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Correlates of gambling on high-school grounds

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Abstract

Objective—This study examined adolescent gambling on school grounds (GS+) and how such behavior was associated with gambling-related attitudes. Further, we examined whether GS+ moderated associations between at-risk problem-gambling (ARPG) and gambling behaviors related to gambling partners.

Method—Participants were 1988 high-school students who completed survey materials. Demographic, perceptions, attitudes, and gambling variables were stratified by problem-gambling

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Conflict of Interest

The authors report no conflicts of interest with respect to the content of this manuscript.

Contributors

Dawn Foster and Marc Potenza developed initial drafts of the manuscript. Rani Hoff and Corey Pilver supported analyses. Yvonne Yau, Marvin Steinberg, Jeremy Wampler, and Suchitra Krishnan-Sarin supported manuscript refinement.

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severity (ARPG versus recreational gambling) and GS+ status. Chi-square and adjusted logistic regression models were used to examine relationships among study variables.

Results—Nearly 40% (39.58%) of students reported past-year GS+, with 12.91% of GS+ students, relative to 2.63% of those who did not report gambling on school grounds (GS), meeting DSM-IV criteria for pathological gambling ($p<0.0001$). In comparison to GS- students, GS+ students were more likely to report poorer academic achievement and more permissive attitudes towards gambling behaviors. Weaker links in GS+ students, in comparison with GS-, students, were observed between problem-gambling severity and gambling with family members (interaction odds ratio (IOR)=0.60; 95% CI=0.39–0.92) and gambling with friends (IOR=0.21; 95% CI=0.11–0.39).

Conclusions—GS+ is common and associated with pathological gambling and more permissive attitudes towards gambling. The finding that GS+ (relative to GS-) youth show differences in how problem-gambling is related to gambling partners (friends and family) warrants further investigation regarding whether and how peer and familial interactions might be improved to diminish youth problem-gambling severity. The high frequency of GS+ and its relationship with ARPG highlight a need for school administrators and personnel to consider interventions that target school-based gambling.

Keywords

gambling; school; at-risk; adolescent

Introduction

High rates of gambling and gambling-related problems exist among adolescents (Barnes, Welte, Hoffman, & Tidwell, 2009; Volberg, Gupta, Griffiths, Olason, & Delfabbro, 2010; Yip et al., 2011). Although gambling is often viewed as an adult behavior, the prevalence of adolescent gambling problems is roughly three times that of adults (Shaffer, Hall, & Vander Bilt, 1999). Gambling during adolescence has been linked with psychiatric, social, and substance misuse problems in adulthood (Burge, Pietrzak, & Petry, 2006). Both recreational and problem gambling have been associated with adverse social functioning and mental health in adolescence including poor school performance and difficulties with aggression and mood (Lloyd et al., 2010; Yip et al., 2011). Thus, efforts to develop targeted educational, prevention, and intervention programs are in line with public and mental health initiatives.

Gambling-related perceptions have been linked to engagement in gambling (Foster, Neighbors, Rodriguez, Lazorwitz, & Gonzales, 2014; Leeman et al., 2014) and substance-use behaviors (Leeman et al., 2014). Extant literature related to adolescent perceptions about gambling indicates that perceptions of family and friends' support for refraining against gambling may protect against problem gambling (Hardoon, Gupta, & Derevensky, 2004). However, adolescents who gamble with friends and peers may be at risk for gambling-related problems, particularly if gambling becomes a regular peer activity, as the behavior can become perceived as normative, safe, and even desirable (Shead, Derevensky, & Gupta, 2010). Furthermore, relative to non-problem gamblers, at-risk/problem gamblers are more

likely to have friends who gamble, and are also more likely to approve of gambling behavior (Gori et al., 2014). Additionally, perceived norms for gambling (e.g., perceiving that gambling is prevalent among or more accepted by peers) have been tied to gambling behavior (Foster et al., 2014).

