

Running Head: PATHOLOGICAL GAMBLING AND TRAUMA

Sexual abuse, residential schooling and probable pathological gambling among Indigenous Peoples

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### **Abstract**

Sexual abuse leads to short-term and long-lasting pervasive outcomes, including addictions. Among Indigenous Peoples, sexual abuse experienced in the context of residential schooling may have led to unresolved grief that is contributing to social problems, such as pathological (disordered) gambling. The aim of this study is to investigate the link between child sexual abuse, residential schooling and probable pathological gambling. The participants were 358 Indigenous persons (54.2% women) aged between 18 and 87 years, from two communities and two semi-urban centers in Quebec (Canada). Probable pathological gambling was evaluated using the South Oaks Gambling Screen (SOGS), and sexual abuse and residential schooling were assessed with dichotomous questions (yes/no). The results indicate an 8.7% past-year prevalence rate of pathological gambling problems among participants, which is high compared with the general Canadian population. Moreover, 35.4% were sexually abused, while 28.1% reported having been schooled in a residential setting. The results of a logistic regression also indicate that experiences of child sexual abuse and residential schooling are associated with probable pathological gambling among Indigenous Peoples. These findings underscore the importance of using an ecological approach when treating gambling, to address childhood traumas alongside current addiction problems.

*Keywords:* Indigenous Peoples, gambling, pathological gambling, SOGS, residential school, child sexual abuse

## Introduction

Several studies have been conducted over the past three decades on the short- and long-term consequences of child sexual abuse (CSA) (Hillberg, Hamilton-Giachritsis, & Dixon, 2011; Fergusson, McLeod, & Horwood, 2013; Gilbert et al., 2009; Maniglio, 2009). According to a small, but growing body of evidence, these consequences may include gambling problems (see Dion, Collin-Vézina, De La Sablonière, Philippe-Labbé, & Giffard, 2010 for a literature review). However, few studies have been conducted on the impact of CSA on gambling among Indigenous<sup>1</sup> Peoples. Studying trauma among Indigenous Peoples implies acknowledgment of the impact of colonization. In Canada, residential schooling and other traumas related to colonization have been responsible for a long history of unresolved grief. These traumas include the loss of land, children being permanently removed from their homes and communities, as well as denial of values and spiritual beliefs (Royal Commission on Aboriginal Peoples [RCAP], 1996; Sinha et al., 2011; Wesley-Esquimaux, & Smolewski, 2004). The impact of these traumas across generations and their interaction with current stressors may result in problematic outcomes among Indigenous Peoples (Brave Heart & De Bruyn, 1998; Fast & Collin-Vézina, 2010). Considering the high prevalence of gambling (Breen & Gainsbury, 2013; Williams, Stevens, & Nixon, 2011) and CSA (Collin-Vézina, Dion, & Trocmé, 2009) among Indigenous Peoples, and given that many of these abuses are related to residential schooling (First Nations Information Governance Committee [FNIGC], RHS Regional Coordinators [RCs] & Regional Longitudinal Health Survey [RHS] Team, 2007), further studies are needed to better understand the link between gambling, CSA, and residential schooling. To date, no study has quantitatively investigated the link between

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<sup>1</sup> Several terms are used to describe Indigenous Peoples. “Aboriginal” is often cited to refer to the first peoples of North America and their descendants. However, the word “Indigenous” is now preferred, as it is considered to be more uniting and less colonizing than the term “Aboriginal” (Canadian Institutes of Health Research - Institute of Aboriginal Peoples’ Health, 2013). In Canada, “Aboriginal” and “Indigenous” refer to the First Nations Peoples, Métis and Inuit (Aboriginal Affairs and Northern Development Canada, 2013).

residential schools, sexual abuse and gambling among Indigenous persons. Results from this study are vital to a better understanding of the impact of childhood traumas on long-term addiction problems, which may inform prevention and treatment programs to help intervene more effectively among Indigenous communities.

