance use reported in the grade 6 to11 assessments provided a cumulative lifetime measure of substance use. Demographic characteristics of the sample (e.g., age, race, and free lunch status) were obtained from school records. Free lunch eligibility has been found to correlate highly with family income and other traditional measures of socioeconomic status [9].

Statistical Analyses

Exploratory and contingency table analyses explored differences in the association between gambling status and substance use, emotional problems, and childhood behavior problems via chi-square tests (χ^2). Logistic regression models estimated odds ratios (aOR) and 95% confidence intervals in the presence of other covariates: free lunch status, race, and first grade intervention status. To accommodate the initial sample design (clustering of students within schools), we used a variant of the Huber-White sandwich estimator of variance to obtain robust standard errors and variance estimates.

Results

Thirty-seven percent of females (36.6%, n=85) had gambled in the year preceding the interview (36.5% of the African-American females and 37.5% of the White females). Six percent (5.9%) of the female gamblers (all African-American) had past-year gambling problems (4 at-risk gamblers and 1 problem gambler), representing 2.5% of the overall sample. There were no

statistically significant differences between gamblers and non-gamblers in regards to eligibility for free lunch status (as a proxy for SES), race, and first grade intervention status.

Table 1 provides the prevalence estimates and adjusted odds ratios of the various factors explored. Past-year substance use (tobacco, alcohol, and illegal drug use) was associated with gambling. Female gamblers were more likely than non-gamblers to report high levels of past-year anxious feelings (OR=2.10, 95%CI=1.08-4.06, p-value=.029). Female gamblers were two times more likely than their non-gambling counterparts to have had high levels of childhood hyperactivity as rated by parents (OR=2.23, 95%CI=1.03-4.82, p-value=.043).

Discussion

Our results suggest that, at least in urban samples of youth, females with high levels of childhood hyperactivity are more likely to gamble in adolescence. Substance use and anxious feelings were associated with female adolescent gambling.

Childhood problem behaviors, especially hyperactivity, might play a role in adolescent recreational gambling initiation not only among male adolescents [3], but also, among female adolescents. Future studies need to clarify whether childhood hyperactivity in girls could be early signs of adolescent anxiety, and if childhood hyperactivity is an early sign of gambling vulnerability for both genders. Studies have associated childhood impulsivity with gambling among boys, and childhood hyperactivity with problem gambling in male adults [3,11]. The association between anxiety symptoms and gambling still needs to be further explored, because in this sample they were both assessed in the same interview. Females might gamble to alleviate anxiety, or they might have developed symptoms secondary to gambling, or even there might be a common shared vulnerability between anxiety symptoms and gambling [2].

In this study, the factors associated with gambling were examined among a community epidemiologically defined sample of urban female adolescents. The availability of longitudinal data on drug use and parent ratings of childhood maladaptive behaviors is a major strength. One potential limitation is that self-reports could lead to response bias in cross-sectional results. In any longitudinal study there might be attrition, while 27% attrition was observed, it was non-differential in respect to baseline demographics.

In conclusion, gambling was associated with substance use, anxious symptoms, and high levels of childhood hyperactivity among female urban youth.

References

1. Chalmers H, Willoughby T. Do predictors of gambling involvement differ across male and female adolescents? J GambStudies. 2006 Sep 13;[Epub ahead of print]

2. Desai RA, Maciejewski PK, Pantalon MV, et al. Gender differences in adolescent gambling. Ann Clin Psychiatry 2005;17(4):249–58. [PubMed: 16402759]

3. Vitaro F, Brendgen M, Ladouceur R, et al. Gambling, delinquency, and drug use during adolescence: mutual influences and common risk factors. J Gambl Stud 2001;17(3):171–90. [PubMed: 11761603]

4. Cunningham-Williams, RM.; Cottler, LB.; Compton, WM., et al. Am J Public Health. 3. 88. 1998. Taking chances: problem gamblers and mental health disorders--results from the St. Louis Epidemiologic Catchment Area Study; p. 1093-6.

5. Ialongo N, Poduska J, Werthamer L, et al. The distal impact of two first grade preventive interventions on conduct problems and disorder and mental health service need and utilization in early adolescence. J Em Behav Disorders 2001;9:146–160.

6. Winters KC, Stinchfield RD, Fulkerson J. Toward the development of an adolescent gambling problem severity scale. J Gambl Stud 1993;9:63–84.

7. Ialongo, NS.; Kellam, SG.; Poduska, J. Manual for the Baltimore How I Feel (Tech Rep No 2) . Baltimore MD: Johns Hopkins University; 1999.

8. Johnston, LD.; O'Malley, P.; Bachman, JG. U.S. DHHS, PHS, NIH, Pub. No. 95-4026. 1995. National survey results on drug use from the monitoring the future study, 1975-1994: Volume 1 Secondary School Students.

9. Ensminger ME, Forrest CB, Riley AW, et al. The validity of measures of socioeconomic status of adolescents. J Adolesc Res 2000;15:392–419.

10. Ialongo, NS.; Kellam, SG.; Poduska, J. Manual for the Parent Observation of Child Adaptation (Tech Rep No 3). Baltimore MD: Johns Hopkins University; 1999.

11. Rodriguez-Jimenez R, Avila C, Jimenez-Arriero MA, et al. Impulsivity and sustained attention in pathological gamblers: influence of childhood ADHD history. J Gambl Stud 2006;22:451–61. [PubMed: 16912931]

Table 1

Prevalence estimates and adjusted Odds Ratio of substance use, recent emotional feelings and childhood problem behaviors by gambling status in an urban sample of 17 year old females.

	Nongamblers (n=147) n (%)	Gamblers (n=85) n (%)	aOR[†] (95% CI)	p-value
Ever use of				
tobacco	115 (78%)	74 (87%)	1.87 (0.88-3.99)	.105
alcohol	140 (95%)	85 (100%)	---[§]	---
any illegal drug	102 (69%)	67 (79%)	1.66 (0.88-3.14)	.120
Past year use of				
tobacco	26 (18%)	36 (42%)	3.54 (1.72-7.31)	.001
alcohol	75 (51%)	55 (65%)	1.76 (1.03-3.00)	.037
any illegal drug	31 (21%)	27 (32%)	1.75 (1.02-3.00)	.043
Past year high levels of				
depressive feelings	89 (61%)	53 (62%)	1.07 (0.52-2.23)	.843
anxious feelings	83 (56%)	62 (73%)	2.10 (1.08-4.06)	.029
Childhood[*]				
Aggression (ref=low)				
Moderate	38 (31%)	25 (32%)	1.02 (0.50-2.08)	.958
High	37 (30%)	20 (26%)	0.83 (0.39-1.75)	.623
Hyperactivity (ref=low)				
Moderate	53 (43%)	26 (34%)	0.93 (0.43-1.99)	.844
High	22 (18%)	25 (32%)	2.23 (1.03-4.82)	.043
Impulsivity (ref=low)				
Moderate	40 (32%)	18 (23%)	0.64 (0.34-1.22)	.175
High	38 (31%)	27 (35%)	1.03 (0.48-2.22)	.937

[†]Adjusted Odds Ratio: adjusted for eligibility for free lunch status (SES), first grade intervention status, and race. Non-gamblers are the reference category.

[§]Odds ratio not available because all female past-year gamblers were lifetime alcohol users.

[*] Parental report when child was beginning first grade (approximately age 6).