One domain in which youth may gamble or engage in other risk behaviors is within their school environment. Risk behaviors among students in school environments have been examined, including the use of alcohol (Hennessy & Tanner-Smith, 2014; Manthey, Aidoo, & Ward, 2008; Walters, Bennett, & Noto, 2000), tobacco (Agaku, Ayo-Yusuf, Vardavas, & Connolly, 2014; Cairney & Lawrance, 2002; Emory et al., 2014), and cannabis (Elliott & Carey, 2013) and engagement in gambling (Shaffer, Forman, Scanlan, & Smith, 2000). While being male and using substances have been linked to gambling and problem-gambling severity in high-school students (Lee, Martins, Pas, & Bradshaw, 2014; Yip et al., 2011), factors linked to the propensity to gamble on school grounds have not been systematically investigated. Given links between gambling and substance-use behaviors and peer influences on these processes (Langhinrichsen-Rohling, Rohde, Seeley, & Rohling, 2004), one might hypothesize that relationships between problem-gambling severity and gambling partners might be influenced by between gambling-on-school-grounds status. Given that schools have policies regarding not engaging in risk behaviors like gambling on school grounds, one might hypothesize that gambling-on-school-grounds status might be associated with more permissive attitudes towards gambling. Specific information regarding the factors associated with gambling on school grounds may provide school administrators, teachers and health-care providers (e.g., school nurses) important information regarding possible at-risk youth and individuals who might benefit from interventions.

Given the current gap in knowledge regarding relationships between gambling-on-school-grounds status, problem-gambling severity and gambling-related measures, the present study examined how gambling on school grounds might relate to at-risk problem gambling (ARPG) and gambling-related attitudes and behaviors. It was hypothesized that students who gambled on school grounds (GS+) as compared to those who did not (GS-) would be more likely to report poorer academic performance, more frequent ARPG and pathological gambling, and more permissive attitudes towards gambling. The study also examined the extent to which gambling-on-school-grounds status moderated the relationships between problem-gambling severity and substance use, Internet gambling, and reported gambling partners. Given that GS+ youth peers might be anticipated to be gambling with peers on school grounds, we hypothesized that gambling on school grounds would moderate the relationship between problem-gambling severity and gambling with peers.

Method

Participants and procedure

The present data came from a survey of risk behaviors among high-school students (Cavallo et al., 2010; Cavallo et al., 2010; Kundu et al., 2013; Slavin et al., 2013; Yau et al., 2014). All public four-year high-schools and nonvocational or special-education high-schools in the state of Connecticut were invited to participate in this research via invitation letters and follow-up phone calls during 2006–2007. Schools were offered follow-up reports of risk

behavior frequencies in the student body as incentive for participation. Not all geographic regions of the state were adequately represented following initial recruitment procedures; thus, additional targeted recruitment was conducted in order to ensure sufficient representation of underrepresented regions. School board and/or superintendent permission was obtained among schools interested in participating. Schools from all geographic state regions and from each of the three district-reference-group tiers (based on socioeconomic status of families within school districts) were included in the sample for a total of 4,523 adolescents. As the focus of the present analyses related to GS+ and problem-gambling severity, students who did not report having engaged in gambling behavior in the past year (12 months) were excluded as were those with missing information on inclusionary criteria for pathological gambling. Thus, the final sample consisted of 1,988 adolescents. The final sample did not differ from the total sample with regard to demographic characteristics or major study variables. Passive parental consent and student assent procedures were approved by the institutional review boards (IRB) at Yale University and all data collection sites.

Survey characteristics

The survey was designed to assess multiple risk behaviors among Connecticut high-school adolescents and was comprised of 154 questions assessing a range of demographic characteristics, gambling perceptions, problem-gambling severity, substance use, and other health and risk behaviors. Items were derived from surveys of adolescent risk behaviors such as the Youth Child Risk Behavior Survey (Eisenmann, Bartee, & Wang, 2002), and included previously established measures such as the Massachusetts Gambling Screen (MAGS; Shaffer, Labrie, Scanlan, & Cummings, 1994). Given the focus on GS+ and ARPG, only students reporting having engaged in gambling behavior and completing all scoring items from the MAGS were included in analyses.

Measures

Demographic characteristics—Participants provided demographic information including gender, age, racial/ethnic background, school grade, and grade average. Overall demographic findings have previously been published (Schepis et al., 2008; Yip et al., 2011).

Gambling on school grounds—Gambling was defined as “any game you bet on for money or anything else of value.” Gambling on school grounds was assessed by asking participants whether they had gambled on school grounds in the past year (12 months). Those endorsing *Never* were categorized as not gambling on school grounds (GS-) and those endorsing *Less than monthly*, *Monthly*, *Weekly*, or *Daily* were categorized as having gambled on school grounds (GS+).

