

**ALCOHOL USE AMONG OFF-RESERVE CANADIAN ABORIGINAL  
ADOLESCENTS: PREVALENCE AND ASSOCIATIONS WITH CULTURAL  
PARTICIPATION**

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### **Abstract**

A limited body of research suggests that cultural participation may protect Aboriginal adolescents against alcohol use. Therefore, this thesis examined the relationship between cultural participation, including Aboriginal language knowledge and participation in extracurricular cultural activities, and three alcohol use outcomes —12-month alcohol use, heavy episodic drinking (HED), and weekly alcohol use, among off-reserve Aboriginal adolescents. Data from the 2012 Aboriginal Peoples Survey, a national cross-sectional survey of off-reserve Aboriginal identity individuals aged six years and older, was used. The analysis was restricted to adolescents aged 15 through 18 years with non-proxy interviews. Overall, 64.0 percent reported using alcohol in the past year, 22.4 percent participated in HED, and 10.9 percent used alcohol weekly. Aboriginal language knowledge was inversely associated with all outcomes, while participating in extracurricular cultural activities was negatively associated with 12-month alcohol use. Thus, programs that promote Aboriginal languages and culture may be successful in reducing alcohol use among Aboriginal youth.

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## **Introduction**

### *The Aboriginal Peoples*

Aboriginal peoples are the earliest inhabitants of Canada and include the Inuit, Métis, and First Nations. The Inuit are the original inhabitants of the Arctic, the Métis are descendants of 18th and 19th century intermarriage between First Nations and European peoples, and the First Nations have historically been referred to as “Indians” and include all Aboriginals who are neither Métis nor Inuit (Indigenous and Northern Affairs Canada, 2004). Together, these three groups make up an increasing proportion of Canadians; they made up 2.8 percent of all Canadians in 1996, 3.3 percent in 2001 and 4.3 percent in 2011. Because the Aboriginal population is growing, Aboriginals make up an even larger proportion of Canadian children and adolescents; as of 2011, 7.0 percent of children under 14 and 5.9 percent of youth aged 15 to 24 were Aboriginal. Aboriginal people live in widely heterogeneous communities in all regions of Canada; about three-quarters of Canada’s Inuit live in their original homeland called Inuit Nunangat, which stretches from Labrador to the North West Territories, while approximately one-third of First Nations people live on reserve. The Métis and Inuit do not commonly reside on reserves (Turner, Crompton & Langlois, 2011).

In addition to demographic differences, marked health and social disparities are evident between Aboriginal and non-Aboriginal Canadians. These disparities tend to begin before birth and extend into childhood, adolescence, and adulthood. For example, Aboriginal children are more likely to be born to young mothers, with about one-quarter of Aboriginal children under the age of 6 having a mother aged 15 to 24 years (O’Donnell & Wallace, 2011). Among youth aged birth to 14 years, 49.6 percent of Aboriginal children, compared to 76 percent of non-Aboriginal

children, live with both biological parents. In addition, 3.6 percent of Aboriginal children, compared to 0.3 percent of non-Aboriginal children live in foster care (Turner et al., 2011). Aboriginal peoples also tend to have higher rates of psychiatric morbidity. For example, one study found that 17.6 percent of Aboriginals reported a diagnosis of depression, compared to 10.7 percent of Anglophone Canadian-born whites. The same study found that 5.0 percent of Aboriginals reported a 12-month prevalence of suicidal thoughts or non-fatal attempts, compared to 2.3 percent of Anglophone Canadian-born whites (Clarke, Colantonio, Rhodes & Escobar, 2008). These high rates of depression may begin in adolescence; one study found that among Aboriginal grade five through eight students, the prevalence of moderate to severe depression was 21.6 percent, compared to only 8.9 percent for Caucasian adolescents (Lemstra et al., 2008). Aboriginal adolescents also tend to consume alcohol at somewhat higher rates than their non-Aboriginal counterparts. For example, one study based on grade five through eight students in Saskatoon found that 23.5 percent of on-reserve First Nations, 16.7 percent of off-reserve Aboriginal students (including First Nations and Métis) and 5.4 of non-Aboriginal students reported having ever been drunk (Lemstra et al., 2009; Lemstra, Rogers, Moraros, & Caldbick, 2013). The 2002 Alberta Youth Experience Survey, based on students attending grades seven through 12, found that 65.2 percent of Aboriginal youth, compared to 53 percent of non-Aboriginal youth, reported having consumed alcohol in the past 12 months (Alberta Alcohol and Drug Abuse Commission, 2005). Finally, a study based on grade 9 through 12 students in the Canadian provinces found that Aboriginal students had higher prevalence rates of having ever tried alcohol and 12-month heavy episodic drinking (HED) [consumption of five or more alcoholic beverages on one occasion]. Furthermore, Aboriginal students reported being of

younger age when they began to consume alcohol (Elton-Marshall, Leatherdale, & Burkhalter, 2011) [more details can be found in manuscript introduction].