### **Prevalence of Pathological Gambling**

Several studies worldwide have used the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987) to assess the prevalence of gambling (Gambino & Lesieur, 2006). According to this validated psychometric tool, individuals who endorse at least five symptoms or components associated with gambling problems, such as family disruption; work disruption; lying about gambling gains, losses and debts; borrowing money; etc., are identified as probable pathological gamblers (Lesieur & Blume, 1987). In North America, results of a meta-analysis (comprising 66 studies) indicate a mean current rate of probable pathological gambling of 1.46% (0.92-2.01 CI) among adults (Shaffer & Hall, 2001). Other studies have also replicated these prevalence results (e.g., Kessler et al., 2008; Kairouz, Nadeau, & Paradis 2011). In their literature review of five North American studies, Wardman, el-Guebaly and Hodgins (2001) estimated that Indigenous persons are 4 to 16 times more likely to develop pathological gambling than individuals of the general population. Williams, Stevens and Nixon (2011) estimate that the average rate of problem gambling (a less severe form of pathological gambling) and pathological gambling among Indigenous Peoples of North America is somewhere between 10 and 20%. These higher prevalence rates have been explained by an accumulation of various risk factors, such as low education, poverty, early onset of gambling, greater exposure to gambling games like bingo, and higher rates of unemployment and addiction (Hewitt, 1994, 1995; Hewitt & Auger, 1995; Hing, Breen, Gordon, & Russell, 2014; Volberg, 2001; Volberg & Abbott, 1997; Wardman, el-Guebaly & Hodgins, 2001; Zitzow, 1996a, 1996b).

Since pathological gambling is a serious problem that can result in various negative outcomes in individuals, families and communities (Wardman et al., 2001), it is important to better understand some of the factors that could lead to its development. Moreover, studying pathological gambling among Indigenous Peoples also implies consideration of the residential schooling legacy, as several researchers have recognized its long-lasting outcomes on Indigenous Peoples' well-being (e.g., Fast & Collin-Vézina, 2010; Mussel, Cardiff & White, 2004).

### **Residential Schooling and Gambling**

Over time, several measures, including the Indian residential school system, have been developed to colonize and assimilate Indigenous Peoples into Canadian society. It is estimated that more than 150,000 Indigenous children (Aboriginal Affairs and Northern Development Canada [AAND], 2010), some as young as five years old (Aboriginal Healing Foundation [AHF], 2001), were removed from their family to attend these institutions. Results of the First Nations Regional Longitudinal Health Survey (FNIGC, RC's, & RHS, 2007) indicate that approximately 20% of Indigenous Peoples were sent to these schools for an average of five years. This proportion increases with age (e.g., 5.7% among 18–29 year olds, and 43.3% among those 60 years and older; FNIGC, RC's, & RHS, 2007).

In these schools, children were deprived of their native language and culture, and many were exposed to child abuse (e.g., Aboriginal Healing Foundation [AHF], 2013; Royal Commission on Aboriginal Peoples [RCAP], 1996; Hylton, Bird, Eddy, Sinclair, & Stenerson, 2002). For example, results of the First Nations Regional Longitudinal Health Survey (FNIGC, RC's, & RHS, 2007), conducted among 10,962 adults, indicate very high prevalence rates of verbal and emotional abuse (79.3%), severe discipline (78.0%), violence witnessing (71.5%), physical abuse (69.2%), bullying (61.5%) and sexual abuse (32.6%).

Indigenous persons who were sent to residential schools have been found, as adults, to present high rates of mental health difficulties, such as post-traumatic stress disorder, substance abuse disorder and major depression (Corrado & Cohen, 2003). They are also more likely to present with health problems (e.g., arthritis, diabetes, hypertension) (FNIGC, RC's, & RHS, 2007), compared with Indigenous persons who did not attend residential schools. Among Indigenous persons who did attend these institutions, those with a history of abuse were also more likely to have a history of suicide thoughts and attempts (Elias et al., 2012). To our knowledge, only two studies have looked at the link between residential schooling and gambling issues among Canadian Indigenous Peoples. Results of the first study ( $N = 149$ ) indicate that among probable severe pathological gamblers, 69% had attended residential school; and among those who did not have a gambling problem, this proportion was 39% (Hewitt, 1994). In the study by Auger and Hewitt (2000;  $N = 500$ ), 25% of probable pathological gamblers had attended residential school compared with 24% of non-problem gamblers. The complexity of problem gambling development and the constellation of precipitating factors might explain this difference in results, which also suggests the need to consider the impact of other traumas, such as sexual abuse, on the development of gambling problems.