Gambling perceptions—Perceptions related to gambling held by peers and family, as reported by participants, were assessed as described previously (Kundu et al., 2013; Slavin et al., 2013). Respondents indicated whether they thought their parents would disapprove or approve of their gambling (parental perception of gambling) on a Likert-type scale ranging from *Strongly Disapprove* to *Strongly Approve*. Responses were grouped into three

categories: “Disapprove” (combining *Strongly Disapprove* and *Disapprove*), “Approve” (combining *Strongly Approve* and *Approve*), and “Neither approve nor disapprove.” Perception of problematic family gambling was assessed via the item “Has the gambling of a close family member caused you worry or concern?” with responses dichotomized to “yes/no.”

Attitudes towards preventing gambling problems among teens were assessed by asking respondents to indicate whether they felt each of 15 items was important or not important for “preventing gambling problems in people your age.” Example items include “Hanging out with friends who don’t gamble,” “Participating in activities that are fun and free of gambling,” and “Learning about the risks of gambling in school.” Responses were dichotomized as “important/not important.” Cronbach’s alpha was .93.

Substance use and Internet gambling—Lifetime substance use was assessed via the item, “Have you ever smoked a cigarette/marijuana/had a sip of alcohol/used designer or other drugs, such as Ecstasy, GHB, Special K, or cocaine?” Responses were dichotomized as “yes/no.” Alcohol use over the past 30 days was assessed among those who indicated having a sip of alcohol using the item, “During the past 30 days, on how many days did you have at least one drink of alcohol?” and responses were coded as “never” and “more than one.” Current caffeine use was assessed via the item “On average, how many servings of caffeine drinks do you drink a day?” and responses were coded as “none,” “1–2 drinks,” and “3 or more drinks per day.” Internet gambling was assessed using the item, “In the past 12 months, have you placed bets on the Internet?” and responses were dichotomized as “yes, no.”

Problem-gambling severity, substance use, Internet gambling and gambling partners—Problem-gambling severity was categorized as recreational gambling (past-year gambling but no inclusionary criteria for pathological gambling based on DSM-IV criteria) and ARPG (one or more past-year inclusionary criteria for pathological gambling based on DSM-IV criteria) as has been done previously (Hammond et al., 2014; Kong et al., 2013; Potenza et al., 2011; Rahman et al., 2014; Slavin et al., 2013). Cronbach’s alpha was .92. Tobacco use was assessed using the question, “Have you ever smoked a cigarette?,” with responses coded as never, occasionally and regularly as previously (Yip et al., 2011). Lifetime cannabis and other drug use were assessed via questions asking, “Have you ever smoked marijuana/used designer or other drugs, such as Ecstasy, GHB, Special K, or cocaine?” Responses were dichotomized as “yes/no.” Alcohol use over the past 30 days was assessed using the item, “During the past 30 days, on how many days did you have at least one drink of alcohol?” and responses were coded as Never Regular (1–5 days), Light (6–9 days), Moderate (10–19 days) and Heavy (20–30 days). Internet gambling was assessed using the item, “In the past 12 months, have you placed bets on the Internet?” and responses were dichotomized as “yes, no.” Gambling partners were categorized into gambling with family, adults, friend, alone, or stranger as was done previously (Yip et al., 2011).

Statistical analyses

Analyses were conducted using SAS 9.3. Chi-square tests were utilized to examine bivariate associations between GS+, GS-, and demographic characteristics. Chi-square tests were also used to examine whether GS+ and GS- differed in terms of ARPG, gambling-related perceptions, and attitudes. Next, multivariate-adjusted logistic regression models were conducted to examine associations between problem-gambling severity (ARPG and recreational gambling) and gambling partners separately for GS+ and GS-. Effects were evaluated in order to determine whether they differed across problem-gambling groups by fitting interaction models wherein interaction significance was determined by examining interaction odds ratios. Logistic regression models were adjusted for gender, race/ethnicity, grade level, grade average, and family structure. Statistical significance was determined using p values $< .05$ and confidence intervals (CIs) that did not include 1.

