

Adolescent  
attitudes toward  
gambling

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Atitudes de  
adolescentes  
perante o jogo

Jeffrey L. Derevensky\*

Laurie Dickson\*\*

Rina Gupta\*\*\*

### Abstract

Once conceived of as an adult activity, more and more youth are engaging in diverse forms of gambling. The present study examined age and gender differences in adolescents' attitudes toward gambling among 1,408 students in elementary and secondary schools. Participants ranging in age from 8 to 20 in Quebec and Ontario, Canada completed the Attitudes and Gambling Activities Questionnaire (AGAQ). The relationship between adolescents' attitudes toward gambling, their perceived levels of skill and luck inherent in various gambling activities, as well as their frequency of gambling was explored. The need for problem gambling prevention initiatives was identified. Youth who reported a greater number of accepting/tolerant attitudes demonstrated greater misperceptions about the degree of skill involved in gambling than youth holding non-accepting/intolerant attitudes toward gambling. Youth attitudes toward gambling were found to be moderately associated with gambling behavior. The implications for responsible social policies are addressed.

Key words: gambling; adolescents; attitudes.

### Resumo

Antigamente considerada uma atividade exclusivamente adulta, temos observado um número cada maior de jovens que se envolvem com diversas formas de jogo. O presente estudo examinou diferenças de idade e gênero nas atitudes de jovens com relação ao jogo em 1408 estudantes de primeiro e segundo grau da cidade de Quebec no Canadá. Os participantes, com idades entre 8 e 20 anos, completaram o Attitudes and Gambling Activities Questionnaire (AGAQ). Foi explorada a relação entre a atitude dos adolescentes frente ao jogo, suas percepções de habilidade e sorte inerentes a diversas atividades de jogo, e a frequência deste comportamento. Foi identificada a necessidade de criação de iniciativas que previnam o jogo patológico. Jovens que relatavam um número maior de atitudes de tolerância/aceitação com relação ao jogo demonstravam concepções errôneas a respeito do grau de habilidade envolvido na atividade de jogar, quando comparados a sujeitos que eram intolerantes ou não aceitavam esta atividade. As atitudes de jovens com relação ao jogo estão moderadamente correlacionadas com o comportamento de jogar. As implicações para políticas sociais responsáveis são discutidas.

Palavras-chave: jogo; adolescentes; atitudes.

\* Ph.D., International Centre for Youth Gambling Problems and High-Risk Behaviors, McGill University, Canada.

\*\* Ph.D., Loma Linda University, Canada.

\*\*\* Ph.D., International Centre for Youth Gambling Problems and High-Risk Behaviors, McGill University, Canada.

Once thought of as an adult activity, youth gambling appears to be a socially accepted form of recreation. Often highly dependent upon cultural differences and availability, there is ample evidence that adolescents are engaging in most forms of regulated and unregulated (informal) types of gambling activities (Jacobs, 2004). Reviews of research conducted in many countries have concluded that a high percentage of youth have gambled for money sometime during their adolescence (Derevensky & Gupta, 2004). Depending on the jurisdiction, the age at which youth are permitted to legally gamble and the types of gambling available varies considerably.

A recent examination of research exploring the long-term trends of youth gambling in North America shows evidence of increasing gambling involvement and suggests that, within the past year, two thirds of legally underage youth have gambled for money (Jacobs, 2004). Additional studies undertaken in Europe, Asia, Canada, and the U.S. suggest a general pathological gambling rate of 4-8% amongst youth under 18 years-of-age, a rate considerably higher than the adult population (Derevensky & Gupta, 2000; Jacobs, 2004; National Research Council, 1999; Wood & Griffiths, 1998), with another 8-10% of adolescents being estimated to be exhibiting some gambling-related problems and at-risk for developing or returning to serious gambling problems (Gupta & Derevensky, 1998; National Research Council, 1999; Shaffer & Hall, 2001).

Our current knowledge of youth problem gambling includes a profile of the adolescent gambler that reflects the serious nature of gambling-related problems for youth. Adolescent problem gamblers have been found to have high rates of depression and anxiety (Gupta & Derevensky, 1998; Ste-Marie, Gupta & Derevensky, 2006; Vitaro, Ferland, Jacques, & Ladouceur, 1998), lower self esteem (Nower, Gupta, & Derevensky, 2000), poor general coping skills (Gupta, Derevensky & Marget, 2004), criminal, delinquent and anti-social behavior (Derevensky, in press; Derevensky & Gupta, 2000; Gupta & Derevensky, 1997; Wynne, Smith & Jacobs, 1996), decreased academic performance and increased disruption of familial relationships (Hardoon, Gupta & Derevensky, 2004). These individuals remain at heightened risk for mental health problems, suicide ideation and actual suicide attempts (Nower, Gupta, Blaszczynski & Derevensky, 2004).