### **Sexual Abuse and Gambling**

Results of several studies indicate that CSA is a non-specific risk factor that contributes to the development of numerous short- and long-term negative consequences (Fergusson et al., 2013; Hillberg et al., 2011; Maniglio, 2009). Moreover, CSA appears to have a stronger and more consistent effect than child physical abuse on later mental health problems (Fergusson, Boden, & Horwood, 2008). However, although CSA is highly prevalent in Indigenous communities (Collin-Vézina et al., 2009; Muckle & Dion, 2008), few studies have investigated its relationship with pathological gambling among Indigenous Peoples. Collin-

Vézina, Dion, and Trocmé (2009) reviewed 20 studies conducted between 1989 and 2007, and the CSA prevalence rate, which included CSA during residential schooling, was estimated to range from 25 to 50%. Among non-Indigenous Peoples, CSA rates among pathological gamblers range from 22 to 56% for females (Boughton & Falenchuk, 2007; Jacobs, 2008; Kaplan & Davis, 1997; Kausch, Rugle, & Rowland, 2006; Moore & Jadlos, 2002) and between 6 and 45% for males (Jacobs, 2008; Kaplan & Davis, 1997; Kausch et al., 2006; Moore & Jadlos, 2002; Scherrer et al., 2007). These results suggest that CSA may be more prevalent in pathological gambler populations than in the general population, where approximately 20% of women and 10% of men report CSA (Pereda, Guilera, Forns, & Gómez-Benito, (2009); Stoltenborgh, Van IJzendoorn, Euser, & Bakermans-Kranenburg, 2011; Tourigny, Hébert, Joly, Cyr, & Baril, 2008). Some recent studies also indicate an association between CSA experiences and pathological gambling (Felsher, Derevensky, & Gupta, 2010; Hodgins et al., 2010; McCormick, Delfabbro, & Denson, 2012), although this relationship was not confirmed in others (Fleming, Mullen, Sibthorpe, & Bammer, 1999; Pérez-Fuentes, 2013). Moreover, although the causal chain between CSA and gambling is yet to be ascertained, one study has suggested that sexual trauma can cause emotional vulnerability, which in turn increases gambling behaviors (Blaszczynski & Nower, 2002). These contradictory and partial findings can be explained by the methodological limitations of this burgeoning scholarship, including the use of small (e.g., Jacobs, 2008), non-randomized (e.g., Moore & Jadlos, 2002) or clinical (e.g., Kausch et al., 2006) samples. Furthermore, some studies did not include a comparison group of non-pathological gamblers (e.g., Boughton & Falenchuk, 2007).

Among Canadian Indigenous Peoples, only two quantitative and two qualitative studies have been conducted on the link between gambling and sexual abuse. In Jacobs' (2008) study among 15 pathological gamblers (median age = 54 years), 75% of women and 43% of men

reported CSA. Another study conducted among 961 Indigenous adolescents (mean age = 14 years; 50% males) in Alberta, of which 272 were problem gamblers (65% males), indicates that almost 20% had experienced some form of sexual abuse. Although no significant differences were found between various levels of gambling and the prevalence of different types of sexual abuse, a greater prevalence of gambling problems was found among victims of more severe forms of sexual abuse (16% of problem gamblers vs. 9% of non-gamblers; Hewitt & Auger; 1995). No analyses were done to differentiate between sex and gambling severity, although girls were victims of sexual abuse about two times more frequently than boys were. Results of a qualitative study conducted among seven Indigenous women living in Western Canada indicate that they used gambling to cope with social trauma (some having experienced CSA), change their mood and block out the past (Hagen, Kalishuk, Currie, Solowoniuk, & Nixon, 2013). Results of another qualitative study conducted in Ontario among 192 Indigenous Peoples also indicate that some participants gambled to numb painful feelings and thoughts (some related to past sexual abuse) (Oakes & Currie, 2004). Finally, although it did not include Canadian Indigenous Peoples, a large representative cross-sectional study was conducted among 2,189 Inuit participants from nine towns and thirteen villages in Greenland from 2005 to 2010. Results indicate that problem gambling was associated with sexual abuse, but only among women (Larsen, Curtis, & Bjerregaard, 2013). To our knowledge, no study has been conducted on this topic among Native Americans.