### *Aboriginal Culture*

Canada's Aboriginal communities are culturally and linguistically diverse, with 60 Aboriginal languages, divided into 12 language groups, being spoken as of 2011 (Langlois & Turner, 2014). However, Aboriginal communities tend to share a common concept of a person's identity being comprised of relationships with extended family, community, land, and deceased ancestors (Tanner, 1979), as well as a common history of subversion of their culture and values through colonization. For example, missionaries actively campaigned against the traditional spirituality that was integral to the function of families and communities (Kirmayer, Tait & Simpson, 2009), and traditional and spiritual ceremonies such as the Potlatch and Sun Dance were prohibited (Hoxie, 1996). Furthermore, over the past two centuries the Canadian government has promoted sedentarization of Aboriginals, forcing families to move to unfamiliar lands and splitting up communities. For example, in the 1950s, several Inuit families from one community in Northern Quebec were forcefully relocated to the Northern Arctic, where they were separated from each other and left without adequate food or training to survive in the northern climate (Tester & Kulchyski, 1994). One of the most damaging components of colonialization may have been the widespread use of residential schools for Aboriginal children; about 100,000 Aboriginal children attended residential schools that enforced limited contact with parents and forbid use of Aboriginal languages with the goal of assimilating Aboriginal children into British Canadian culture (Miller, 1996). Efforts to suppress Aboriginal culture have been partially successful. Over the past 100 years, ten Aboriginal languages have become extinct and

many more are endangered (Norris, 2007). Moreover, as of 2011, only 15.2 percent of Aboriginals reported an Aboriginal language as their mother tongue (Langlois & Turner, 2014).

### *Historical Loss and Alcohol Use*

Young (1991) analyzed 26 books on alcohol use published between 1976 and 1989 and concluded that the most prevalent theory explaining the high rates of alcohol use among Aboriginal peoples postulates that they are a consequence of the forced assimilation experienced by Aboriginal and Native American peoples after the arrival of Europeans. Although there are few empirical studies in this area, a small body of literature does lend support to this theory. For example, Whitbeck, Adam, Hoyt & Chen (2004a) examined the prevalence of thoughts about loss of culture and associated emotions among American Indian and First Nations adults aged 28 to 59 residing on two reserves in the American Midwest and two in Ontario, Canada. Results suggest that American Indian and First Nations peoples frequently think about the loss of Aboriginal culture and that these thoughts are associated with negative emotional responses. For example, 36.3 percent of respondents revealed that they thought about the loss of language, 37.5 percent about the loss of respect by children and grandchildren for elders, and 35.2 percent thought about the loss of respect by children for traditional ways at least daily. These thoughts were accompanied by emotional responses such as depression, anger, and distrust towards white people. Whitbeck et al., (2004a) termed these emotionally charged thoughts “historical loss”. Furthermore, Whitbeck, Chen, Hoyt and Adams (2004b) noted an association between thoughts of historical loss and a 12-month diagnosis of alcohol abuse in the same population of American Indian and First Nations adults. A later study found that the children of these adults, aged 10 to 12 years, had a similar prevalence of thoughts about historical loss (Whitbeck, Walls, Johnson, Morrisseau, & McDougall, 2009).

In accordance with this theory, participating in Aboriginal culture may contribute to good mental health among Aboriginal and Native American peoples, such as protecting against suicide and substance use. Cultural participation refers to the creation, dissemination, exhibition or consumption of activities or goods related to a particular culture (United Nations Educational, Scientific and Cultural Organization, 2012). A related term is enculturation, which is defined as integration into one's culture of origin [see manuscript introduction for more information on enculturation]. Studies from both the United States and Canada support an association between cultural participation and mental health Aboriginal peoples (Chandler & Lalonde, 1998; Hallett, Chandler, Lalonde, 2007; Yoder, Whitbeck, Hoyt & LaFromboise, 2006; Currie et al., 2013; Stone, Whitbeck, Chen, Johnson & Olson, 2006; Whitbeck et al., 2004b; Herman-Stahl, Mindy & Spencer 2003; Currie et al., 2011; LaFromboise, Hoyt, Oliver & Whitbeck, 2006).

### *Cultural Participation and Suicide*

To my knowledge, three studies have examined the relationship between cultural participation and suicidal thoughts or actions among Aboriginal peoples. The results of all three studies suggest that cultural participation is associated with a lower risk of suicide. A pivotal study that examined youth (aged 15 to 24 years) suicide rates among British Columbia's First Nations Tribal Councils (government organizations made of several First Nations Bands), with and without at least one cultural facility (a building designed specifically to be used for cultural purposes), found that rates differed between 99.4 and 128.7 suicides per 100,000 youth in councils that had, and did not have, a cultural facility, respectively (Chandler & Lalonde, 1998). In another study, 152 of the First Nations Bands that made up the Tribal Councils were divided into two groups based on the proportion of band members who had a conversational knowledge of an Aboriginal language. The first group consisted of bands where at least half of the members

knew an Aboriginal language. The second group consisted of bands where less than half knew an Aboriginal language. Bands in which a majority spoke the language had an average youth suicide rate of 13 per 100,000, compared to 96.59 per 100,000 among bands in which less than half spoke an Aboriginal language (Hallett et al., 2007). Similarly, among American Indian adolescents aged 9 to 16 years, living on three reservations in the American Midwest, enculturation, defined as a composite measure of cultural participation, ethnic identity, and traditional spirituality, was negatively associated with suicidal thoughts (Yoder et al., 2006).