Recent research has been focused upon identifying the risk factors associated with problem gambling. Evidence from multifactorial suggest that the initiation, development and maintenance of gambling behavior points

to an etiology of problem gambling that is characterized by interactions between biological, environmental and psychological processes (Derevensky, in press; Gupta & Derevensky, 1998). While further research is required to examine relationships between such multiple factors, the specification and individual contribution of specific risk factors is still required. One specific risk factor that has been largely unexamined is the impact of youths' gambling attitudes on their subsequent gambling behavior.

### Why examine youth gambling attitudes?

Our current understanding of the relationship between individual's attitudes and behaviors suggests that the underlying reasons young people decide to gamble in spite of reported losses may be, in part, explainable by their attitudes towards gambling (Ajzen, 2001; Gillespie, Derevensky & Gupta, 2007). In the 1950's, Festinger postulated that positive attitudes towards a specific behavior increases the likelihood of the individual to behave in a manner consistent with one's attitudes and beliefs (Festinger, 1957). Positively perceived attitudes toward gambling may increase the probability for gambling involvement. Given the finding that individuals who began gambling during childhood have been found to be more likely to develop gambling problems in later adolescence or as adults (Gupta & Derevensky, 1998; Jacobs, 2004; Wynne et al., 1996), identifying those attitudes related to early gambling onset may be critical in the development of youth problem gambling prevention initiatives.

### Influences upon youth gambling attitudes

A number of factors most likely influence an adolescent or young adults attitudes toward gambling. Past research has consistently demonstrated that parents who gamble are far more likely to have children who gamble (Gupta & Derevensky, 1997; Wood & Griffiths, 1998; Wynne et al., 1996). A social learning theory perspective would suggest that children and adolescents may mimic or model the attitudes, beliefs and behavior exhibited by family members who perceive gambling as a socially acceptable recreational activity. Prior knowledge, social exposure, and actual gambling experiences are all likely to influence youth gambling attitudes. Prior experiences are particularly salient in findings that establish early wins as a significant risk factor for developing problem gambling (Griffiths, 1995) and likely have a number of effects upon attitudes, although the influence between behavior and attitudes is clearly bi-directional.

It is likely that peer and media influences (including the Internet) play an essential part in the formation of youth's beliefs about gambling (gambling-expectancies) and the importance youth place on these beliefs (Gillespie et al., 2007). Although the impact of television and movie portrayal of gambling on young people's perceptions, attitudes and behavior is at this point only speculative, a link between social influences and youth gambling behavior has been well established. For example, studies in several countries show that the majority of youth gamble with their family (40%–68%) and friends (55%–82%) (Gupta & Derevensky, 1997; Huxley & Carroll, 1992; Ladouceur & Mireault, 1988; Moore & Ohtsuka, 1997). Furthermore, a number of adolescents report initiating gambling because of their friends' gambling involvement (Griffiths, 1990) and average wagers have been found to increase when children gamble in groups as compared to gambling alone (Hardoon & Derevensky, 2001). Thus, the link between social influences and gambling behavior supports the need to identify socially influenced attitudes youth have toward gambling.

### Perception of skill and luck in gambling behavior

Several studies have also examined cognitive distortions in levels of perceived skill and luck, as well as the construct of 'control' inherent in various gambling activities (Derevensky, Gupta & Baboushkin, 2007; Dixon, 2000; Goodie, 2003; Miyazaki, Brumbaugh & Sprott, 2001; Wohl & Enzle, 2002; 2003) which support a typology of gambling-relevant cognitive distortions (Toneatto, 1999). Accordingly, individuals with gambling problems have been found to over-estimate their gambling skills, minimize other gambler's skills, report predictive skill, and exhibit various illusions of control over luck (e.g., luck as an uncontrollable/controllable variable, luck as a trait variable, and luck as a contagion). However, less is known about adolescent gamblers and their gambling-related cognitions. Past research suggests that adolescents perceive gambling as primarily luck-driven though they also deem skill an important aspect of successful gambling (Gupta & Derevensky, 1998). Yet, adolescent pathological gamblers have not been found to vary from non-gamblers in their perceptions of skill and luck in gambling (Gupta & Derevensky, 1998). Although there have been some investigations into youth gambling behavior and related cognitions, there remains much to be understood about normative adolescent attitudes and perspectives toward

gambling. Further research in this area is likely to be informative to the study of problem gambling and the development of prevention efforts.

### Principle aims

The current study sought to identify youths' attitudes about gambling and to examine age and gender differences. The research further explored the relationship between adolescents' attitudes toward gambling and their perceived level of skill and luck inherent among various gambling activities. This research is intended to provide useful information for the refinement of effective strategies aimed at discouraging under-aged gambling while promoting responsible gambling attitudes.