Few theoretical frameworks have considered the impact of childhood trauma on gambling. In Jacobs' general theory of addiction (1986, 1989, 2008; McCormick et al., 2012), trauma occurring during childhood may lead to the development of physiological and psychological states that predispose to addiction. Addictions, such as pathological gambling, may serve as a means of coping with the suffering of past trauma. Blaszczynski and Nower (2002) developed the Pathways Model of problem and pathological gambling, where they



integrate the biological, psychological, social, and environmental factors that contribute to problem gambling. In this model, the various pathways allow us to identify three gambler subgroups, and one of them is the emotionally vulnerable problem gamblers' subgroup. In that subgroup, the motivation to gamble is viewed as a way to modulate affective states and/or to meet psychological needs, which may be related to negative family background and life events, to a history of poor coping skills or to mood and anxiety problems (Blaszczynski & Nower, 2002). Along the same lines, Polusny and Folette's (1995) theoretical framework of the emotional avoidance theory posits that CSA is a distal stressor that may lead to the development of emotionally avoidant coping behaviors, such as substance abuse. Although these behaviors may alleviate aversive internal experiences related to CSA memories and increase relief in the short-term, they also lead to long-term negative consequences. In that context, gambling behaviors are perceived as maladaptive coping strategies used to escape, dissociate or relieve stress from past CSA trauma (Dion et al. 2010). Overall, these theories, when applied to CSA and gambling, may indicate that CSA is a distal stressor that increases the likelihood of developing maladaptive coping skills, which in turn lead to pathological gambling.

The current study aims to investigate the relationship between CSA and pathological gambling in a large sample of Indigenous Peoples, while taking into account residential schooling. We hypothesize that having been sexually abused as well as having been sent to residential school will be associated with increased odds of being a probable pathological gambler. Considering that a significant proportion of residential school survivors were sexually abused while attending these schools (e.g., FNIGC, RC's, & RHS, 2007), we also hypothesize that the CSA x residential schooling interaction will be associated with increased odds of probable pathological gambling.

## **Method**

Gambling problems was a research topic of importance to the Indigenous rehabilitation center involved and to members and stakeholders of various Indigenous communities. As researchers, we were invited to develop a collaborative approach that involved all partners in the research process and recognized the unique strengths that each brought to this project. All together, we defined the questions, method and implementation of this research. The community members and the Indigenous rehabilitation center participated also in the data collection and the interpretation of the results. Thus, the research was driven by our partners' needs. Consent from Band Councils was also obtained to ensure its relevance to their communities. This research was designed according to the Canadian Tri-Council Policy Statement on Ethical Conduct of Research Involving Aboriginal Peoples (Interagency Advisory Panel on Research Ethics, 2010). Throughout this project, the Indigenous culture and traditions were respected.

### **Participants and Procedure**

A total of 358 Indigenous persons (54.2% women) aged between 18 and 87 years ( $M = 42.6$  years,  $SD = 16.3$  years), from two communities (reserves) and two semi-urban centers in the province of Quebec (Canada), participated in this study in 2009–2010. Of these, 196 were randomly recruited, i.e. they were selected from lists of Indigenous members provided by the Band Councils (communities) and by the Native Friendship Centres (semi-urban centers). The other 159 participants were volunteers who had heard about this study and contacted the researchers to express their interest in participating. All the Indigenous interviewers, who were social workers or were trained in counseling, received a half-day of training in the research protocol. They met each participant individually for approximately 40 minutes to administer the questionnaire in French. All participants understood French, although the mother tongue of the majority was an Indigenous language. As our interviewers were Indigenous and spoke these languages, they were able to help participants if they did not

understand the questions. The interviewers mentioned that it rarely happened. Participants received \$20 in compensation. Although no participant appeared distressed while participating in this study, the interviewers gave them all a list of culturally informed resources and services. The ethics committee of the university (blinded for review) approved this study.