#### *Cultural Participation and Substance Use*

The majority of studies that examined the relationship between cultural participation and substance use among Canadian Aboriginal and Native American peoples suggest an inverse relationship. For example, among Aboriginal adults living in Edmonton, higher levels of cultural participation and valuing Aboriginal culture, as assessed by the Vancouver index, were associated with lower levels of prescription and illegal drug use (Currie et al., 2013). Enculturation, defined by each study as a composite measure of cultural participation and various other factors, has been found to increase the likelihood of alcohol cessation (Stone et al., 2006), and decrease the odds of alcohol abuse (Whitbeck et al., 2004b), weekly HED (Herman-Stahl et al., 2003) and alcohol abuse problems (Currie et al., 2011) in American Indian and Canadian Aboriginal adults [more details in manuscript introduction]. However, the research on cultural participation and alcohol use among Native American and Canadian Aboriginal adolescents is limited. One study from the United States, based on 212 American Indian students, found that cultural participation was associated with lower levels of alcohol use, substance use, and externalizing behaviour (LaFromboise et al., 2006). A Canadian study based on the 2012 Aboriginal Peoples Survey did not find statistically significant association between knowledge of

an Aboriginal language, exposure to an Aboriginal language, making traditional crafts, and heavy alcohol use among off-reserve First Nations and Métis students aged 15-17 residing in the provinces (Ryan, Cooke, & Leatherdale, 2016). However, the direction of the association does suggest some protective effect of cultural participation. In addition, the final model was neither weighted according to Statistics Canada guidelines (Budinski & Langlet 2015) nor adjusted for the proxy nature of about half of the adolescents' interviews, thus possibly decreasing the validity of the reported results [further details on studies mentioned in this section can be found in manuscript introduction]. In contrast to these studies, a longitudinal study of 246 American Indian students from one reservation in the American Midwest found no association between cultural participation and alcohol use (Whitesell et al., 2014).

#### *Rationale and Study Significance*

Investigating the relationship between cultural participation and alcohol use has several advantages. First, instead of focusing on risk factors, which contributes to stereotypes about Aboriginal people, it is an opportunity to focus on strengths found within Aboriginal communities (Zimmerman, Ramirez-Valles, Washienko, Walter, & Dyer, 1996). Furthermore, investigations that are of cultural relevance to Aboriginal people may have greater impacts on reducing health inequalities (Valaskakis, Stout & Gidmoid, 2009; Zimmerman et al., 1996). For example, traditional activities are popular among Canadian Aboriginal youth (Smith, Findlay, and Crompton, 2010) and thus adolescents are likely to participate in such activities if they are available. Thus, levels of cultural participation may be more modifiable than traditional risk factors such as socioeconomic status (Currie et al., 2013). Moreover, cultural participation may be an especially important predictor of alcohol abstinence or moderation among off-reserve adolescents because they are likely to have less contact with Aboriginal culture than their on-

reserve counterparts (Zimmerman et al., 1996). However, studies on cultural participation and alcohol use among Aboriginal adolescents are limited. New research on cultural participation and alcohol use in Canadian Aboriginal adolescents would contribute to the growing body of literature on the relationship between cultural participation and alcohol use and would help shape educational and public health policy to serve the needs of Aboriginal adolescents. For example, if a protective relationship is found, this research may support cultural programs such as extracurricular clubs that celebrate Aboriginal culture or Aboriginal language classes as a method to decrease alcohol use among Aboriginal adolescents.

#### *Study Objective*

Therefore, the objective of this study is to examine the relationship between cultural participation, including Aboriginal language knowledge and participation in cultural activities, and three forms of alcohol use (12-month alcohol use, HED, and weekly alcohol use) among off-reserve Aboriginal adolescents aged 15 to 18.

## **Manuscript**

Alcohol use among off-reserve Canadian Aboriginal adolescents: prevalence and associations with cultural participation.

### **Abstract**

**Objective:** There is evidence that cultural participation may protect North America's Indigenous peoples against alcohol misuse; however, few studies have examined this relationship in adolescents. Therefore, the aim of this study was to examine the associations between two cultural participation variables, including Aboriginal language knowledge and participation in extra-curricular cultural activities, and alcohol use among off-reserve Canadian Aboriginal adolescents aged 15 to 18. **Methods:** The weighted sample consisted of 50,920 adolescents who completed the 2012 Aboriginal Peoples Survey, a national cross-sectional survey of off-reserve Aboriginal identity individuals aged six years and older. The independent associations between cultural participation variables and alcohol use, including 12-month alcohol use, heavy episodic drinking (HED) drinking, and weekly alcohol use, were assessed through logistics regression models. **Results:** Overall, 64.0 percent of adolescents reported using alcohol in the past year, 22.4 percent exhibited heavy episodic drinking (HED), and 10.9 percent used alcohol weekly. No knowledge of an Aboriginal language was associated with 12-month alcohol use (AOR=1.8, 95% CI=1.4-2.2), HED (AOR=1.6, 95% CI=1.4-2.0), and weekly alcohol use (AOR=2.1, 95% CI=1.5-2.7). No participation in extracurricular cultural activities was associated with an increased risk of 12-month alcohol use (AOR=1.7, 95% CI=1.5-2.0). **Conclusion:** Results suggest that cultural participation may protect off-reserve Aboriginal adolescents from alcohol use. Thus, programs that promote Aboriginal languages and culture to youth may be successful in reducing alcohol use among Aboriginal adolescents.