### Method

#### Participants

The study included 1,408 students (730 females; 678 males) from Elementary and Secondary Schools in Montreal, Quebec and Windsor, Ontario. In Ontario, the legal age for casino entrance is 21 years and 18 years for the purchase of scratch and lottery tickets. In Quebec, the legal age for casino entrance and the purchase of scratch and lottery tickets is 18 years. This represented a convenience sample of students from participating schools. Participants ranged from 8-20 years of age and were grouped by age for analyses. The number of youth who participated was unevenly distributed across age groupings such that there were 10.4% (n = 147) aged 8-11 (children), 32.2% (n = 453) aged 12-14 (early adolescence), 43.3% (n = 610) aged 15-17 (mid-adolescence), and 12.9% (n = 182) ages 18-20 (late adolescence) (16 individuals failed to indicate their age). When data were missing for a particular variable, that case was excluded from the sample only for the examination of that particular variable.

#### Instruments

Attitudes and Gambling Activities Questionnaire (AGAQ) (Gupta, & Derevensky, 1999): The questionnaire was designed for this study to ascertain the attitudes children and adolescents possess regarding gambling, their alcohol consumption, and illicit drug use as well as frequency and type of gambling activities in which they engage. The inclusion of alcohol and drug items permits descriptive comparisons between attitudes toward these activities and gambling, given the positive correlation

among involvement in these activities (Stinchfield, 2000; Winters, Stinchfield, Botzet, & Anderson, 2002). The Attitude subscale of the AGAQ, modeled upon a number of attitude and perceived risks/benefits scales developed for drug and alcohol use, requires participants to respond to 27 gambling-related attitude statements; 3 items regarding alcohol consumption; and 2 items concerning drug use, on a Likert scale ranging from 1 (disagree) to 7 (agree) (higher scores reflecting more accepting/tolerant attitudes toward gambling) (see Table 1). Attitude items tapped youth's perceptions about the addictive nature of gambling, activities that constitute gambling, prevalence of gaming, tolerance of particular gambling behaviors (e.g., borrowing money from friends to gamble), perceived social/familial norms, and perceived ability to influence gambling outcomes. Items were grouped into the domains based upon face validity for ease of presentation but were analyzed individually. For individual item analysis, responses on the Likert scale of the Attitude subscale were collapsed into endorsement of non-acceptance/intolerance (1-2), neutral (3-5) and acceptance/tolerance (6-7) based upon the Likert scale. Cut-off criteria were developed in

order to identify and examine differences between those who held more approving versus disapproving attitudes. Further analyses involved reverse coding a number of items and obtaining a total gambling attitude score by summing the 27 gambling-related items. This scale was found to have a Cronbach's alpha of .81.

The Skill-Luck subscale of the AGAQ requires participants to attribute the amount of perceived skill and luck, on a Likert scale ranging from 1 (none) to 7 (a lot), involved in the following gambling and non-gambling activities: gambling (in general), roulette, slots, blackjack, lottery, baseball, school, swimming, and video games. Responses on the Likert scale of the Skill-Luck subscale were collapsed into endorsement of non-acceptance/intolerance (1-2), neutral (3-5) and acceptance/tolerance (6-7) for analyses. For correlation analysis, total skill and total luck scores were derived by summing the reported levels of skill and luck separately in five gambling-related items, for possible score ranges of 5-35. The internal reliability for the Skill-Luck subscale was acceptable, with a Cronbach's alpha of .76.

**Table 1 - Attitude Items on the AGAQ Attitude Subscale**

Category	Stem
Addictive nature of gambling	*Teens with gambling Problems have an illness.
	*A person cannot get hooked on gambling like drugs.
	Gambling will never lead to addiction.
	*Adults with gambling problems have an illness.
	*Person who can't control gambling is in serious trouble.
	*Gambling can result in addiction just like alcohol And drugs.
Youth's perceptions of activities that constitute gambling	*Betting money on sports is considered gambling.
	*Playing bingo at a hall a few times a week can lead to a gambling problem.
	*Buying lottery tickets is a form of gambling.
Perceived prevalence of gambling activities	Most children under 18 years of age gamble.
	Most adults gamble.
	Most children under the age of 18 buy scratch lottery tickets.
Fear of getting caught in high risk activities	Children are not afraid of getting caught gambling.
	Children are not afraid of getting caught drinking alcohol.
	*Children should be afraid of getting caught taking drugs.
	Teens are not afraid of getting caught gambling.
	*Teens are afraid of getting caught drinking alcohol.
Tolerance of gambling behaviors	*Teenagers should be afraid of getting caught taking drugs.
	Ok for children and teens to gamble for money.
	Teenagers should be allowed to gamble on VLTs.
	*Gambling can be bad for you.
	Playing cards is harmless even when you do it at least once a week.
	Ok to borrow money from friends to gamble.
Youths' perceptions of social/familial gambling attitudes	Becoming a gambler makes your friends respect you and like you more.
	Gambling at school is Ok.
	People who gamble on a regular basis are more popular.
	*Parents get angry when children drink alcohol.
Ability to influence Gambling outcomes	*Parents get upset if their children gamble.
	Winning money gambling would make parents proud of you.
	There are tricks or strategies to becoming a successful gambler.
	The more you practice the better you get at gambling.
	Children who are good at playing video games are also good at gambling.

