



## Correlates of At-risk Gambling Behaviors of Homeless Youth

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### Abstract

**Objective:** This exploratory study aims to describe the gambling behaviors of 419 homeless youth.

**Methods:** Participants were divided into two groups: 1) those whose gambling behaviors did not present a risk (n=366); and 2) those whose gambling behaviors presented a risk (n=53).

**Results:** In this homeless youth cohort, 12.6% exhibited gambling behaviors that could be considered at-risk. Compared to youth not having at-risk gambling behavior, youth with at-risk gambling behaviors were more likely to be male and be born outside of Canada. The at-risk participants were three times more likely to have a diagnosis of mental health disorder and two times more likely to report criminal activities as their main source of income.

**Conclusions:** These findings underline the importance of addressing all at-risk behaviors engaged in by homeless youth.

**Keywords:** Gambling behaviors; Homeless youth; Substance use; Mental health problems; Criminal behaviors; At-risk behaviour; Drug problem

### Introduction

Over the years, various psychosocial theories have associated different at-risk behaviors, particularly, the general deviance model [1]. According to this model, deviant behavior during adolescence increases the risk of other deviant behaviors because of the associated contextual opportunities. Thus, youth exhibiting risk-taking behaviors, such as problematic alcohol use, are more likely to engage in other types of at-risk behaviors, including drug use or delinquency [2]. Recently, new substances that may lead to a problem of impulsivity have been incorporated into these general theories of addiction. In fact, several studies have observed a co-occurrence between alcohol and drugs consumption and gambling behaviors in youths under 21 years old [2-6]. Nowadays, youth gambling constitutes a cause for concern in the scientific community and is a central stake in public health. Gambling is one of the popular and most frequent at-risk behaviors teenagers and young adults participate in [7-9]. Several studies show that a high number of youth in the general population take part in gambling [3,10-14]. Gambling participation rates varying between 36% and 92% have been reported among adolescent and late adolescent (young adult) populations [7-9,11,12,15,16]. The prevalence of gambling problems appears to reach a peak at the end of the adolescence, in the 18- to-24-year-old group (called either young adult or late adolescent group) [3,13,17]. Studies looking at this age group, primarily conducted in the general population or among university students, report prevalence rates varying between 2% and 8% for problem gambling [7,11-14,16]. This

is markedly higher than the prevalence observed among adults (0.7%-1.8%) [18-21], underlining the vulnerability of the 18-to-24-year olds with respect to this behavior [14,22].

Several studies have demonstrated a strong link between substance use and other risk-taking behaviors, such as gambling [4,11,16,23-25]. In fact, research shows that adolescent gamblers compared with non-gamblers are more likely to consume alcohol or drugs [7,26,27], and are more likely to develop addiction problems [25,28-30]. In addition to a multitude of risk-taking behaviors, these young problem gamblers have been observed to exhibit more mental health problems, such as depression [25,31] and anxiety [32].

Until now, studies interested in the link between substance consumption and gambling have been conducted in the general population or among students. There has been little research conducted on more vulnerable youth, those exhibiting a number of risky behaviors such as homeless youth. In fact, no study, to our knowledge, has looked at documenting the importance of gambling behaviors among homeless youth. Furthermore, the link between gambling, substance use and mental health remains unknown among homeless youth. Nonetheless, these youth appear to be particularly at risk because of the harsh nature of their living condition that often implies involvement in informal economy, their specific characteristics [33,34], and because they have few or no protective factors (family or school cohesiveness), known to help increase resiliency to gambling [35]. Also, homeless youth potentially have several vulnerability factors considered to be common in substance abuse problems and gambling problems, such as: a troubled family history, a low self-esteem, impulsivity, a history of physical or sexual abuse, delinquency and mental health problems [36-39].

This article aims to: 1) estimate the prevalence of at-risk gambling among homeless youth; and 2) document the association between at-risk gambling behaviors and the problems typically associated with problematic gambling, namely substance use problems, mental health problems and criminal activities [40,41].

## Methods

This paper is based on secondary analyses done on a broader prospective cohort study that aimed to determine the links between residential trajectory, health problems and HIV risk behaviors among homeless youth. Within an exploratory context, gambling activities were assessed at study entry. Ethical approval was provided by "Comité d'éthique de la recherche en santé chez l'humain du Centre hospitalier universitaire de Sherbrooke".