Results

Sociodemographic characteristics

Of the 1,988 adolescents whose data were included in present analyses, 790 (39.58%) reported gambling on school grounds (GS+) in the past 12 months, and 103 (5.18%) met criteria for pathological gambling. GS+ status was associated with gender, grade average, endorsement of “other” with respect to race/ethnicity, grade level, and family structure, but not with Caucasian, African-American, Asian, or Hispanic race/ethnicity (Table 1). GS+ status was associated with ARPG and pathological gambling in that 55.39% of those in the GS+ group, relative to 19.87% in the GS- group, reported ARPG (Table 1), and 12.91% in the GS+ group, relative to 2.63% in the GS- group, met DSM-IV criteria for pathological gambling ($p < 0.0001$).

Gambling-related perceptions and attitudes

Individuals categorized as GS+, as compared GS- individuals, were more likely to report perceptions of parental approval of gambling (Table 2). GS+ youth were more likely than GS- youth to view the following as less important for preventing gambling problems in peers: checking identification for purchasing lottery tickets; hanging out with friends who don't gamble; participating in activities that are fun and free of gambling; fear of losing valuable possessions, close friends, and relatives; advertisements that show the problems associated with gambling; not having access to Internet gambling at home; parent/guardian strictness about gambling; gambling-related warnings from adults in the family; warnings from peers or listening to peers; having parents who don't gamble; learning about the risks of gambling in school, from parents, and from peers; adults not involving children in gambling; and parent/guardian not permitting card games for money at home. GS+ youth, in comparison with GS- youth, were also less likely to report perceptions of problematic family gambling associated with the item, “Has the gambling of a close family member caused you worry or concern?”

Substance use and Internet gambling

Among both GS+ and GS- adolescents, ARPG versus recreational gambling was associated with drug use and Internet gambling (Table 3a). In adjusted logistic regression models, GS+ status did not moderate relationships between ARPG and either substance-use or Internet-gambling measures (data not shown).

Gambling partners

GS+ status moderated relationships between specific gambling partners and ARPG (Table 3b). Among students reporting GS+, ARPG, relative to recreational gambling, was associated with a decreased odds of gambling with friends (OR=.44; 95% CI [.26-.74]) and increased odds of other adults (OR=1.72; 95% CI=1.24–2.38), strangers (OR=3.61; 95% CI=2.24–5.82), and alone (OR=2.65; 95% CI=1.62–4.36). Among students reporting GS-, ARPG, in comparison with recreational gambling, was associated with increased odds of gambling with family (OR=1.79; 95% CI=1.30–2.45), friends (OR=2.00; 95% CI=1.41–2.83), other adults (OR=2.31; 95% CI=1.59–3.37), and gambling alone (OR=2.58; 95% CI=1.40–4.75). Interaction odds ratios showed a weaker relationship between ARPG and gambling with friends in the GS+, relative to the GS- groups (OR=0.21; 95% CI=0.11–0.39). Interaction odds ratios also showed a weaker relationship between ARPG and gambling with family in the GS+, relative to the GS- groups (OR=0.60; 95% CI=0.39–0.92). Numerically larger proportions of ARPG adolescents in the GS+ vs. GS- groups reported gambling with friends (83.5% vs. 72.7%), strangers (26.0% vs. 6.2%), other adults (40.7% vs. 27.3%), and alone (19.7% vs. 11.2%), whereas roughly equal proportion of ARPG adolescents in the GS+ and GS- groups reported gambling with family members (52.7% and 52.9% respectively). However, larger proportions of adolescents who gambled recreationally in the GS+ vs. GS- groups reported gambling with family (51.4% vs. 37.4%), friends (91.2% vs. 57.0%), other adults (27% vs. 14.6%), strangers (7.6% vs. 1.8%) and alone (7.3% vs. 3.6%), and these larger proportions in the GS+ recreational-gambling group may have in part driven the interaction effects.

Discussion

The present study examined in high-school students: 1) the relationships between GS+ status and academic performance, ARPG and gambling-related attitudes and perceptions; and, 2) the extent to which GS+ moderated relationships between ARPG and gambling partner status. Hypotheses were largely supported. In comparison to GS- students, GS+ students were more likely to report poorer academic performance, ARPG and pathological gambling, and more permissive attitudes towards gambling. GS+ status also moderated the relationship between ARPG and gambling partners, with differences noted with respect to relationships with gambling with peers and family members.