## **Introduction**

Adolescent alcohol consumption is a public health concern because it has been consistently associated with negative physical, psychological, and social outcomes. Evidence suggests that adolescent alcohol consumption may predict injuries (Moure-Rodriguez et al., 2014), suicidal thoughts and attempts (Reifman & Windle 1995; Duncan et al., 1997), low educational achievement (Latvala et al., 2014; Viner & Taylor, 2007; Rose et al., 2014), unprotected sex with casual partners (Kiene et al., 2009; Rose et al., 2014), and criminal activity (Duncan, et al., 1997). Furthermore, a large British longitudinal study found that adolescent alcohol use may predict adult alcohol dependence, illicit drug use, psychiatric morbidity, and homelessness (Viner & Taylor, 2007). Adolescent alcohol consumption is an especially pertinent public health issue among the Canadian Aboriginal population. While patterns of alcohol use among Canada's Aboriginal adolescents are widely heterogeneous, off-reserve Aboriginal adolescents tend to consume alcohol at higher rates and begin using alcohol earlier than their non-Aboriginal peers. For example, a study based on grade five through eight students in Saskatoon found that 23.5 percent of on-reserve First Nations, 16.7 percent of off-reserve Aboriginal students (including First Nations and Métis), and 5.4 percent of non-Aboriginal students reported having ever been drunk (Lemstra et al., 2009; Lemstra et al., 2013). In addition, a national study based on students attending grades 9 through 12 in the Canadian provinces found that 88.5 percent of Aboriginal students, compared to 84.2 percent of non-Aboriginal students, reported 12-month alcohol use. Furthermore, 81.3 percent of Aboriginal adolescents, compared to 71.7 percent of non-Aboriginal adolescents, reported having participated in heavy episodic drinking (HED) [consumption of five or more alcoholic beverages on one occasion] during the past 12 months,

and Aboriginal adolescents began to consume alcohol, on average, 0.6 years earlier than non-Aboriginal adolescents (Elton-Marshall et al., 2011). These prevalence rates are likely to be underestimations because the sample of secondary school students excluded the substantial proportion of Aboriginal adolescents not enrolled in secondary schools (Gilmore, 2010).

Over the past 20 years, participation in Aboriginal culture has begun to emerge as potentially protective factor against alcohol misuse among Canadian Aboriginal and Native American peoples. Cultural participation refers to the creation, dissemination, exhibition or consumption of activities or goods related to a particular culture (United Nations Scientific, Cultural and Cultural Organization, 2012). A related term is enculturation. Enculturation is defined as integration of an individual into their culture of origin. Nevertheless, studies have measured enculturation through diverse combinations of variables, including: identification with Aboriginal culture, cultural participation and traditional spirituality; cultural participation and ethnic pride; and cultural affinity, identification as Aboriginal, and family participation in traditional activities (Stone et al., 2006; Herman-Stahl et al., 2003; Zimmerman et al., 1996).

A limited body of research has examined the relationship between cultural participation and alcohol use among American Indian or Aboriginal adults and adolescents. Studies based on on-reserve Canadian First Nations and American Indian parents of children aged 10 to 12 years have found that a composite measure of identification with Aboriginal culture, cultural participation, and traditional spirituality was associated with an increased likelihood of alcohol cessation (Stone et al., 2006) and a decreased likelihood of alcohol abuse (Whitbeck et al., 2004b). Herman-Stahl et al., (2003) found that a composite measure of cultural participation and ethnic pride was inversely associated with HED among American Indian adults residing in South Dakota. Similarly, Currie et al., (2011) found a negative relationship between cultural

participation and valuing Aboriginal culture, as assessed by the Vancouver Index, and alcohol use problems among 60 off-reserve Aboriginal students, aged 18 to 40, enrolled in one Canadian university. Among 212 American Indian students attending grades five through eight, residing on or near reserves in the Midwestern United States and experiencing extensive adversity, higher levels of identification with Aboriginal culture, cultural participation, and traditional spirituality were associated with lower levels of alcohol use, substance use and externalizing behaviour (LaFromboise et al., 2006).

Only one study has examined the relationship between cultural participation and alcohol use among Aboriginal adolescents in Canada. Ryan et al., (2016) used the 2012 Aboriginal Peoples Survey (2012-APS) to examine the associations between cultural participation (including knowledge and exposure to an Aboriginal language, and making traditional crafts), and HED among off-reserve First Nations and Métis students aged 15 to 17 years residing in the provinces. The results did not document significant associations between cultural participation and HED; however, some protective effect was evident. While this work sheds some light on the epidemiology of alcohol use among Aboriginal adolescents, it is limited in that no adjustments were made for the fact that nearly half of the sample had proxy interviews.. Furthermore, the results were not weighted despite the recommendation for weighting of output from the 2012-APS by Statistics Canada (Budinski & Langlet, 2015).

Examining cultural participation as a protective factor against alcohol use among Aboriginal peoples may lead to more efficient public health campaigns as levels of cultural participation are more modifiable than traditional risk factors such as socioeconomic status. Therefore, the objective of this study was to examine the relationship between cultural participation, including Aboriginal language knowledge and participation in extracurricular

cultural activities, and alcohol use among off-reserve Aboriginal adolescents aged 15 to 18. This study will build on the work of Ryan et al., (2016) by: exploring three alcohol use outcomes - 12-month alcohol use, HED, and weekly alcohol use; including Inuit adolescents, adolescents residing in the territories, and adolescents who have dropped out of school; excluding proxy data; and weighting the analysis according to Statistics Canada guidelines (Budinski & Langlet, 2015).