## Participants

Youth who were street-involved and currently homeless at baseline interview were eligible for the study. To be considered street-involved, a youth had to have used the services of Montreal (Quebec, Canada) street youth agencies regularly (three times or more) or been without a place to sleep more than once in the previous year [42,43]. Furthermore, youth were considered currently homeless if they had had nowhere to sleep in the previous 30 days, i.e., had spent at least one night in a place that was unfit for human habitation or in an emergency shelter. Youth who, on a temporarily basis, had spent at least one night at friends or acquaintances' places due to not having a personal place where to sleep (couch surfing) were also considered homeless [44]. Other entry criteria included being 18-25 years of age, English- or French- speaking, being able to provide informed consent and to complete an interviewer-administered questionnaire, and planning to stay in the Montreal area in the following year.

Of the 419 study participants, 19.8% were women and 80.2% were men (mean age: 21.8 years old; SD: 2.3). The average age at first homelessness episode was 16.2 years and participants had been homeless for approximately 2 years (median 2.0; IQR: 3.25). The majority of participants (90.7%) were born in Canada and 83.8% were French speaking. Only 23.3% had a high school diploma.

## Procedures

Between April 2006 and May 2007, study interviewers recruited participants during regular visits to all major street youth agencies in Montreal (Canada). These included drop-in centers, emergency shelters, or outreach vans offering a range of services such as food, short-term housing, and social and preventive healthcare services. Visit frequency, based on the number of youth served by each agency, ranged from once a month to three times a week. All youth present in the organization were invited to participate in the study. Those who accepted were given an appointment for their interview at the study office, located in the downtown area where most homeless youth hang out. The majority of interviews were done in the afternoon or early evening to minimize the possibility of participants being intoxicated. Interviews included the signing of a consent form, collection of contact information, and completion of an interviewer-administered questionnaire. Participants received a financial compensation (CAD \$30) at the end of the interview.

## Measurements

The study questionnaire typically took between 90 and 120 minutes to complete and covered various themes related to the objectives of the cohort study. Questions on socio-demographic characteristics included age, gender, country of birth and education [42,43,45]. With respect to gambling behavior, some authors assert that the frequency of gambling activities and the sum of money spent constitute important variables in defining gambling behaviors [46,47]. In fact, the risk of gambling related problems increases the more often one gambles and the more money spent in games of chance [47]. As gambling problems largely depend on financial losses, this variable occupies a central place in prevalence studies and often constitutes a marker for excessive gambling [48,49]. Therefore, in a context where no literature or data exists regarding homeless youth's gambling behaviors, three questions were used to examine participants' recent gambling behaviors: frequency of play, amount of money spent gambling and gambling-related debts. Nine types of gambling activities were examined: a) lottery tickets; b) casino table games; c) bingo; d) card games for money; e) horse race betting; f) video lottery terminals and slot machines; g) games of skill for money; h) dice for money; and i) sports betting. The frequency of past-month participation on each activity was assessed on a four-point scale: 1) never or less than once a month; 2) once a month; 3) once a week; and 4) every day. Furthermore, participants were asked to indicate the total sum of money spent gambling ("Keeping in mind the various types of gambling activities I have just mentioned, can you tell me how much money you spend betting or gambling on a monthly basis?"). Finally, gambling debts, a common consequence of gambling, was examined ("Do you currently have any gambling debts?"). Participants who confirmed having gambling debts were asked to indicate the total sum of the debt.

Based on their answers to these three questions, participants were grouped in one of two categories: participants presenting at-risk gambling behaviors and participants without at-risk gambling behavior. Having at-risk gambling behaviors was defined as having at least one of the following behaviors: a) gambling every day; b) having gambled \$100 or more in the previous month; and c) having gambling debts. The \$100 cut-off point was established based on existing youth gambling prevalence studies [4], and with the risk curves of gambling frequency and expenditure [47]. In fact, \$100 is more than twice the average sum of money spent by Quebecers monthly (\$37.50) [50], and beyond the optimal limit for low-risk participation of 1% of gross family income [47]. For youth living on the street, in precarious conditions, who most likely receive social assistance income, \$100 represents more than 25% of their average monthly income.

The presence of the following mental health problems was also assessed: alcohol/drug-related disorders (abuse and dependence), major depression, bipolar disorders, anorexia/bulimia, schizophrenia, anxiety disorders. Anxiety and alcohol/drug-related disorders were assessed using the CIDIS developed by Kovess et al. [51]. Questions for depression, bipolar disorder, anorexia and schizophrenia diagnoses were taken from the World Mental Health (WMH) Composite International Diagnostic Interview (CIDI; WMH-CIDI; version 2.1) [52]. All these instruments are well validated tools that can be administered by lay interviewers and produce psychiatric diagnoses according to the fourth version of the Diagnostic and Statistical Manual of Mental Health Disorders published by the American Psychiatric Association (DSM-IV) [53].

Finally, criminal activities were evaluated using proxy based questions on criminal activities as main source of income in the previous three months. These included theft, fraud, selling of stolen goods, pimping and drug sales. Other sources of income (non-criminal) were marginal activities related to street economy such as survival sex, the sale of own goods, squeegee, begging, and conventional sources such as part-time or full-time work or governmental assistance.