GS+ and Gambling Problems

The almost five-fold higher estimates of pathological gambling amongst GS+ adolescents, in comparison to GS- adolescents (as well as the elevated frequency of ARPG), is noteworthy and suggests that more research is needed to identify the directionality of this relationship. That is, it will be important to understand whether the relationship is such that GS+

promotes gambling problems in youth, versus the reverse (whether problem gambling leads to GS+). Additionally, further work is needed to identify relevant mechanisms and sequelae of this association. In conjunction with the high frequency of GS+ in the sample (40%), the findings suggest the need for improved interventions to limit GS+. Such interventions might include school-based strategies regarding policy, detection, and prevention of school-grounds gambling activities.

GS+ and academic performance

In comparison to GS- students, GS+ students were more likely to report poorer academic performance. These findings support the perspective that attention to student gambling, and particularly adolescents gambling on school grounds, to prevent impaired academic performance among adolescents is needed (Winters, Stinchfield, Botzet, & Anderson, 2002; Yip et al., 2011) and although examinations are needed, this raises the possibility that school-grounds-based (Galan et al., 2012) gambling prevention strategies may warrant consideration with respect to diminishing at-risk or problematic gambling. It is possible that intervening against GS+ may have positive effects on academic performance. However, the opposite might also be true such that helping students to achieve greater academic success may have protective effects against GS+. Longitudinal examinations could clarify the directionality of this relationship and provide additional important temporal information including types and patterns of such gambling.

GS+ and gambling-related attitudes and perceptions

Relative to GS- students, GS+ students were more likely to report more permissive attitudes towards gambling. This extends previous findings from this survey documenting relationships between gambling and perceived parental permissiveness towards gambling related to impulsivity, sensation-seeking, alcohol consumption, and receipt of instant lottery tickets as gifts (Kundu et al., 2013; Leeman et al., 2014; Rahman et al., 2014). Parental permissiveness has been linked to other risk behaviors performed on school grounds. Having parental permission to smoke has previously been associated with higher probability of smoking on school premises (Galan et al., 2012), and our findings suggest similarities with gambling-related permissiveness among the GS+ group. This may suggest that parental monitoring and communication may be influential in regards to gambling perceptions and behaviors among youth, and good communication between adolescents and parents with respect to potential risks associated with gambling may be an important next step in terms of prevention strategies (Rahman et al., 2014). It will be important to examine whether emphasizing the importance of adult awareness of gambling and the risks thereof may help effect change in gambling perceptions among adolescents at risk for problem gambling (Rahman et al., 2014; Turrisi et al., 2013). It is also worth noting that the GS+ group was less likely than the GS- group to report concern about other family members' gambling behavior, which further suggests tolerance of gambling behaviors among those with GS+ status.

GS+and gambling partners

Among students reporting GS+, ARPG (relative to recreational gambling) was associated with decreased odds of gambling with friends. This was somewhat unexpected given prior

work suggesting that problem behaviors among adolescents are strongly associated with peers engaging in the same problem behavior (Delfabbro & Thrupp, 2003). This finding may reflect the frequent gambling with friends observed in the recreational-gambling group in the GS+ group. Among GS+ students, ARPG was associated with increased odds of gambling with other adults, gambling with strangers, and gambling alone. Thus, the GS+ ARPG group may be exhibiting risky gambling with potentially non-traditional gambling partners.

Examination of interactions among these variables revealed that GS+ status moderated the relationship between ARPG and gambling partners, with differences specifically noted for peers and family members. Findings indicated a stronger association between ARPG and gambling with both friends and family in the GS- relative to the GS+ group, and these differences appear to be in part driven by how GS+ relates to ARPG in comparison to recreational gambling. While no moderating effect emerged between GS status and ARPG on the association between gambling with strangers, potential mediators or moderators not examined in the present study which could account for this lack of effect might include excessive use of mobile devices for Internet-based gambling or other purposes (Martinotti et al., 2011; Villella et al., 2011), although this possibility is purely speculative. Additional examinations should explore how gambling via smartphone or other forms of digital technology at school may relate to gambling on school grounds.