## **Methods**

### *Study design and data source*

This cross-sectional study was a secondary data analysis on the linked 2012-APS and 2011 National Household Survey (2011-NHS). Both surveys were conducted by Statistics Canada. The first author received research and ethics committee approval from Statistics Canada to conduct analysis on the 2012-APS and 2011-NHS. The 2012-APS had a target population of Aboriginal identity individuals who lived in private dwellings and were aged six years and older as of February 1, 2012. Individuals residing on First Nations reserves and in some First Nations communities in the territories were excluded. Aboriginal identity was defined as identifying with one of Canada's Aboriginal groups (First Nations, Métis, and Inuit), being a Status Indian (Registered Indian or Treaty Indian, as defined by the Indian Act of Canada), or a member of a First Nations or Indian band. The 2012-APS sample was selected from individuals who responded that they met at least one of the criteria for Aboriginal identity or stated that they had Aboriginal ancestry during the 2011-NHS. The 2011-NHS was the voluntary component of the 2011 Canadian Census and had a response rate of 68.6 percent. A total of 50,000 individuals were selected from the 2011-NHS, out of which 38,150 completed the 2012-APS, yielding a response rate of 76 percent. Of these, 9,740 were excluded from the final sample because they

did not meet the requirements for Aboriginal identity, resulting in a final sample size of 28,410. The 2012-APS interviews were conducted in English and French, with a translation of the questionnaire into Inuktitut (the Baffin dialect) available, through Computer Assisted Telephone Interviews (CATI) and Computer Assisted Personal Interviews (CAPI). Parents of adolescents aged 15 to 17 were asked for permission to interview the adolescent. If permission was denied the parent could act as a proxy for the adolescent. For the present study, analysis was restricted to adolescents with non-proxy interviews who were aged 15 to 18 years at the time of data collection. The design and methods of the 2012-APS have been described in further detail elsewhere (Cloutier & Langlet, 2014).

#### *Outcome variables*

The present study examined three outcome variables: 12-month alcohol use, HED, and weekly alcohol use. The first outcome, 12-month alcohol use, was defined as any alcohol use during the past 12-months and was collected by asking: “During the past 12 months, have you had a drink of beer, wine, liquor or any other alcoholic beverage?”. HED was defined as having five or more beverages on one occasion at least once per month during the past 12-months, and was assessed by asking: “How often in the past 12 months have you had five or more drinks on one occasion?”. Weekly alcohol use was defined as consuming alcohol at least once a week during the past 12-months and was collected by asking: “During the past 12 months, how often did you drink alcoholic beverages?”. These specific outcomes were chosen as they have been widely examined in the literature on adolescent alcohol use (Elton-Marshall et al., 2011; Chen et al., 2012; Ledoux et al., 2002; McCann et al., 2015; Huang et al., 2016)

#### *Independent variables*

For the present study, cultural participation was examined using two independent variables: fluency in an Aboriginal language, and participation in extracurricular cultural activities. Data for fluency in an Aboriginal language was collected by asking “Do you speak an Aboriginal language, even if only a few words?” and “How would you rate your ability to speak this Aboriginal language?”. Possible answers were very well, relatively well, with effort, only a few words and no knowledge. Answers of very well and relatively well were recoded as fluent, answers of with effort or only a few words were recoded as limited proficiency, and no knowledge remained the same. Information on participation in extracurricular cultural activities was collected by asking: “At any time during this school year (or in your last year of school), did you participate in activities related to First Nations, Métis or Inuit culture?” and “How often did you usually participate in these activities?”. Possible answers included never, less than once a week, one to three times a week, and 4 or more times per week. Responses of never and less than once a week remained the same, while responses of one to three times a week and four or more times a week were combined into the  $\geq$  weekly category.

### *Covariates*

Covariate variables that were included in this analysis were socioeconomic characteristics (income quartile adjusted for family size, and school status), demographic characteristics (Aboriginal identity, region of residence, community size, age, family structure, and sex), health and behaviour characteristics (mood or anxiety disorder, and smoking status), and one peer characteristic (friends use alcohol).

### *Statistical analysis*

Chi-squared tests were used to examine differences in characteristics between adolescents with proxy and non-proxy interviews. Further analyses were restricted to adolescents with non-proxy interviews. Unadjusted logistic regression models were performed to assess the relationship between each independent variable and covariate and each of the three alcohol use outcomes. Adjusted logistic regression models were built to assess the independent relationships between the independent variables and the outcomes. Effect modification by Aboriginal identity was examined by including interaction terms in each adjusted logistic regression model. Survey weights were performed for all derived estimates. Logistic regression models were bootstrapped using weights provided by Statistics Canada to account for the survey's complex sampling frame. All analyses were conducted using Stata Data Analysis and Statistical Software (Stata, version 14.0).

## **Results**

Table 1 demonstrates that compared to adolescents with proxy interviews, adolescents with non-proxy interviews were significantly more likely to report 12-month alcohol use, HED, weekly alcohol use, to be 17 to 18, to have dropped out of school, smoke, and report most or all of their friends using alcohol. To reduce the potential of information bias, the present study was restricted to adolescents with non-proxy interviews, which constituted a weighted sample of 50,920 individuals or 59.4 percent of all adolescents aged 15 to 18 in the 2012-APS. This sample was equally divided between boys (50.0%) and girls (50.0%). The majority were First Nations (50.8%), and Métis (43.0%), while a smaller proportion was Inuit (6.2%). Only 6.1 percent and 30.0 percent spoke an Aboriginal language fluently or with limited proficiency, respectively. In addition, 72.6 percent did not participate in extracurricular cultural activities during the current school year or their last year of school. The prevalence rates of alcohol use reported were 64.0

percent for 12-month alcohol use, 22.4 percent for HED, and 10.9 percent for weekly alcohol use (Table 1).