Despite the fact that the total number of participants was 358, this number fluctuated for the different study variables due to missing data. Among the participants, 39.9% earned less than \$10,000 per year and only 14.6% earned more than \$40,000 per year. Over a quarter (26.1%) of them were employed, while 42.4% received income assistance. The majority of the participants reported not having completed high school (70.2%). Three quarters had children (75.1%; on average, 3.1 children).

### **Measures**

A socio-demographic questionnaire was used to collect information, such as the participants' sex, annual income, and age (grouped into two categories to ensure sufficient statistical power in the analyses: 18–49; 50 or more). One question also assessed the presence/absence of CSA (having been sexually abused before age 18) and one assessed residential schooling (having attended residential school).

Pathological gambling, in the past year and across the lifespan, was evaluated using the SOGS (Lesieur & Blume, 1987; French version of Ladouceur, 1991), a validated and reliable instrument for screening populations for gambling problems. It is one of the most used instruments worldwide for detecting gambling problems and has been employed in various settings and populations, such as epidemiological surveys, treatment settings, and diagnostic and forensic screening (Gambino & Lesieur, 2006; Lesieur & Blume, 1993; Rosenthal, 1989; Stinchfield, 2002). The SOGS contains 20 items, which correspond to gambling problems (e.g., family disruption, losses and debts), and was developed using the DSM-III diagnostic

criteria for pathological gambling. Two time frames were computed, life-time and twelve-month period, but the twelve-month time window was used as the outcome variable to assess current probable pathological gambling. The SOGS score is obtained by summing up all items endorsed. Participants who score 5 or more are classified as current probable pathological gamblers. This cut-off score has been established by Lesieur and Blume (1987) and further validated over the years (e.g., Stinchfield, 2002). Although the SOGS and the DSM criteria are not identical, they are highly correlated (DSM-III-TR, Lesieur & Blume, 1987; DSM-IV, Stinchfield, 2002; and DSM-5, Goodie et al., 2013). In this sample, Cronbach's alpha was 0.86.

### **Results**

The data showed that 28.1% of the participants reported attending residential school and that 35.4% had suffered CSA. Overall, 80% of the sample reported gambling during the past year. The prevalence of probable pathological gambling as measured by the SOGS in the past year was 8.7% and the lifetime prevalence was 11.5%. Table 1 presents chi-square results for the factors associated with probable pathological gambling (non-pathological gamblers included the 20% of participants who did not gamble). Among probable pathological gamblers, 67.7% reported a CSA history, compared with 32.2% of non-pathological gamblers ( $\chi^2 = 15.62, p < .001$ ). Probable pathological gamblers also reported attending residential school (61.3%) more often than non-pathological gamblers (24.9%) ( $\chi^2 = 18.50, p < .001$ ).

The exact logistic regression is the most valid method to employ when sample sizes are small or the data are sparse, skewed, or heavily tied (Derr, 2009; Mehta & Patel, 1995). In the current study, the outcome variable—probable pathological gambling in the past year—was present for only 8.7% of participants; therefore, it was expected that some cells would have small counts. We thus performed an exact logistic regression to investigate the relative

influence of CSA on pathological gambling, taking into account the influence of residential schooling, and the socio-demographic covariates, age and sex of the participants.