Note. \* indicates items that were reverse coded for analyses.

## Procedure

Students participating in the study were assured anonymity and confidentiality and were given the following definition of gambling before completing the questionnaire: "Gambling is any activity that involves you betting an item of value (e.g., money, personal possessions) on a gambling game or event in order to win something of value." Specifics games were described for students who were unfamiliar with gambling activities (e.g., roulette, slots, lotteries, etc.). Youth were encouraged to direct questions to the research assistants who remained in the administration setting. The time taken to complete the survey was between 30 - 50 minutes.

## Data analysis

Participants were divided into groups based upon their gambling frequency as measured by responding *never, less than once a week, or once a week* to each item in the following list of gambling activities: playing cards, wagering on sports (i.e., sports pools) with friends, sports lottery tickets, lottery tickets, bet money on video games, playing electronic gambling machines, bingo, wagering money on personal games of skill, and gambling on the Internet. Groupings included non gamblers (identified by answering never to each item in a list of gambling activities), occasional gamblers (reporting involvement in any of the listed activities less than once a week) and regular gamblers (reporting involvement in any of the listed activities once a week or more).

**Table 2 - Reported Gambling Behavior by Age**

Age Groupings	Non-Gamblers (never gambled)		Occasional Gamblers (gambles less than once a week)		Regular Gamblers (gambles once a week or more)	
	N	Percentage	N	Percentage	N	Percentage
Pre-adolescence (Ages 8-11)	65	44.2%	38	25.9%	44	29.9%
Early-adolescence (Ages 12-14)	150	33.4%	198	44.1%	101	22.5%
Mid-adolescence (Ages 15-17)	126	21.0%	302	50.2%	173	28.8%
Late-adolescence (Ages 18-20)	18	9.9%	93	51.4%	70	38.7%

## Youth's attitudes toward gambling by age, gender, and gambling involvement

### The addictive nature of gambling

Overall, the majority of youth sampled were found to have responsible attitudes concerning the importance

Subscale reliability analyses were conducted and Chi-square tests of independence were used to test for significant differences in the frequency of attitude endorsement and perceived levels of skill and luck between gambling groups, age groups, and gender. Intercorrelations between gambling attitude disposition, perceived skill, perceived luck, and frequency of gambling were examined. Finally, an independent samples t-test was used to test the hypothesis that adolescents who report accepting/tolerant attitudes toward gambling will report greater skill and less luck involved in gambling than those with non-accepting/intolerant attitudes toward gambling.

## Results

### Youth gambling behavior

Overall, while 26% of youth reported having never gambled, the vast majority of the participants (74%) reported they had gambled for money at least once in their lifetime. Of the participants who had gambled, 46% were occasional gamblers and 28% were regular gamblers. Cross tabulations indicated that there was a small but significant relationship between age and frequency of gambling behavior, [ $\chi^2 (6, N = 1378) = 81.30, p < .001$ ] such that as age increased so did the reported frequency of gambling behavior (see Table 2). A significant association between gender and gambling frequency was found with twice as many males (67%) reporting gambling once a week or more compared to females (33%), and twice as many females (67%) than males (34%) reported that they had never gambled [ $\chi^2 (2, N = 1384) = 88.80, p < .001$ ].

of remaining in control while gambling (78%). However, many youth believe there is a difference between becoming addicted to gambling versus drug use. Preadolescents (age 8-11 years) held the greatest misperceptions about the potentially addictive nature of gambling [ $\chi^2 (6, N = 1387) = 117.69, p < .001$ ] with only 29% agreeing with the statement, "Gambling will never lead to an addiction,"

in contrast to early adolescents/young adults (12-14 years) (6%), mid-adolescents (15-17 years) (5%) and late adolescents (18-20 years) (8%). In addition, 14% of preadolescents disagreed with the notion that gambling can result in an addiction similar to drugs and alcohol compared to early adolescents (8%), mid-adolescents (7%) and late adolescents (7%) [ $\chi^2(6, N = 1389) = 20.16, p < .003$ ]. No significant gender differences were found in youth's perceptions of the addictive nature of gambling.

While overall, 8% of youth agreed that gambling will never lead to an addiction, this was more likely endorsed by regular gamblers (12%) than occasional gamblers (7%) and non-gamblers (7%) [ $\chi^2(4, N = 1389) = 14.66, p < .01$ ]. Furthermore, the notion that gambling can result in addiction just like alcohol and drugs significantly differed by level of gambling involvement [ $\chi^2(4, N = 1390) = 45.03, p < .001$ ] such that 15% of regular gamblers disagreed with the statement in contrast to 7% of occasional and 3% of non-gamblers.