## Analyses

Descriptive analyses of socio-demographic characteristics, gambling behaviors, substance abuse or dependence (alcohol and drug), mental disorders, and income sources were performed. Means, medians, and proportions were calculated. Correlates of at-risk gambling behaviors were examined using logistic regression analyses. Variables with p-value  $\leq 0.20$  in univariate analyses were entered into initial multivariate models. Following the purposeful selection procedure [54], significant variables at the 5% level as well as those that showed a confounding effect on significant co-variables were retained in the final multivariate models. Because of parsimony concern, having one mental disorder or more was the only variable entered in the logistic regression.

## Results

### Gambling behaviors

Almost a third (33.4%) of participants had gambled in the previous month (35.4% of men vs. 25.3% of women,  $p=0.08$ ). Approximately 5.7% gambled daily and 15.5% gambled on a weekly basis. The most popular gambling activities included lottery tickets, video lottery terminals and slot machines, playing cards for money, and games of skill for money.

With respect to the amount of money spent gambling in the previous month, 11.9% had spent \$100 or more and the average amount of money spent was \$215 (max: \$5000). Among those who reported having gambled ( $n=140$ ) in the past month, 2.9% reported gambling debts varying between \$20 and \$500.

### Prevalence of at-risk gambling behaviors

The overall prevalence of gambling behaviors considered at-risk in the past month was 12.6% (14.3% of men vs. 6.0% of women,  $p=0.04$ ). Specifically, 53 participants reported having at least one at-risk behavior: 50 participants (11.9%) had spent \$100 or more in the past month, 24 (5.7%) had participated in at least one gambling activity on a daily basis, and four participants (1.0%) had gambling debts.

The at-risk group had spent, on average, \$593 in the previous month (range: \$20 to \$5000, median: \$300) in comparison with an average of \$4.50 (range \$0 to \$70, median: \$0) for the non-risk group. A higher proportion of at-risk gambling behavior participants had taken part in each type of gambling activity compared to their non-risk counterparts (Table 1) and the number of types of gambling activities involved in over the previous month was also higher (0.4, non-risk vs. 2.8, at-risk, sum of ranks=68138.5 vs. 19851.5, Mann-Whitney  $U=977.5$ ,  $p<0.001$ ). The most popular activity among the at-risk group was video lottery terminals and other slot machines, followed by lottery tickets.

	No-risk group (n=366)	At-risk group (n=53)
Lottery tickets	12.8%	60.4%
Casino	0.8%	30.2%
Bingo	1.1%	13.2%
Card playing for money	4.4%	35.8%
Horse race betting	0.3%	5.7%
Video lottery terminals or slot machines	7.7%	66.0%
Skill games for money	2.5%	30.2%
Dice for money	3.0%	24.5%
Sports betting	2.5%	18.9%

Table 1: Gambling behaviors in the previous month

### Psychoactive substance use and at-risk gambling behavior

The majority of the study participants reported having consumed alcohol or recreational drugs in the previous month (Table 2). Logistic regression analysis, controlling for gender, demonstrated that there was no statistical difference for alcohol and recreational drug use between the at-risk group and the non-risk group. The psychoactive substance use profiles were similar with respect to the drugs used, regular drug used, daily alcohol consumption, or use by injection. In the past month, 60.4% of the at-risk youth had used several substances and the average number of recreational drugs used was 2.2. Furthermore, 13.2% of the at-risk youth reported having injected themselves with drugs in the previous month and 13.2% had consumed alcohol daily. As for diagnoses, both groups were also similar in that 75.5% of the youth with at-risk gambling behaviors and 71.9% of the youth with non-risk gambling behaviors had substance-related problems in the previous year ( $p=0.45$ ).

	No-risk group (n=366)	At-risk group (n=53)	P value
Alcohol†	80.1%	79.2%	0.88
Daily alcohol use†	18.3%	13.2%	0.47
Marijuana†	79.2%	79.2%	0.76
Hallucinogenic (acid/PCP/mushrooms) †	23.8%	17.0%	0.37
Cocaine/crack/freebase †	39.1%	47.2%	0.28

Heroin †	12.6%	7.5%	0.47
Heroin and cocaine mixture †	1.4%	1.9%	0.6
Solvent/glue †	1.9%	1.9%	0.9
Amphetamines (including ecstasy) †	39.1%	41.5%	0.73
Medication used for the buzz †	21.3%	20.8%	0.97
Injection of drugs †	18.9%	13.2%	0.46
Multiple drug use	64.2%	60.4%	0.66
Numbers of types of drugs used	2.2	2.2	0.92
Regular drug used (≥3 times per week) †	67.8%	66.0%	0.58
Problems related to substance used	71.9%	75.5%	0.45
Alcohol abuse-dependence ‡	33.6%	32.1%	0.87
Drug abuse-dependence‡	63.7%	71.7%	0.18