**Table 1**

*Factors associated with pathological gambling.*

Variable	Non-pathological gambler		Probable pathological gambler		Total		$\chi^2$
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
<b>Sex</b>							
Men	151	46.6	10	32.3	161	45.4	2.350
Women	173	53.4	21	67.7	194	54.6	
<b>Age</b>							
18–49 years	213	65.7	24	77.4	237	66.8	1.739
50 years or more	111	34.3	7	22.6	118	33.2	
<b>Income</b>							
Less than \$20,000	172	63.7	16	57.1	188	63.1	0.469
\$20,000 or more	98	36.3	12	42.9	110	36.9	
<b>CSA</b>							
Yes	100	32.2	21	67.7	121	35.4	15.616***
No	211	67.8	10	32.3	221	64.6	
<b>Residential schooling</b>							
Yes	80	24.9	19	61.3	99	28.1	18.497***
No	241	75.1	12	38.7	253	71.9	

Note. N varies in the different analyses due to missing data.

\*\*\*  $p < .001$ .

Table 2 presents the correlations between the factors associated with probable pathological gambling, which reveal no problem with multicollinearity, as no correlation higher than .70 was found (Tabachnick & Fidell, 2013). Results indicate that CSA is more

prevalent among women. Participants who attended residential school were older and more often victims of CSA.

**Table 2**

*Correlations between factors.*

Variable	2	3	4
1. Sex	-0.06	0.16*	-0.06
2. Age	—	0.02	0.31**
3. CSA		—	0.26**
4. Residential schooling			—

Note. Age categories were: 18–49 years; 50 years and more.

\*  $p < .05$ ; \*\*  $p < .01$ .

Three exact logistic regressions were performed (see Table 3). The most parsimonious model is the one in Step 2, which corresponds to the final model. Model 3 was not retained, as the interaction between CSA and residential schooling was non-significant, which indicates that there is no multiplicative effect of having both traumas. Risk for pathological gambling was almost 3 times higher for CSA victims compared with non-victims (OR: 2.95; CI: 1.20 – 7.66;  $p = .016$ ), and nearly 7 times higher for those having attended residential school (OR: 6.86; CI: 2.66 – 18.30;  $p < .000$ ). In contrast, pathological gambling was almost 4 times lower for participants aged 50 years or more (OR: .25; CI: .08 – .74;  $p = .008$ ), compared with younger ones. Participants' sex was not statistically significant.

## Discussion

To our knowledge, this is the first study to empirically examine the link between CSA and gambling among Indigenous Peoples while considering the impact of residential schooling. The results obtained partly confirmed our hypothesis: CSA and residential schooling were associated with probable pathological gambling, but the interaction between CSA and residential schooling was non-significant.

Table 3

*Exact logistic regressions of factors associated with pathological gambling.*

Variable	Step 1			Step 2			Step 3		
	OR	(95% CI)	<i>p</i>	OR	(95% CI)	<i>p</i>	OR	(95% CI)	<i>p</i>
Sex									
Women	Ref.			Ref.			Ref.		
Men	0.56	(0.22-1.34)	0.218	0.64	(0.24-1.63)	0.421	0.62	(0.23-1.58)	0.373
Age									
18–49	Ref.			Ref.			Ref.		
≥ 50	0.31	(0.10-0.84)	0.017	<b>0.25</b>	<b>(0.08-0.74)</b>	<b>0.008</b>	0.25	(0.07-0.73)	0.008
Residential schooling									
No	Ref.			Ref.			Ref.		
Yes	6.88	(2.85-17.29)	<.000	<b>6.86</b>	<b>(2.66-18.30)</b>	<b>&lt;.000</b>	4.79	(0.91-22.58)	0.066
CSA									
No				Ref.			Ref.		
Yes				<b>2.95</b>	<b>(1.20-7.66)</b>	<b>.016</b>	2.20	(0.55-8.79)	0.318
Residential schooling X CSA							1.76	(0.24-14.62)	0.817

Note. *N* = 340; CI = Confidence Interval for odds ratio (OR) and Ref. = Reference category. Data in bold was used to highlight the significant results of the final model.