Present findings demonstrate that among both the ARPG and recreational-gambling groups, higher proportions of youth in the GS+ group, relative to the GS- one, reported gambling with varying partners including strangers. Although not investigated in the present survey, future studies could investigate which strangers have been gambling with adolescents, and in what context this may have taken place (e.g., meeting strangers on school grounds or gambling with online strangers via mobile devices while on school grounds). A better understanding of the relationships between gambling with strangers, GS+, and ARPG among adolescents is needed, as this would allow for more appropriately designed and tailored intervention strategies for youth.

Implications for school policies, education and interventions

The present research represents one of the first examinations of GS+ in conjunction with gambling-related perceptions and attitudes, and gambling behaviors among adolescents. Analyses were conducted on data from a large and ecologically valid sample of high-school students in Connecticut, and these findings can inform more efficient treatment and prevention programs in efforts to mitigate problem gambling among high-school students. While most efforts target problem gambling among adults, there is a paucity of research examining school grounds gambling. Risky behaviors including substance misuse can begin during adolescence and have been linked with high-school gambling (Lee et al., 2014; Patterson, Myers, & Gallant, 1988). As substance-using ARPG adolescents may be more likely to seek treatment when it is available (Duhig, Maciejewski, Desai, Krishnan-Sarin, & Potenza, 2007), early identification is important.

Earlier identification may be facilitated through teachers and other school officials highlighting, in nonjudgmental ways, the availability of treatment programs to students

(Byrne, Baron, Larsson, & Melin, 1996). The use of teacher or administrator reports (Moore, Roberts, & Tudor-Smith, 2001; Wakefield et al., 2000) and encouraging the establishment of school policies related to banning gambling on school premises and enforcing such policies may facilitate reductions of gambling on school grounds. Further, research suggests that perceptions of more strictly enforced restrictions have been effective deterrents with respect to smoking (Adams, Jason, Pokorny, & Hunt, 2009; Leatherdale & Manske, 2005), and this indicates potential utility in expanding jurisdiction covered by school gambling restrictions. It will be of continued importance to increase awareness of adverse health outcomes and risks associated with GS+ among adolescents, teachers, families, educators, pediatricians, and other professionals.

Of particular concern is the growing prevalence of internet gambling (King & Barak, 1999), the spread of which may be facilitated by increasing use of smartphones and other mobile devices (Griffiths & Parke, 2010; King, Delfabbro, & Griffiths, 2010). As gambling via mobile devices likely constitutes some of the reported school-ground and off-grounds gambling (e.g., gambling via social media platforms; Griffiths & Parke, 2010), it will be important to understand to what extent GS+ status is enabled by digital devices. In support of this perspective, findings from the present study suggest that among GS+ students, those meeting ARPG criteria were more than three times more likely to report gambling with strangers relative to students who gambled recreationally. It is possible that youth may be using the Internet at school (e.g., via smart phones or school computers) to gamble with strangers, and this possibility, while speculative, warrants direct examination. In general, further work is needed to better understand the specific nature, modifiable precursors, and underlying mechanisms of GS+ among adolescents in order to best understand how to intervene.

Limitations

Possible limitations relate to the sample, as this sample is not random; however, demographics were consistent with those reported in the 2000 Census of Connecticut residents between the ages of 14–18 (Bureau, 2000; Schepis et al., 2008). Moreover, these data may not reflect current prevalence rates, and further work is needed to better understand forms of gambling that are growing in popularity, including gambling via social media. Possible limitations also relate to the survey methodology (self-report with possible responder biases and inaccurate recall). Respondents may have underreported or overreported engagement in certain (e.g., illegal) behaviors for reasons of shame or bravado, respectively. The cross-sectional design of the present study mitigates abilities to make inferences related to causality among variables; additional work is needed to determine temporal relationships between GS+ and measures examined.

Conclusion

Efforts to mitigate harm among students engaging in GS+ and better understand potential points of intervention are warranted. The present study examined GS+ and GS-, and determined whether differences exist between ARPG and recreational-gambling groups on a range of demographic and gambling-related, perceptions, attitudes, and behaviors. Findings indicated that in comparison to GS- students, GS+ students were more likely to report poorer

academic performance, ARPG, and more permissive attitudes towards gambling. GS+ status also moderated the relationship between ARPG and gambling partners, with differences noted with respect to relationships with gambling with peers and family members. The findings suggest that it is important to school-based efforts to increase the awareness of GS+ among adolescents such that teachers, students, families, educators, pediatricians, and other professionals may appropriately intervene.