As documented in table 2, this analysis revealed cultural participation to be inversely associated with alcohol use. At the bivariate level, limited proficiency or no knowledge of an Aboriginal language was significantly inversely associated with all outcomes, while participating in extracurricular cultural activities less than weekly or never was significantly inversely associated with 12-month and weekly alcohol use. After adjustment, adolescents with no knowledge of an Aboriginal language had the greatest odds of alcohol use, including 12-month alcohol use (AOR=1.8, 95% CI=1.4-2.2), HED (AOR=1.6, 95% CI=1.4-2.0), and weekly alcohol use (AOR=2.1, 95% CI=1.5-2.7). In addition, adolescents who did not participate in extracurricular cultural activities had the greatest odds of 12-month alcohol use (AOR=1.7, 95% CI=1.5-2.0). Participation in extracurricular cultural activities was not significantly associated with weekly alcohol use after adjustment. Among covariates, being part of a higher income family, being Inuit, older age, male sex, reporting a mood or anxiety disorder, being a smoker, and reporting most or all friends using alcohol were consistently associated with all alcohol use outcomes. Furthermore, residing in the territories was inversely associated with all alcohol use outcomes. In order to assess whether the associations between cultural participation and alcohol were consistent across Aboriginal identity groups, the logistic regression models were examined for effect modification using interaction terms. No effect modification was present; therefore, the results for all three Aboriginal groups are reported together.

Table 1: Characteristics of off-reserve Canadian Aboriginal adolescents aged 15 to 18, with proxy and non-proxy interviews in the 2012 Aboriginal Peoples Survey.

	Non-proxy interview (%)	Proxy interview (%)	P-value
<b>Outcomes</b>			
<b>12-month alcohol use</b>	64.0	45.5	0.0000
<b>HED</b>	22.4	7.2	0.0000
<b>Weekly alcohol use</b>	10.9	5.7	0.0076
<b>Cultural participation variables</b>			
<b>Aboriginal language</b>			
Fluent	6.2	4.9	0.4630
Limited proficiency	30.0	29.3	
No knowledge	63.8	65.8	
<b>Cultural activities</b>			
≥Weekly	11.3	10.2	0.2930
<Weekly	9.7	12.3	
Never	72.6	70.2	
Missing	6.4	7.3	
<b>Socioeconomic covariates</b>			
<b>Income quartile adjusted for family size</b>			
1 (lowest income)	28.6	29.5	0.0925
2	22.4	26.8	
3	26.5	21.9	
4 (highest income)	22.5	21.8	
<b>School status</b>			
In school or graduated	89.2	94.2	0.0009
Dropped out	10.8	5.8	
<b>Demographic covariates</b>			
<b>Aboriginal identity</b>			
First Nations	50.8	51.4	0.7535
Métis	43.0	42.8	
Inuit	6.2	5.8	
<b>Region of residence</b>			
Atlantic	6.6	8.8	0.0800
Central	31.2	24.8	
Prairies	41.0	42.7	
BC	16.9	19.7	
Territories	4.3	4.0	
<b>Community size</b>			
<30,000	47.1	51.4	0.3013
≥30,000	52.9	48.6	
<b>Age</b>			
15-16	45.1	62.9	0.0000
17-18	54.9	37.1	
<b>Family structure</b>			
2 parent	49.0	47.1	0.2926
Other	51.0	52.9	
<b>Sex</b>			
Female	50.0	48.6	0.4787
Male	50.0	51.4	
<b>Health and Behaviour covariates</b>			
<b>Mood or anxiety disorder</b>	18.9	17.1	0.4131
<b>Smoker</b>	30.6	20.0	0.0000
<b>Peer covariate</b>			
<b>Friends use alcohol</b>			
None or some	61.2	78.0	0.0000
Most or all	38.8	22.0	

<sup>a</sup>Calculated using survey weights.

Table 2: Associations between cultural participation variables, covariates, and alcohol use outcomes among off-reserve Canadian Aboriginals aged 15 to 18 with non-proxy interviews in the 2012 Aboriginal Peoples Survey.