**Table 2:** Comparison of psychoactive substance use; P-value of logistic regression, controlling for gender; †: in the past month, ‡: in the past year

### Correlates of at-risk gambling behaviors

Results of univariate analyses highlight significant differences in socio-demographic characteristics and in income sources between the two groups of participants. Proportion of men, born outside of Canada and whose main sources of income are based on criminal activities are higher among the at-risk gambling behaviors group. No significant association was found between having at-risk gambling behaviors and having a substance use or a mental health disorder. However, results show a tendency for youth diagnosed with at least one mental health disorder to be at higher risk for experiencing at-risk gambling behaviors ( $p = 0.074$ ) (Table 3).

	At risk/total	At risk rate	P value
Gender			
Male	48/336	14.3%	
Female	5/83	6.0%	0.043
Country of birth			
Outside Canada	10/39	25.6%	
Canada	43/380	11.3%	0.019
Scholarship			
No high school	39/322	12.1%	
High school or more	14/97	14.4%	0.547
Main source of income			
Criminal	18/76	23.7%	
Non-Criminal	35/343	10.2%	0.001
Problems related to substance used			
Yes	40/303	13.2%	

No	13/116	11.2%	0.583
Alcohol abuse or dependence			
Yes	17/140	12.1%	
No	36/279	12.9%	0.825
Drug abuse or dependence			
Yes	38/271	14.0%	
No	15/148	10.1%	0.253
Anxiety disorders (phobias, panic disorder, generalized anxiety disorder)			
Yes	20/121	16.5%	
No	33/298	11.1%	0.128
Eating disorder (anorexia, bulimia)			
Yes	0/3	0%	
No	52/415	12.5%	1
Affective disorders (major depression, bipolar disorder, dysthymic disorder)			
Yes	16/93	17.2%	
No	37/326	11.3%	0.134
Psychotic disorders			

(schizophrenia, delusional)			
Yes	0/10	0%	
No	53/409	13%	0.622
Diagnostica			
1 diagnostic or more	5/78	6.4%	
No diagnostic	47/340	13.8%	0.074

**Table 3:** Correlates of at-risk gambling behaviours; aOne value is missing

The final multivariate model (Table 4) shows that factors independently associated with at-risk gambling behaviors are gender (boys more likely), being born abroad, having at least one diagnosis of mental health disorder and having had criminal activities as main source of income.

Gender				
Male	47/335	2.56	2.66	1.09-7.98
Female	5/83			
Country of birth				
Outside Canada	10/39	2.7	3.3	1.37-7.59
Canada	42/379			
Main source of income				
Criminal	17/75	2.73	2.21	1.12-4.22
Non Criminal	35/343			
Diagnostic				
1 diagnostic or more	47/340	2.34	3.18	1.26-9.89
No diagnostic	5/78			

**Table 4:** Multivariate logistic regression (n=418); aOne value is missing

## Discussion

The results of this study conducted in a population of homeless youth, a population whose gambling behaviors, to our knowledge, have never been studied, trace a first portrait of their gambling behaviors and the correlates associated with at-risk gambling. A third of the 419 participants had taken part in gambling activities in the previous month. While a large majority of youth had not gambled in the previous month, 21.2% took part in gambling activities on a weekly or daily basis, a proportion higher than that found in studies among 18-to-25-year-old university students (between 4% and 18.5%) [7,10,22,55]. Furthermore, 11.9% had spent between \$100 and \$5000, which is a considerable sum considering the living conditions of these youth. Both the money spent on gambling and the frequency of gambling indicates that some of these youth may have problematic gambling behaviors. Their precarious living conditions and the lack of

resources available to them may have possibly increased their use of gambling as subsistence strategy to gain money and improve their living conditions [56]. This hypothesis is based on research results on gambling motivations of homeless adults, which are often associated with the need to feel equal, to have some comfort and to get off the street [57-58].

The data set allowed an opportunity to explore, for the first time, the characteristics of homeless youth who reported at-risk gambling behavior. While the majority of these youth reported very few gambling behaviors in the previous month, a significant minority (12.6%) presented risky gambling behaviors. The at-risk gambling behavior group had spent, on average, \$593, which represents more than 15 times the amount of money spent by Quebecers (\$37.50) on a monthly basis [50]. Furthermore, the at-risk group participants took part in a greater number of gambling activities, the most popular being video lottery terminals and other types of slot machines, while 7.5% of youth in that group had gambling debts. These findings suggest that certain homeless youth might have problematic gambling behaviors. Moreover, these results corroborate findings from previous studies conducted on homeless adults who presented a higher prevalence of gambling behaviors and a preference for video lottery terminals [56-59]. The potential vulnerability of homeless youth should be further explored in order to better identify the characteristics of homeless youth at risk of developing gambling problems.