### Youth's perceptions of activities that constitute gambling

Overall, the majority of youth held accurate perceptions about activities that constitute gambling. Many youth agreed that wagering money on sports would be considered gambling (71%) and that playing the lottery is a form of gambling (60%). Preadolescents were more likely to support misconceptions than older youth. Accordingly, 19% of preadolescents

failed to recognize that wagering money on sports is considered gambling in contrast to older youth (8%). No appreciable gender differences were found between male's and female's perceptions of gambling activities.

Youth differed in their perceptions of what activities constitute gambling depending on their level of gambling involvement. The majority of individuals who disagreed that wagering money on sports is gambling were regular gamblers (16%) in contrast to occasional gamblers (8%) and non-gamblers (5%),  $\chi^2 [(4, N = 1389) = 33.30, p < .001]$ .

### Fear of getting caught in high-risk activities

No age differences were found in participants' reported fear of being caught using illicit drugs. In contrast, preadolescents report that children are more fearful of being caught drinking alcohol (66%) than early adolescents (43%) and mid-adolescents (28%) [ $\chi^2(6, N = 1387) = 104.81, p < .001$ ]. Preadolescents also reported more fear of involvement in gambling (49%) than early adolescents (28%) and mid-adolescents (14%) [ $\chi^2(6, N = 1387) = 96.98, p < .001$ ] (Figure 1). More males (39%) than females (27%) report teenagers are fearless about getting caught gambling [ $\chi^2(2, N = 1396) = 24.31, p < .001$ ]. Furthermore, of those that expressed this belief, 45% were regular gamblers, 30% were occasional gamblers, and 24% were non-gamblers [ $\chi^2(4, N = 1391) = 44.67, p < .001$ ].

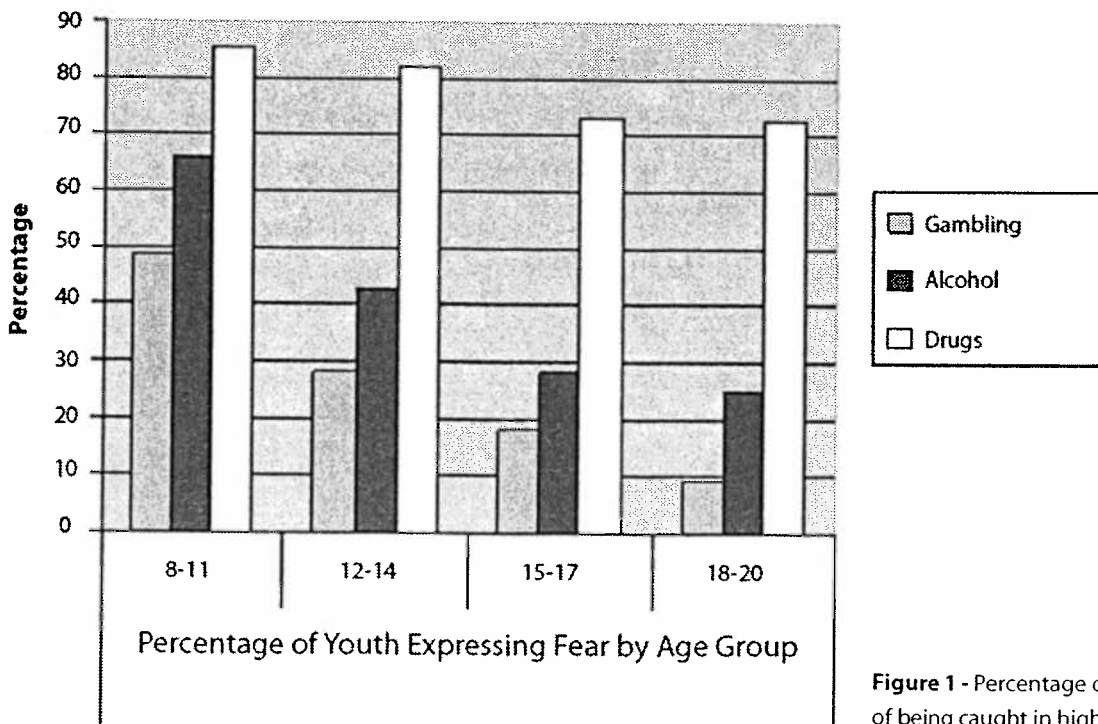


Figure 1 - Percentage of youth by age fearful of being caught in high-risk activities

### Tolerance of gambling behaviors

Overall, 85% of youth agreed that it is unacceptable for children to gamble while 62% agreed that gambling can be problematic. Youth expressed agreement with the inappropriateness of borrowing money to gamble (e.g., only 7% agreed that it is acceptable to borrow money to gamble). However, some attitudes held regarding the acceptability of gambling raise concern. Approximately 27% of the sample indicated that teenagers should be allowed to gamble on electronic gambling machines and almost one third indicated that playing cards for money is harmless.