	12-month alcohol use		HED		Weekly alcohol use	
	OR <sup>a</sup> (95% CI) <sup>b</sup>	AOR <sup>cd</sup> (95% CI) <sup>b</sup>	OR <sup>a</sup> (95% CI) <sup>b</sup>	AOR <sup>cd</sup> (95% CI) <sup>b</sup>	OR <sup>a</sup> (95% CI) <sup>b</sup>	AOR <sup>cd</sup> (95% CI) <sup>b</sup>
<b>Cultural Participation Variables</b>						
<b>Aboriginal language</b>						
Fluent	1.0	1.0	1.0	1.0	1.0	1.0
Limited proficiency	<b>2.1(1.8-2.4)</b>	<b>1.8(1.5-2.2)</b>	<b>2.0(1.8-2.3)</b>	<b>1.5(1.3-1.8)</b>	<b>2.1(1.7-2.5)</b>	<b>1.6(1.2-2.1)</b>
No knowledge	<b>2.0(1.8-2.3)</b>	<b>1.8(1.4-2.2)</b>	<b>1.6(1.4-1.8)</b>	<b>1.6(1.4-2.0)</b>	<b>2.0(1.7-2.4)</b>	<b>2.1(1.5-2.7)</b>
<b>Cultural activities</b>						
≥Weekly	1.0	1.0	1.0	1.0	1.0	1.0
<Weekly	<b>1.7(1.4-1.9)</b>	<b>1.7(1.4-2.1)</b>	1.0(0.9-1.3)	1.0(0.8-1.3)	<b>1.3(1.0-1.6)</b>	1.1(0.9-1.4)
Never	<b>1.8(1.6-1.9)</b>	<b>1.7(1.5-2.0)</b>	1.1(0.9-1.2)	1.0(0.9-1.2)	<b>1.2(1.0-1.5)</b>	1.0(0.8-1.2)
Missing	<b>3.0(2.5-3.6)</b>	<b>3.9(3.2-4.8)</b>	<b>1.8(1.5-2.2)</b>	<b>1.4(1.1-1.8)</b>	<b>1.7(1.4-2.0)</b>	1.2(0.9-1.6)
<b>Socioeconomic covariates</b>						
<b>Income quartile adjusted for family size</b>						
1(lowest income)	1.0	1.0	1.0	1.0	1.0	1.0
2	<b>1.2(1.1-1.3)</b>	<b>1.2(1.1-1.3)</b>	<b>2.0(1.8-2.3)</b>	<b>2.3(2.0-2.6)</b>	<b>2.6(2.2-3.0)</b>	<b>2.4(2.0-2.9)</b>
3	<b>1.6(1.4-1.8)</b>	<b>2.1(1.9-2.4)</b>	<b>1.5(1.3-1.7)</b>	<b>2.3(2.0-2.6)</b>	1.1(1.0-1.3)	<b>1.2(1.0-1.5)</b>
4(highest income)	<b>1.2(1.1-1.4)</b>	<b>1.5(1.3-1.7)</b>	<b>1.9(1.7-2.2)</b>	<b>2.8(2.4-3.2)</b>	<b>2.3(2.0-2.7)</b>	<b>3.4(2.8-4.2)</b>
<b>School status</b>						
In school/graduated	1.0	1.0	1.0	1.0	1.0	1.0
Dropped out	<b>1.8(1.6-2.0)</b>	0.9(0.8-1.0)	<b>2.9 (2.6-3.4)</b>	<b>1.6(1.4-1.9)</b>	<b>3.9(3.3-4.7)</b>	<b>2.6(2.1-3.2)</b>
<b>Demographic covariates</b>						
<b>Aboriginal identity</b>						
First Nations	1.0	1.0	1.0	1.0	1.0	1.0
Métis	<b>1.7(1.5-1.8)</b>	<b>1.8(1.7-2.0)</b>	<b>1.2(1.1-1.3)</b>	1.0(0.9-1.1)	<b>1.5(1.3-1.6)</b>	<b>1.5(1.3-1.8)</b>
Inuit	<b>0.9(0.8-0.9)</b>	<b>1.3(1.1-1.5)</b>	<b>1.5(1.4-1.8)</b>	<b>2.5(2.2-3.0)</b>	<b>1.8(1.5-2.2)</b>	<b>2.3(1.8-2.9)</b>
<b>Region of residence</b>						
Atlantic	1.0	1.0	1.0	1.0	1.0	1.0
Central	<b>1.5(1.3-1.8)</b>	<b>1.7(1.4-1.9)</b>	1.0(0.8-1.2)	1.0(0.8-1.3)	0.9(0.7-1.1)	0.9(0.7-1.1)
Prairies	<b>1.6(1.4-1.8)</b>	<b>1.2(1.1-1.4)</b>	<b>1.6(1.3-1.9)</b>	<b>1.6(1.3-1.9)</b>	1.1(0.9-1.3)	0.9(0.7-1.1)
BC	<b>1.3(1.1-1.5)</b>	<b>1.4(1.1-1.6)</b>	1.0(0.8-1.2)	1.0(0.8-1.3)	0.9(0.7-1.2)	0.8(0.7-1.1)
Territories	<b>0.7(0.6-0.8)</b>	<b>0.7(0.6-0.9)</b>	0.9(0.7-1.0)	<b>0.6(0.5-0.7)</b>	<b>0.7(0.5-0.8)</b>	<b>0.5(0.3-0.6)</b>
<b>Community size</b>						
<30,000	1.0	1.0	1.0	1.0	1.0	1.0
≥30,000	<b>1.2(1.1-1.3)</b>	<b>1.1(1.0-1.2)</b>	<b>1.2(1.1-1.3)</b>	<b>1.2(1.1-1.3)</b>	0.9(0.8-1.1)	<b>0.9(0.8-1.0)</b>
<b>Age</b>						
15-16	1.0	1.0	1.0	1.0	1.0	1.0
17-18	<b>2.7(2.5-2.9)</b>	<b>2.3(2.1-2.5)</b>	<b>2.6(2.4-2.9)</b>	<b>1.7(1.5-1.9)</b>	<b>3.1(2.8-3.5)</b>	<b>1.6(1.4-1.8)</b>
<b>Family structure</b>						
Two parents	1.0	1.0	1.0	1.0	1.0	1.0
Other	<b>1.3(1.2-1.4)</b>	<b>1.6(1.4-1.7)</b>	1.0(0.9-1.1)	0.9(0.9-1.0)	1.0(0.9-1.1)	0.9(0.8-1.0)
<b>Sex</b>						
Female	1.0	1.0	1.0	1.0	1.0	1.0
Male	1.1(1.1-1.1)	<b>1.2(1.1-1.3)</b>	<b>1.4(1.3-1.5)</b>	<b>1.5(1.4-1.7)</b>	<b>1.3(1.2-1.5)</b>	<b>1.4(1.2-1.5)</b>
<b>Health and Behaviour covariates</b>						
<b>Mood or anxiety disorder</b>						
No	1.0	1.0	1.0	1.0	1.0	1.0
Yes	<b>1.9(1.7-2.1)</b>	<b>1.3(1.2-1.5)</b>	<b>1.4(1.3-1.6)</b>	1.1(1.0-1.3)	<b>2.6(2.3-3.0)</b>	<b>2.1(1.8-2.4)</b>
<b>Smoker</b>						
No	1.0	1.0	1.0	1.0	1.0	1.0
Yes	<b>3.0(2.8-3.3)</b>	<b>3.3(2.9-3.7)</b>	<b>3.9(3.5-4.3)</b>	<b>3.6(3.2-4.0)</b>	<b>5.7(5.0-6.5)</b>	<b>4.8(4.2-5.5)</b>
<b>Peer covariate</b>						
<b>Friends use alcohol</b>						
None or some	1.0	1.0	1.0	1.0	1.0	1.0
Most or all	<b>5.3(4.8-5.8)</b>	<b>4.0(3.6-4.4)</b>	<b>7.7(7.0-8.5)</b>	<b>6.3(5.7-7.0)</b>	<b>8.8(7.4-10.5)</b>	<b>6.9(5.9-7.9)</b>

<sup>a</sup>OR=Odds Ratio, 95% CI=95% Confidence Interval; <sup>b</sup>All 95% CIs were calculated using bootstrapping.; <sup>c</sup>AOR=Adjusted Odds Ratio; <sup>d</sup>Each variable adjusted for all the other variables in the model.