Contrary to what has been observed in studies conducted among university students [11,17,22,55], no difference was found in proportion of participants with a diagnosis of drug or alcohol abuse or dependency between the two groups. This lack of difference may very well be explained by the elevated prevalence of substance abuse/dependence among homeless youth [60-62].

Results on correlates of at-risk gambling behavior show a greater proportion of males and youth born outside of Canada in the at-risk group [4,11,22]. Since an increased frequency of gambling goes hand in hand with increased money spent on gambling, criminal activities are often a way of getting important amount of money. In fact, criminal activities may bring in more money than the marginal and conventional activities. However, criminal activities can worsen the severity of gambling-related problems<sup>63</sup>. In this cohort of homeless youth, criminal activities were substantially more common in the at-risk group (23.7%). Although it is impossible to determine a causal relationship, these data are consistent with other observations on delinquency among problem gamblers [63-65]. Given the exploratory nature of the present study, further studies are needed to determine the links between gambling and criminality in homeless youth. In fact, it would be interesting to compare the profile of this at-risk group to that of the adolescents presenting the most severe externalizing behaviors [66].

Despite the presence of a higher proportion of youth diagnosed with at least one mental health disorder in the at-risk group, the difference found was not statistically significant. Furthermore, no association between specific mental health diagnosis (depression, anxiety) and at-risk gambling behaviors was found. These data do not corroborate clinical and epidemiological studies observing association between depression or anxiety and problematic gambling [32,67-69]. Lack of association between anxiety and depression diagnosis and at-risk gambling behavior might be caused by the use of a robust clinical diagnosis in the present study, while other studies often use self-reported data or less robust screening tools. However, the final regression model reveals that participants in the at-risk gambling

behaviors group are three times more likely to experience at least one mental health disorder, which is in line with previous research results underlying the risky nature of mental health disorders for gambling problems [41].

In summary, these results underline the presence of a significant proportion of homeless youth exhibiting a constellation of at-risk behaviors. In addition to a problematic use of alcohol and other drugs, some youth also participate in gambling activities. Youth who play more frequently and who spend significant amounts of money have specific characteristics when compared to those who do not report at-risk gambling behaviors. Males and youth born outside of Canada are almost three times more likely to be in the at-risk group. Youth whose main sources of income are criminality-based are two times more likely to be in the at-risk group while youth with at least one mental health diagnosis are three times more likely to be in this group.

These results suggest that at-risk gambling is associated with several risk behaviors and with other substance use problems<sup>4</sup>. These findings also underline the importance of considering the constellation of at-risk behaviors in homeless youth for both prevention and treatment interventions. Since at-risk behaviors are probably a result of common physiological, psychological, familial and even environmental predispositions, it is important to address and to work on the comorbidity and the interrelations between these problem behaviors. Moreover, this therapeutic work, where all the at-risk behaviors are addressed in an integrated way, requires not only a personalized intervention plan, but also brief innovative interventions adapted to the life conditions of these youth. A first approach could be made by street workers, who could integrate questions regarding youth's gambling habits, to make them see the environment's openness to address these issues. Finally, additional studies need to be conducted in order to better understand the gambling behaviors of homeless youth and the relationship between these behaviors and other at-risk behaviors.

This study has several important limitations to be considered when interpreting the results. First, the scope of the results is limited by the lack of use of a validated questionnaire allowing for the establishment of a diagnosis of pathological gambling. Although it is difficult to use validated instruments such as the DSM-IV with this marginal population due to their inherent characteristics, namely the fact that certain consequences of gambling (such as lying to family or potentially losing a job) are not likely to be measurable among homeless youth in unstable living conditions, a robust diagnosis would allow for a better evaluation of the prevalence of gambling problems in this population. Moreover, the use of a validated questionnaire would allow for a better understanding of the consequences of the gambling behaviors for these youth on the different areas of their life. Furthermore, the reference period used in this study (previous month) is not necessarily representative of the participants' gambling behaviors in the previous year. Using a validated instrument such as the Canadian Problem Gambling Index (CPGI) measuring the gambling behaviors over the previous year would allow for a better understanding of gambling problems [70]. Due to the limited number of questions related to gambling behaviors in our study, it was impossible to go beyond the description of gambling behaviors. Lastly, since this data rests on self-reported behaviors, it is difficult to estimate the validity of the youths' reports concerning the money spent gambling, particularly since it's known that gamblers have a tendency to underestimate their spending [46]. Despite these limitations, this

first set of data collected among a neglected population underlines the need to continue investigating gambling behaviors of homeless youth.