Results clearly indicate that gambling is more frequently viewed as a socially acceptable activity as the age of youth increased [ $\chi^2(6, N = 1384) = 54.96, p < .001$ ]. Similarly, only 6% of preadolescents were in agreement that it is acceptable for children to gamble at school compared to 17% of older adolescents [ $\chi^2(6, N = 1387) = 56.31, p < .001$ ]. Gender differences found among items assessing attitudes of gambling tolerance revealed that males are more likely to endorse the acceptability of gambling at school [ $\chi^2(2, N = 1393) = 113.28, p < .001$ ], on electronic gambling machines [ $\chi^2(2, N = 1391) = 59.08, p < .001$ ], playing cards for money [ $\chi^2(2, N = 1396) = 56.06, p < .001$ ], and borrowing money to support gambling activities [ $\chi^2(2, N = 1392) = 48.82, p < .001$ ]. Furthermore, males were more likely to believe gambling increases respect from their peers and that few negative consequences are associated with gambling.

Overall, not surprisingly, regularly gamblers reported more permissive attitudes toward gambling. Whereas only 5% of non-gamblers agreed that adolescents should be permitted to gamble, 12% of occasional and 32% of regular gamblers found no difficulty with adolescents gambling [ $\chi^2(4, N = 1386) = 154.86, p < .001$ ]. Regular gamblers were more likely to agree that youth should be allowed to gamble on electronic gambling machines [ $\chi^2(4, N = 1386) = 149.89, p < .001$ ] and were much more likely (53%) to agree that playing cards for money is harmless than occasional and non-gamblers (25% and 20% respectively) [ $\chi^2(4, N = 1391) = 124.29, p < .001$ ].

### Youths' perceptions of societal and parental gambling attitudes

Generally, youth expressed the perception that parents respond differentially to youth alcohol consumption and gambling. While 71% of youth reported that their parents would be angry if they consume alcohol, only

42% indicated that their parents would be angry if they were caught gambling. Furthermore, 12% of youth agreed that their parents would be proud of them if they were to win money gambling. Youths' perceptions of parental gambling attitudes differed by age and degree of gambling involvement. Few parental perceptions differed between males and females with the exception that more males (17%) than females (8%) suggested that winning money when gambling would make parents proud [ $\chi^2(4, N = 1390) = 65.51, p < .001$ ]. Preadolescents were more likely to report that their parents would get upset if they gamble (67%) while only 35% of late adolescents held a similar perspective [ $\chi^2(6, N = 1387) = 48.35, p < .001$ ]. Similar age trends were also found in youths' responses to the consumption alcohol [ $\chi^2(6, N = 1390) = 56.97, p < .001$ ] although the frequency of agreement was higher for alcohol than gambling for each age group, with parents having more permissive attitudes toward gambling than alcohol consumption.

### Attitudes toward perceived control over gambling activities

Almost one third of youth agreed that practice makes one better at gambling and this finding differed developmentally with a larger percentage of children ages 8-11 (47%) agreeing in contrast to older youth (ranging from 29%-31%) [ $\chi^2(6, N = 1385) = 22.53, p < .001$ ]. Regular gamblers were also more likely to believe that a "system" would enhance their skills and success [ $\chi^2(4, N = 1387) = 45.41, p < .001$ ].

### Perceptions of skill and luck in gambling

As a means of controlling for over-representation of socially desirable responses, participants rated the degree of skill and luck involved in multiple activities (those chance-based and those skill-based). Most students indicated that school achievement, basketball and swimming involved considerable skill. However, their general perception of the degree of skill involved in various gambling activities warrants concern. Overall, 30% of youth indicated that there is a lot of skill involved in being a good gambler independent of games of chance. In terms of specific gambling activities, a relatively large number of youth (18%) over-estimated the degree of skill involved in roulette when in fact the outcome is totally random. Fewer youth held misperceptions about the level of skill involved in other gambling activities (e.g., only 7% expressed there is

a lot of skill involved in slot playing and 7% noted *a lot of skill* is involved in playing the lottery).

There were several age differences in youths' perceptions of the skill and luck involved in specific gambling activities. Younger children reported greater misperceptions about the degree of skill and luck involved in gambling. Accordingly, children ages 8-11 were less likely to report that *'a lot of luck'* is involved in gambling successfully such that 63% (ages 8-11), 80% (ages 12-14), 81% (ages 15-17), and 83% (ages 18-20) associated considerable luck with successful gambling outcomes [ $\chi^2(6, N = 1374) = 37.31, p < .001$ ]. More specifically, younger children suggested less luck was involved in roulette [ $\chi^2(6, N = 1363) = 32.78, p < .001$ ], slots [ $\chi^2(6, N = 1360) = 60.28, p < .001$ ], video game playing [ $\chi^2(6, N = 1372) = 25.89, p < .001$ ], and the lottery [ $\chi^2(6, N = 1377) = 82.30, p < .001$ ] than older youth. Thus, age appears to be related to perceived skill and luck in gambling; as the age of youth increased, the perceived amount of luck involved in gambling activities increased.