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Table 1
Socio-demographic characteristics of the sample by gambling on school grounds (GS) status

Variable	Gambles on School Grounds (GS+)		Does Not Gamble on School Grounds (GS-)		χ^2	p value
	N	%	N	%		
Gender					254.50	<.0001
Male	650	82.3	558	46.6		
Female	140	17.7	640	53.4		
Race/Ethnicity						
Caucasian					0.26	.61
Yes	579	72.6	871	71.5		
No	219	27.4	347	28.5		
African-American					0.09	.76
Yes	94	11.8	138	11.3		
No	704	88.2	1080	88.7		
Asian					1.19	.27
Yes	41	5.1	50	4.1		
No	757	94.86	1168	95.9		
Hispanic					0.15	.70
Yes	122	16.2	197	16.9		
No	631	83.8	971	83.1		
Other					4.64	.03
Yes	115	14.4	220	18.1		
No	683	85.6	998	81.9		
Grade					15.60	.0014
9 th	221	27.7	382	31.5		
10 th	191	24.0	339	28.0		
11 th	211	26.5	299	25.0		
12 th	174	21.8	191	15.8		
Grade Average					34.76	<.0001
A+B	349	45.2	670	56.8		
C	275	35.6	376	31.9		

Variable	Gambles on School Grounds (GS+)		Does Not Gamble on School Grounds (GS-)		χ^2	p value
	N	%	N	%		
D+F	149	19.3	133	11.3	9.77	.0076
Family Structure						
One parent	179	23.0	296	24.7		
Two parents	529	67.8	836	69.7		
Other	72	9.2	67	5.6	271.35	<.0001
Problem-Gambling Severity						
ARPG	442	55.4	242	19.9		
Recreational gambling	356	44.6	967	80.1		

Table 2

Gambling-Related Perceptions and Attitudes

Variable	Gambles on School Grounds (GS+)		Does Not Gamble on School Grounds (GS-)		χ^2	p value	Gambles on School Grounds (GS+) vs. Does not Gamble on School Grounds (GS-)	
	N	%	N	%			OR	95%
Parent perception of gambling								
Disapprove	199	30.2	432	41.6	33.92	<.0001	Ref	--
Neither approve nor disapprove	354	53.8	516	49.7			1.37	1.07–1.77
Approve	105	16.0	90	8.7			2.49	1.69–3.66
Importance for preventing gambling problems in teens								
Checking identification for purchasing lottery tickets					58.11	<.0001		
Important	514	69.8	969	84.5			Ref	--
Not important	222	30.2	177	15.5			0.49	0.37–0.63
Hanging out with friends who don't gamble					59.09	<.0001		
Important	435	59.7	868	76.4			Ref	--
Not important	294	40.3	268	23.6			0.53	0.42–0.67
Participating in activities that are fun and free of gambling					53.16	<.0001		
Important	510	70.1	961	84.3			Ref	--
Not important	217	29.9	179	15.7			0.53	0.40–0.69
Fear of losing valuable possessions, close friends, and relatives					33.29	<.0001		
Important	588	80.5	1022	90.0			Ref	--
Not important	142	19.5	114	10.0			0.57	0.41–0.78
Advertisements that show the problems associated with gambling					65.61	<.0001		
Important	462	63.7	908	80.6			Ref	--
Not important	263	36.3	218	19.4			0.50	0.39–0.64
Not having access to Internet gambling at home					25.48	<.0001		
Important	396	54.7	750	66.4			Ref	--
Not important	328	45.3	380	33.6			0.69	0.55–0.87
Parent/Guardian strictness about gambling					46.74	<.0001		
Important	498	68.3	924	82.1			Ref	--