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When a substance is a trigger for a second one, it reveals the severity of dependence to that second substance.

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## References

1. Donovan JE, Jessor R (1985) Structure of problem behavior in adolescence and young adulthood. *J Consult Clin Psychol* 53: 890-904.
2. Turner NE, Ialomiteanu A, Paglia-Boak A, Adlaf EM (2011) A typological study of gambling and substance use among adolescent students. *Journal of Gambling Issues* 25: 88-107.
3. Barnes GM, Welte JW, Hoffman JH, Tidwell MC (2011) The co-occurrence of gambling with substance use and conduct disorder among youth in the United States. *Am J Addict* 20: 166-173.
4. Goldstein AL, Walton MA, Cunningham RM, Resko SM, Duan L (2009) Correlates of gambling among youth in an inner-city emergency department. *Psychol Addict Behav* 23: 113-121.
5. Wanner B, Vitaro F, Carbonneau R, Tremblay RE (2009) Cross-lagged links among gambling, substance use, and delinquency from midadolescence to young adulthood: additive and moderating effects of common risk factors. *Psychol Addict Behav* 23: 91-104.
6. Vitaro F, Wanner B, Charbonneau R, Tremblay RE (2007) La pratique des jeux de hasard et d'argent, les comportements délinquants et la consommation problématique de substances psychotropes : une perspective développementale. *Criminologie* 40: 59-77.
7. Brunelle N, Leclerc D, Cousineau MM, Dufour M, Gendron A, et al. (2012) Internet gambling, substance use, and delinquent behavior: an adolescent deviant behavior involvement pattern. *Psychol Addict Behav* 26: 364-370.
8. Gupta R, Derevensky J (2008) Gambling practices among youth: Etiology, prevention and treatment. In CA Essau (edn) *Adolescent addiction: Epidemiology, assessment and treatment*, (pp. 207-230). London, United Kingdom: Elsevier.
9. Martin I, Gupta R, Derevensky J (2008) Participation aux jeux de hasard et d'argent. In DubéGaëtane et autres. *Enquête québécoise sur le tabac, l'alcool, la drogue et le jeu chez les élèves du secondaire*, Québec, Institut de la statistique du Québec, 149-181.
10. Wickwire EM, Whelan JP, West R, Meyers A, McCausland C, et al. (2007) Perceived availability, risks, and benefits of gambling among college students. *J Gambl Stud* 23: 395-408.
11. Engwall D, Hunter R, Steinberg M (2004) Gambling and other risk behaviors on university campuses. *J Am Coll Health* 52: 245-255.
12. Huang JH, Boyer R (2007) Epidemiology of youth gambling problems in Canada: a national prevalence study. *Can J Psychiatry* 52: 657-665.
13. Welte JW, Barnes GM, Tidwell MC, Hoffman JH (2008) The prevalence of problem gambling among U.S. adolescents and young adults: results from a national survey. *J Gambl Stud* 24: 119-133.
14. Williams RJ, Connolly D, Wood RT, Nowatzki N (2006) Gambling and Problem Gambling in a Sample of University Students. *Journal of Gambling Issues*.