The data obtained showed that 28.1% of respondents had attended residential school, and that this proportion increased with age, which is consistent with findings in other studies (Barton, Thommasen, Tallio, Zhang, & Michalos, 2005); Reading & Elias, 1999; FNIGC, RC's, & RHS, 2007). The prevalence of CSA in the overall sample was 35.4%, and was higher among women. This rate is rather high compared with the general population, where it is around 10% for men and 20% for women (Pereda et al., 2009; Stoltenborgh et al., 2011; Tourigny et al., 2008), but consistent with the high rates of CSA found among Indigenous communities in several studies (Collin-Vézina et al., 2009). In our study, CSA was also related to residential schooling, which might be explained by the high proportion of residential school survivors who suffered sexual abuse (FNIGC, RC's, & RHS, 2007).

Nonetheless, some participants had been victims of CSA in their own community, not in residential schools.

In our sample of Indigenous persons, a high proportion of participants lived in a low-income and low-employment situation, which may also be related to their low education attainment. This is often the case among Indigenous persons in Canada (FNIGC, RC's, & RHS, 2007; Tourigny, Domond, Trocmé, Sioui, & Baril, 2007). Those in our sample also had an average of 3.1 children. In comparison, the average number of children per woman in Canada in 2009 was 1.7 (Statistics Canada, 2013).

Overall, four out of five respondents reported gambling during the past year, which is slightly more than the rest of the Quebec population (70.4% of gamblers in 2009; Kairouz et al., 2011) and the Indigenous persons of the James Bay Cree, in the Northwest part of the province (72% reported gambling in 2003, Anctil & Chevalier, 2008; 68.4% in 2006-2007, Gill, 2010). However, our results also indicate that 8.7% of participants are probable pathological gamblers, which is almost 9 times higher than in the general population. This result is nonetheless consistent with (Anctil & Chevalier, 2008; Wardman et al., 2001), or slightly higher (Gill, 2010) than the rates observed in other studies conducted among Indigenous Peoples in Canada. It is also comparable to the high rates found in other countries among Indigenous Peoples (see Breen & Gainsbury, 2013).

Although no causal link could be derived from our methodology, the current results reveal that past traumas are associated with probable pathological gambling. More specifically, they show that CSA is associated with probable pathological gambling, which has also been found in studies among Inuit (Larsen et al., 2013) as well as non-Indigenous Peoples (Felsher et al., 2010; Hodgins et al., 2010; McCormick et al., 2012). Although there is an abundant literature on the residential school legacy (e.g., see AHF, 2013; RCAP, 1996), few quantitative studies have been conducted on the outcomes of residential schooling,



including pathological gambling (Hewitt, 1994, but not in Auger & Hewitt, 2000), substance abuse (Corrado & Cohen, 2003), and mental health problems (Corrado & Cohen, 2003). In our sample, residential schooling appeared more related to probable pathological gambling than CSA did. This may be because residential school survivors experienced many forms of abuse (FNIGC, RC's, & RHS, 2007), in addition to being removed from their families. It may also be difficult to disentangle the various elements of personal history of each residential school survivor that led to the survivors' pathological gambling, but it is probable that the accumulation of the various traumas experienced increased their vulnerability to mental health problems. The non-significant interaction of CSA and residential schooling in our study also indicates that CSA and residential schooling have an additive, but not multiplicative, effect in increasing the odds of probable pathological gambling. As this is the first study to consider the impact of both these traumas, further studies including both qualitative and quantitative methodologies are needed to better understand how they relate to pathological gambling. Overall, both traumas (CSA and residential schooling), taken separately, are related to probable pathological gambling. They thus may be stressors that increase the likelihood of developing pathological gambling. As suggested by several addiction theories, gambling may become a distraction to avoid traumatic memories (Blaszczynski & Nower, 2002; Jacobs, 2008; McCormick et al., 2012).

In this study, we did not investigate by which mechanism traumas were associated with pathological gambling. Among other studies, one found certain factors that mediate the relationship between traumas and pathological gambling, such as difficulties with relationships, self-identity, and affect regulation (Parikh 2012). Future research should attempt to simultaneously assess multiple pathways by which CSA contributes to pathological gambling, to pinpoint direct and indirect processes. For example, a longitudinal framework

could be used to study moderating and mediating factors between CSA and pathological gambling among Indigenous Peoples.