Variable	Gambles on School Grounds (GS+)		Does Not Gamble on School Grounds (GS-)		χ^2	p value	Gambles on School Grounds (GS+) vs. Does not Gamble on School Grounds (GS-)	
	N	%	N	%			OR	95% CI
Not important	231	31.7	202	17.9			0.54	0.31–0.69
Warnings from adults in family					54.79	<.0001		
Important	493	67.7	926	82.6			Ref	--
Not important	235	32.3	195	17.4			0.53	0.41–0.68
Warnings from, or listening to, peers					41.63	<.0001		
Important	508	70.2	932	82.9			Ref	--
Not important	216	29.8	192	17.1			0.62	0.48–0.80
Having parents who don't gamble					56.67	<.0001		
Important	479	65.9	917	81.6			Ref	--
Not important	248	34.1	207	18.4			0.54	0.42–0.70
Learning about the risks of gambling in school					63.50	<.0001		
Important	456	62.6	892	79.5			Ref	--
Not important	272	37.4	230	20.5			0.52	0.41–0.66
Learning about the risks of gambling from parents					54.90	<.0001		
Important	505	69.3	944	83.8			Ref	--
Not important	224	30.7	182	16.2			0.54	0.42–0.70
Learning about the risks of gambling from peers					58.98	<.0001		
Important	476	65.0	909	80.9			Ref	--
Not important	255	35.0	215	19.1			0.55	0.43–0.70
Adults not involving kids in gambling					79.51	<.0001		
Important	496	68.0	957	85.5			Ref	--
Not important	233	32.0	163	14.5			0.45	0.34–0.58
Parent/Guardian not permitting card games (for money) at home					42.99	<.0001		
Important	381	52.3	758	67.4			Ref	--
Not important	348	47.7	366	32.6			0.52	0.42–0.65
Family concern					6.35	.0118		
Yes	115	15.9	131	11.8			Ref	--
No	608	84.1	979	88.2			1.43	1.03–1.97

Table 3a
Unadjusted analyses of problem-gambling severity and substance use, Internet gambling and gambling partners.

Variable	Gambles on School Ground (GS+)				Does Not Gamble on School Ground (GS-)			
	Recreational Gambling	ARPG	X ²	p	Recreational Gambling	ARPG	X ²	p
	N	%	N	%	N	%	N	%
Substance Use								
Smoking				2.11			4.77	.09
Never	161	47.3	180	43.0	587	62.6	126	17.7
Occasionally	103	30.3	128	30.5	230	24.5	67	22.6
Regularly	76	22.4	111	26.5	121	12.9	37	23.4
Marijuana				2.80			0.34	.56
Ever	192	58.0	260	64.0	335	37.4	85	39.5
Alcohol				2.23			1.21	.75
Never regular	62	24.2	62	21.0	197	31.9	40	28.5
Light	57	22.3	69	23.3	184	29.8	48	34.3
Moderate	92	35.9	100	33.8	170	27.5	38	27.1
Heavy	45	17.6	65	22.0	66	10.7	14	10.0
Other drug				5.45			5.42	.02
Ever	50	19.5	93	27.8	57	7.55	23	13.0
Internet Gambling	91	25.8	196	45.0	81	8.4	41	16.9
				<.0001			15.75	<.0001
Gambling Partners								
Family	183	51.4	233	52.7	365	37.4	128	52.9
Friends	326	91.2	369	83.5	556	57.0	176	72.7
Other adults	99	27.8	180	40.7	142	14.6	66	27.3
Strangers	27	7.6	115	26.0	18	1.8	15	6.2
Alone	26	7.3	87	19.7	35	3.6	27	11.2
				24.86			23.01	<.0001
				<.0001				

ARPG = At-Risk/Problematic Gambling

Multivariate-adjusted analyses of problem-gambling severity and gambling partners stratified by GS status

Table 3b

	Gambling on School Ground (GS+)		Does Not Gamble on School Ground		VS [GS+ (ARPG VS Recreational Gambling)]	
	ARPG VS Recreational Gambling		(GS-) ARPG VS Recreational Gambling		Interaction OR	
	OR	95% CI	OR	95% CI	OR	95% CI
Gambling Partners						
Family	1.05	0.77–1.43	1.79	1.30–2.45	0.60	0.39–0.92
Friends	0.44	0.26–0.74	2.00	1.41–2.83	0.21	0.11–0.39
Other adults	1.72	1.24–2.38	2.31	1.59–3.37	0.76	0.47–1.24
Strangers	3.61	2.24–5.82	1.94	0.82–4.60	1.62	0.63–4.17
Alone	2.65	1.62–4.36	2.58	1.40–4.75	0.92	0.43–1.98

ARPG = At-Risk/Problematic Gambling; OR= Odds Ratio