15. Jacobs DF (2004) Youth gambling in North America: An analysis of long term trends and future prospects. In DerevenskyJefferey and Gupta Rina (eds) *Gambling Problems in Youth: Theoretical and Applied Perspectives*. Kluwer Academic/Plenum Publishers, New York.
16. Brunelle N, Leclerc D, Cousineau MM, Dufour M, Gendron A, et al. (2012) Internet gambling, substance use, and delinquent behavior: an adolescent deviant behavior involvement pattern. *Psychol Addict Behav* 26: 364-370.
17. Winters KC, Stinchfield RD, Botzet A, Anderson N (2002) A prospective study of youth gambling behaviors. *Psychol Addict Behav* 16: 3-9.
18. Cox BJ, Yu N, Afifi TO, Ladouceur R (2005) A national survey of gambling problems in Canada. *Can J Psychiatry* 50: 213-217.
19. Ladouceur R, Jacques C, Chevalier S, Sévigny S, Hamel, et al. (2002) Prévalence des habitudes de jeu et du jeu pathologique au Québec en 2002, Québec et Montréal, Université Laval et Institut national de santé publique du Québec.
20. Stucki S, Rihs-Middel M (2007) Prevalence of adult problem and pathological gambling between 2000 and 2005: an update. *J Gambl Stud* 23: 245-257.
21. Kairouz S, Nadeau L, Paradis C (2010) Enquête ENHJEU-Québec: Portrait du jeu au Québec: Prévalence, incidence et trajectoires sur quatre ans. Rapport remis au Fonds de recherche sur la société et la culture (FQRSC), Université Concordia.
22. Stuhldreher WL, Stuhldreher TJ, Forrest KY (2007) Gambling as an emerging health problem on campus. *J Am Coll Health* 56: 75-83.
23. Barnes GM, Welte JW, Hoffman JH, Tidwell MC (2009) Gambling, alcohol, and other substance use among youth in the United States. *J Stud Alcohol Drugs* 70: 134-142.
24. LaBrie RA, Shaffer HJ, LaPlante DA, Wechsler H (2003) Correlates of college student gambling in the United States. *J Am Coll Health* 52: 53-62.
25. Lynch WJ, Maciejewski PK, Potenza MN (2004) Psychiatric correlates of gambling in adolescents and young adults grouped by age at gambling onset. *Arch Gen Psychiatry* 61: 1116-1122.
26. Duhig AM, Maciejewski PK, Desai RA, Krishnan-Sarin S, Potenza MN (2007) Characteristics of adolescent past-year gamblers and non-gamblers in relation to alcohol drinking. *Addict Behav* 32: 80-89.
27. Potenza MN, Steinberg MA, Wu R (2005) Characteristics of gambling helpline callers with self-reported gambling and alcohol use problems. *J Gambl Stud* 21: 233-254.
28. Desai RA, Maciejewski PK, Pantalon MV, Potenza MN (2005) Gender differences in adolescent gambling. *Ann Clin Psychiatry* 17: 249-258.
29. Haroon KK, Gupta R, Derevensky JL (2004) Psychosocial variables associated with adolescent gambling. *Psychol Addict Behav* 18: 170-179.
30. Langhinrichsen-Rohling J, Rohling ML, Rohde P, Seeley JR (2004) The SOGS-RA vs. the MAGS-7: prevalence estimates and classification congruence. *J Gambl Stud* 20: 259-281.
31. Feigelman W, Gorman BS, Lesieur H (2006) Examining the relationship between at-risk gambling and suicidality in a national representative sample of young adults. *Suicide Life Threat Behav* 36: 396-408.
32. el-Guebaly N, Patten SB, Currie S, Williams JV, Beck CA, et al. (2006) Epidemiological associations between gambling behavior, substance use & mood and anxiety disorders. *J Gambl Stud* 22: 275-287.
33. Baron SW (1999) *Street Youths and Substance Use. The Role of Background, Street Lifestyle, and Economic Factors*. *Youth & Society* 31: 3-26.
34. Ammerman SD, Ensign J, Kirzner Rn (2004) Homeless Young Adults Ages 18-24: Examining Service Delivery Adaptations. National Health Care for the Homeless Council, Nashville.
35. Dickson L, Derevensky JL, Gupta R (2008) Youth Gambling Problems: Examining Risk and Protective Factors. *International Gambling Studies* 8: 25-47.
36. Barnes GM, Welte JW, Hoffman JH, Dintcheff BA (1999) Gambling and alcohol use among youth: influences of demographic, socialization, and individual factors. *Addict Behav* 24: 749-767.
37. Barnes GM, Welte JW, Hoffman JH, Dintcheff BA (2002) Effects of alcohol misuse on gambling patterns in youth. *J Stud Alcohol* 63: 767-775.
38. Stinchfield RD, Winters KC (1999) Adolescent Gambling: A Review of Prevalence, Risk Factors and Health Implications. *Annals of the American Academy of Political and Social Science* 556: 172-185.
39. Shead NW, Derevensky JL, Gupta R (2010) Risk and protective factors associated with youth problem gambling. *Int J Adolesc Med Health* 22: 39-58.
40. Barnes GM, Welte JW, Hoffman JH, Dintcheff BA (2005) Shared predictors of youthful gambling, substance use, and delinquency. *Psychol Addict Behav* 19: 165-174.
41. Johansson A, Grant JE, Kim SW, Odlaug BL, Göttestam KG (2009) Risk factors for problematic gambling: a critical literature review. *J Gambl Stud* 25: 67-92.
42. Roy E, Haley N, Leclerc P, Cédras L, Blais L, et al. (2003) Drug injection among street youths in Montreal: predictors of initiation. *J Urban Health* 80: 92-105.
43. Haley N, Roy E, Leclerc P, Boudreau JF, Boivin JF (2004) HIV risk profile of male street youth involved in survival sex. *Sex Transm Infect* 80: 526-530.
44. Gaetz S (2010) Homeless Hub - What is Homelessness?
45. Institut de la statistique du Québec. Collection la santé et le bien-être. Gouvernement du Québec. Enquête auprès de la clientèle des ressources pour personnes itinérantes des régions de Montréal-centre et de Québec, 1998-1999. Montréal, Québec: Les publications du Québec.
46. Blaszczynski A, Ladouceur R, Goulet A, Savard C (2008) Difference in Monthly versus Daily Evaluations of Money Spent on Gambling and Calculation Strategies. *Journal of Gambling Issues*.
47. Currie SR, Hodgins DC, Wang J, el-Guebaly N, Wynne H, et al. (2006) Risk of harm among gamblers in the general population as a function of level of participation in gambling activities. *Addiction* 101: 570-580.
48. Walker MB, Dickerson MG (1996) The prevalence of problem and pathological gambling: A critical analysis. *J Gambl Stud* 12: 233-249.
49. Williams R, Wood R (2004) Final report: The demographic sources of Ontario gaming revenue. Guelph, Ontario, Canada: Ontario Problem Gambling Research Centre.
50. Proudfoot S (2008) Canadians lost \$13.6B to gambling in 2007: report. Canwest News Service..
51. Kovess V, Fournier L, Lesage AD, Lebigre FA, Caria A (2001) Two validation studies of the CIDIS: a simplified version of the Composite International Diagnostic Interview. *Psychiatric Networks* 4: 10-24.
52. Kessler RC, Ustun TB (2004) The World Mental Health (WMH) Survey Initiative version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *The International Journal of Methods in Psychiatric Research* 13: 93-121.
53. American Psychiatric Association (2000) DSM-IV, Manuel diagnostique et statistique des troubles mentaux (4th edn). Paris, Masson.
54. Hosmer DW, Lemeshow S (1989) *Applied Logistic Regression*. New York: Wiley.
55. Winters KC, Bengston P, Dorr D, Stinchfield R (1998) Prevalence and Risk Factors of Problem Gambling Among College Students. *Psychology of Addictive Behaviors* 12: 127-135.
56. Shaffer HJ, Freed CR, Healea D (2002) Gambling disorders among homeless persons with substance use disorders seeking treatment at a community center. *Psychiatr Serv* 53: 1112-1117.
57. Talbot C (2004) *Gambling and Homelessness. A case management resource*, Adelaide (South Australia), UnitingCare Wesley.
58. Rogers N (2005) *Safe as Houses? An Exploration of The Link Between Gambling and Homelessness*. Government of South Australia: Department for Families and Communities.
59. Antonetti E, Horn M (2001) *Gambling The Home Away. A Study of the Impact of Gambling on Homelessness*. Melbourne, Hanover Welfare Services.