One of the limitations of this study concerns the difficulty collecting data in one of the communities studied. Geographical distance and turnover (we trained five interviewers at that location) may have contributed to the low response rate in that community. Further studies are thus needed in remote communities. Another limitation is the cross-sectional and retrospective design. Although we had a large and diverse (from 2 communities and 2 semi-urban centers) sample of Indigenous participants, for analytical reasons (small counts), we could not include in our models several factors that may be associated with pathological gambling, given the total number of pathological gamblers.

Another limitation concerns the measure of sexual abuse, which was limited to the presence/absence of sexual abuse and therefore precluded any analysis of the severity of the abuse in relation to pathological gambling, which is a question to pursue in future research. To ensure sufficient statistical power, we had to group age into two categories (18–49; 50 or more). A more widely used strategy for creating age groups (18–34; 35–49; and 50 or more) would have been interesting. Also, the use of the SOGS may have overestimated the number of pathological gamblers in the general population, compared with the DSM-IV (Goodie et al., 2013; Stinchfield, 2002) or DSM-5 criteria (Goodie et al., 2013). It should be noted that there are still debates over the changes of diagnostic criteria and reclassification in the new edition of the DSM-5 (e.g., Bowden-Jones, 2013). Diagnostic criteria of the DSM are *a product of research results, clinical experience, expert group consensus, and possible cultural and political biases* (Stinchfield, 2002, p.15). Thus, no gold standard for pathological gambling has been established (Gambino & Lesieur, 2006; Stinchfield, 2002). Moreover, the high emphasis of the SOGS on financial problems may have resulted in higher prevalence rates among Indigenous persons with low incomes (Young & Stevens, 2008). Nonetheless,

the aim of this study was not to estimate the prevalence rate but rather to investigate how past traumas can relate to pathological gambling. While any instrument has its advantages and disadvantages, the current results indicate that past traumas are related to gambling problems. Further studies are required to better understand the risk factors associated with probable pathological gambling. Finally, caution should be used regarding the generalization of the findings of the current study to other Indigenous groups, given the vast diversity within and between Indigenous groups in Canada. We thus encourage researchers to engage in collaborative efforts with the Indigenous communities of interest to identify the relevance of the findings from the current study before collecting data. Future researchers could use this study as a basis or starting point for their work with other Indigenous groups, whether in Canada or elsewhere.

### **Practical Implications**

Clinical implications can be drawn from these results, particularly for the treatment of gamblers. First, the current results underscore the importance of screening for past traumas in the population of probable pathological gamblers. They also suggest that gambling problems should be addressed in prevention and intervention programs designed for victims of sexual abuse or those having attended residential school. Moreover, if gambling is used to avoid suffering from past trauma, it is important to use a holistic approach in intervention for gamblers (Auger & Hewitt; 2000). In Indigenous communities, the recommended therapeutic models often include an ecological approach, which integrates individuals, their families and their communities, within a historical, political and cultural context (Muckle & Dion, 2008). Moreover, our results highlight the importance of further understanding the realities of Indigenous Peoples, including the consequences of the historical traumas, such as residential schooling and colonization (Morency & Kistabish, 2001). Prevention should also address sexual abuse as well as pathological gambling among Indigenous Peoples.

## **Conclusion**

In recent years, many studies have focused on the residential school legacy (e.g., AHF, 2013; Fast & Collin-Vézina, 2010), and this has led to the acknowledgement of the numerous negative outcomes of having attended these institutions. Nonetheless, this study is the first to date to have quantitatively studied the link between residential schools, sexual abuse and pathological gambling. Our results reveal not only the extent of pathological gambling among the Indigenous Peoples who took part in this study, but also its association with past traumas, indicating that CSA and residential schooling are related to probable pathological gambling. Considering the high prevalence among Indigenous Peoples of both these traumas, it would be helpful to better understand their roles in the complex picture of pathological gambling. Since pathological gambling is part of a broader set of problems facing some communities, clinicians, researchers and community members need to join their efforts in prevention and intervention practices that foster well-being and heal not only the individual, but the whole community.

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