With respect to gender differences, slightly more males (36%) than females (26%) indicated that

considerable skill is involved in being a good gambler [ $\chi^2(2, N = 1380) = 16.39, p < .001$ ]. Youth's gambling involvement also appeared related to their perception of the amount of luck involved in gambling. Regular gamblers were more likely than non- and occasional gamblers to indicate that there is a lot of skill involved in being good at playing slots [ $\chi^2(4, N = 1376) = 29.26, p < .001$ ], blackjack [ $\chi^2(4, N = 1386) = 35.68, p < .001$ ], and more broadly speaking, being a good gambler [ $\chi^2(4, N = 1384) = 36.65, p < .001$ ].

### Attitudes and perceived skill and luck

Partial Pearson correlations were calculated between measures of gambling attitude, perceived skill, perceived luck, and gambling frequency controlling for age and gender. The means and standard deviations for each variable as well as their inter-correlations reveals a moderate association between gambling attitude disposition and frequency of gambling ( $r = .35$ ), and between perceived skill and gambling attitudes ( $r = .31$ ) (Table 3). A moderate to weak negative relationship was observed between perceived luck and gambling attitudes ( $r = -.25$ ).

**Table 3** - Means, Standard Deviations, and Intercorrelations for Study Variables

Variable	Gambling Frequency	Gambling Attitudes	Perceived Skill	Perceived Luck	M (N=1327)	SD (N=1327)
1. Gambling Frequency*	--				2.02	0.74
2. Gambling Attitudes	.35*	--			99.93	24.47
3. Perceived Skill	.16*	.31*	--		8.46	2.34
4. Perceived Luck	-.06	-.25*	-.12*	--	13.52	2.19

aVariable coded such that 1=non-gambler; 2=occasional gambler; 3=frequent gambler.

n = 1323 for partial correlation analysis.

\*p < .001.

### Discussion

While the majority of youth could be considered to have relatively accurate perceptions regarding gambling there are some concerns that warrant attention in developing primary prevention efforts. When also taking into account the recent findings of adolescents' perceived risks and benefits of gambling (Gillespie et al., 2007). Positive attitudes and a lack of awareness of the potential addictive nature of gambling is of concern.

#### Developmental differences in youths' attitudes

Generally, during late childhood (8-11 years), children appear to have a particular set of permissive

attitudes and misperceptions concerning gambling that are less prominent in older youth. First, younger children tended to under-estimate the addictive nature of gambling and over-estimate the degree of control over gambling outcomes. Younger children were also more apt to believe that wagering money on sports and playing bingo is not harmful. This is not surprising given that many children's community activities are often supported through proceeds from community bingo or more recently, poker tournaments. Such activities represent a justifiable way to fund socially good causes. Older adolescents exhibited more tolerant attitudes toward gambling activities (e.g., youth should have access to electronic gambling machines).



less fearfulness of being caught gambling, and viewed parents as more permissive of youth gambling behavior. It is likely, though still speculative, that such normative attitudes contribute to increases in under-aged gambling.

### Gender differences in youths' attitudes

The attitudes expressed by males in this study point to the need for intervention programs to respond to males' tendency towards risk-taking (Brown, Parks, Zimmerman & Phillips, 2001; Gullone & Moore, 2000). Accordingly, males were less afraid of getting caught gambling and had much more tolerant attitudes than females toward gambling behaviors including borrowing money to gamble, playing cards for money, and gambling at school. Males were also stronger advocates of youth access to electronic gambling machines and more frequently over-estimating the degree of control (e.g., tricks or strategies to becoming a successful gambler) over gambling outcomes than females.

Although, being male has been established as a risk-factor for youth problem gambling (Ladouceur et al., 1994; Stinchfield, 2000) there is still much to be understood about how gender contributes to increased risks for problem gambling. Gender differences have been recently examined in studies of cultural meanings and expectations (influencing the family) (Ellenbogen, Derevensky & Gupta, 2007; Haroon & Derevensky, 2001) and in studies of neurobiological mechanisms involved in the initiation, development and maintenance of problem gambling (DeCaria, Hollander, Grossman & Wong, 1996; Potenza, 2001). Understanding gender differences in attitudes will help to clarify the larger picture, especially given the role attitudes play in motivations.