60. Adlaf EM, Zdanowicz YM (1999) A cluster-analytic study of substance problems and mental health among street youths. *Am J Drug Alcohol Abuse* 25: 639-660.
61. Keyes KM, Martins SS, Hasin DS (2008) Past 12-month and Lifetime Comorbidity and Poly-drug Use of Ecstasy Users among Young Adults in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Drug Alcohol Depend* 97: 139-149.
62. Roy E, Haley N, Leclerc P, Lemire N, Boivin JF, et al. (2000) Prevalence of HIV infection and risk behaviours among Montreal street youth. *Int J STD AIDS* 11: 241-247.
63. Ledgerwood DM, Weinstock J, Morasco BJ, Petry NM (2007) Clinical Features and Treatment Prognosis of Pathological Gamblers With and Without Recent Gambling-Related Illegal Behavior. *J Am Acad Psychiatry Law* 39: 294-301.
64. Meyer G, Stadler MA (1999) Criminal Behavior Associated with Pathological Gambling. *J Gambl Stud* 15: 29-43.
65. Potenza MN, Steinberg MA, McLaughlin SD, Rounsaville BJ, O'Malley SS (2000) Illegal behaviors in problem gambling: analysis of data from a gambling helpline. *J Am Acad Psychiatry Law* 28: 389-403.
66. Vaughn MG, Salas-Wright CP, DeLisim M, Maynard BR (2014) Violence and Externalizing Behavior Among Youth in the United States: Is There a Severe 5%? *Youth Violence and Juvenile Justice* 12: 3-21.
67. Desai RA, Potenza MN (2008) Gender differences in the associations between past-year gambling problems and psychiatric disorders. *Soc Psychiatry PsychiatrEpidemiol* 43: 173-183.
68. Petry NM (2000) Psychiatric symptoms in problem gambling and non-problem gambling substance abusers. *Am J Addict* 9: 163-171.
69. Westphal JR, Johnson LJ (2007) Multiple Co-occurring Behaviours among Gamblers in Treatment: Implication and Assessment. *International Gambling Studies* 7: 73-99.
70. Ferris J, Wynne H (2001) The Canadian Problem Gambling Index: Final Report. Submitted for the Canadian Centre on Substance Abuse.

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