### Youth gambling attitudes and perceived skill and luck

This study found that approximately one third of youth indicated that considerable skill is necessary in being a good gambler which is higher than estimates reported in other studies (Wiebe, 1999). Males, youth aged 8-11, and regular gamblers appeared particularly at-risk for over-estimating the degree of skill involved in gambling games (e.g., black jack, roulette, slots and the lottery). The findings that youth with accepting/tolerant attitudes toward gambling attribute more skill to various gambling activities than youth who report less permissive attitudes, as well as the moderate correlation found between perceived skill and a measure of youth gambling attitudes, are informative in light of previous findings that control beliefs (e.g., illusion

of control, belief in systems, need for money, etc.) are predictive of adolescent pathological gambling (Moore & Ohtsuka, 1999). Further, the moderate association observed in this study between a measure of gambling attitudes and frequency of gambling suggests that future research should incorporate theoretical models examining attitudes, perceived control and gambling behavior (e.g., utilizing the Ajzen & Fishbein's (1991) *Theory of Planned Behavior*). Although correlation analysis did not reveal that gambling frequency and perceived skill in gambling are related as has been identified elsewhere (Moore & Ohtsuka, 1999), this may have been due to a narrow construct of skill used in this study (e.g., did not tap constructs such as use of belief systems).

### Limitations and directions for future research

Several limitations are inherent in the cross-sectional nature of this study. Firstly, causal interpretation of the relationship among gambling attitude disposition and gambling frequency, as well as the relationships between gambling attitudes perceived skill and luck require replication and longitudinally designed studies are required to reassess the findings to formulate causal inferences. Thus, findings from the present study only suggest that particular attitudes and misperceptions may be important targets for prevention; longitudinal studies showing improved outcomes for youth at-risk for problem gambling following interventions targeting tolerant attitudes identified in this study would assist in exploring possible causal influence.

The present study solely used self-report data which risks the possibility that youth may not answer sensitive questions honestly; either exaggerating or playing down particular responses (McCord, 1990). Further, there is always the risk that a sampling bias may have occurred given that schools and participants may have self-selected to participate. Thus, it is important to note that this method may have under-estimated the frequency of reported accepting/tolerant attitudes toward gambling given that school samples tend to underestimate pathology given youth at greatest risk are more likely to drop-out of school or to have been absent or truant during the administration of the questionnaire (MacMahon & Trichopoulos, 1996). Perhaps future studies can include sampling from community organizations and other non-educational centers.

### Implications for youth problem gambling prevention

Results warrant further examination of knowledge-based gambling attitudes (e.g., the potentially addictive

quality of gambling, activities that constitute gambling and perceived control over gambling outcomes) as possible risk and protective factors for youth problem gambling and suggest the efficacy of targeting attitudes in prevention programs. Attitudes, examined as protective and risk factors for participation in high-risk behaviors such as alcohol consumption, illicit substance use and unsafe sexual activity, have been studied along a number of evaluative dimensions (e.g., tolerant-intolerant and conventionality-unconventionality) with findings that intolerant attitudes draw youth into more conventional behaviors associated with school, church or the community and in doing so, protect against the development of several high-risk behaviors (Donovan, Jessor & Costa, 1991; Jessor, Turbin & Costa, 1998).

The protective and risk factor functions of gambling attitudes upon subsequent gambling behavior have yet to be examined although the prediction of problem gambling from youth attitudes has received some attention (Moore & Ohtsuka, 1999). Additionally, from a theoretical standpoint, it has been argued that teaching and instilling the value of responsible gambling is a promising prevention approach for activities that are socially acceptable and fall on a continuum of harm (e.g., gambling and alcohol consumption) (Dickson, Derevensky & Gupta, 2004). Therefore, "protective attitudes" are likely to be "responsible gambling" attitudes, which may be operationalized as knowledge of gambling and problem gambling, respect for legal restrictions, intolerance of particular gambling behaviors (e.g., borrowing money to gamble), accurate perceptions of the costs and benefits of gambling and ultimately, responsible behavior.

This study generates several important prevention research questions. Are accepting/tolerant attitudes risk factors for developing a gambling problem? Do the specific age and gender differences in attitudes identified in this study increase youth's vulnerability to developing problem gambling at particular stages of development? What attitudes are protective and contribute to youths' ability to make sense of various gambling-related media messages, cope with peer and/or family gambling, and maintain a course of development free from developing problem gambling?

The results suggest that normative youth gambling attitudes vary by age, signifying that prevention programs seeking to change attitudes and knowledge must be designed and implemented with developmental sensitivity. Further, youth's attitudes toward school-related gambling support

the importance of widespread prevention programming in all schools. As the social acceptability of gambling gains widespread appeal and normalization, gambling venues and opportunities (including Internet wagering) will increase. The likelihood of more underage youth gambling both on unregulated and regulated forms of gambling will see a dramatic rise. Our legislators must enact responsible social policies to protect our youth. Concomitantly, greater awareness among mental health professionals and parents about the negative consequences and potential addictive nature of gambling needs to be addressed.

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• Endereço do autor principal: Jeffrey L. Derevensky: International Centre for Youth Gambling Problems and High-Risk Behaviors, McGill University, 3724 McTavish Street, Montreal, Quebec, Canada H3A 1Y2.  
E-mail: Jeffrey.derevensky@mcgill.ca