## **Discussion**

The objective of this study was to investigate the relationship between cultural participation, including Aboriginal language knowledge and participation in extracurricular cultural activities, and alcohol use among off-reserve Canadian Aboriginal youth aged 15 to 18 years. After adjustment for pertinent confounders, speaking an Aboriginal language was associated with a decreased likelihood of 12-month alcohol use, HED, and weekly alcohol use, while participation in extracurricular cultural activities was associated with decreased odds of 12-month alcohol use. Furthermore, the associations between cultural participation and alcohol use were consistent across Aboriginal identity groups. This study adds to the literature by being the first to document the relationship between cultural participation and alcohol use, and alcohol use prevalence rates, among a national sample of off-reserve Canadian Aboriginal adolescents. This suggests that cultural programs may be an effective way to lower alcohol use among Aboriginal adolescents, who are a growing and high risk group.

Results of the present study are consistent with existing literature. The current study documented 64.0 percent of adolescents using alcohol in the past 12-months, 22.4 percent participating in monthly HED, and 10.9 percent using alcohol weekly. These rates are consistent with those previously reported among school-based samples of off-reserve Aboriginal adolescents. For example, 65.2 percent of Aboriginal grade 7 through 12 students in off-reserve Alberta schools reported 12-month alcohol use (Alberta Alcohol and Drug Abuse Commission, 2005), and 24 percent of Aboriginal grade 7 through 12 students attending British Columbia schools reported monthly HED (Tourand, Smith, Poon, Saewyc, & McCreary Centre Society, 2016). Furthermore, Ryan et al., (2016) used the 2012-APS to investigate the relationship

between cultural participation and HED among First Nations and Métis students aged 15 to 17 years residing in the provinces, and documented a 12-month HED prevalence rate of 10.1 percent. The present study expanded on this work by examining a greater number of alcohol use outcomes, including adolescents residing in the territories, weighting the analysis as suggested by Statistics Canada (Budinski, & Langlet, 2015), and excluding adolescents with proxy interviews. Adolescents with non-proxy interviews differed from adolescents with proxy interviews by being of older average age and more likely to report behavioural characteristics such as smoking and alcohol use. Because parents are likely to underestimate adolescents' substance use, information reported by adolescents with non-proxy interviews is more likely to be accurate, thus decreasing the likelihood of information bias in the present study (Morleo, Cook, Elliott, & Phillips-Howard, 2013; O'Donnell et al., 2008). While Ryan et al., (2016) did not show any significant associations between cultural participation and alcohol use, their results are consistent with the present study in suggesting that an inverse association between cultural participation and alcohol use may exist. Moreover, the inverse associations between cultural participation and alcohol use are consistent with studies based on First Nations and Métis University students in Edmonton (Currie et al., 2011), on-reserve American Indian and First Nations adults (Stone et al., 2006; Whitbeck et al., 2004b), and on-reserve American Indian adolescents (LaFromboise et al., 2006). However, one longitudinal study based on American Indian middle school students on one dry reserve in the upper Midwest found no association between cultural identity (ethnic pride, involvement in Aboriginal music, knowledge or learning of an Aboriginal language) and alcohol use (Whitesell et al., 2014). This discrepancy in findings may be attributable to differences in study designs (cross-sectional versus longitudinal), or sample differences.

Research in Aboriginal adults and adolescents suggests that about one fifth to one third of individuals think about the loss of their culture at least daily, and that these thoughts are often associated with negative emotions such as anger and depression (Ehlers, Gizer, Gilder, Ellingson, & Yehuda, 2013; Whitbeck et al., 2009; Whitbeck et al., 2004a; Wiechelt, Gryczynski, Johnson, & Caldwell, 2012). These emotionally charged thoughts, termed historical loss, have been found to be associated with alcohol use among Aboriginal peoples (Whitbeck et al., 2004b; Wiechelt et al., 2012). Cultural participation may protect Aboriginal peoples from alcohol use by allowing them to regain some of the culture that has been lost over the past centuries, therefore decreasing thoughts of historical loss and accompanying negative emotions. Because coping with negative emotions is one possible motivation for drinking (Cooper, Frone, Russell & Mudar, 1995), decreasing negative emotions may lead to lower levels of alcohol use. However, an alternate explanation may be that both lower rates of alcohol use and increased cultural participation stem from more involved parenting, as more involved parents may both encourage their children to participate in traditional activities and set restrictions on alcohol use. Interestingly, extracurricular cultural activities were negatively associated with 12-month alcohol use but not heavier forms of alcohol use (HED and weekly alcohol use). One possible explanation is that while extracurricular cultural activities may have a protective component, they may also lead to increased social contact with peers and thus greater access to alcohol. Therefore, adolescents who do not have a strong desire to be abstinent may find that while extracurricular cultural activities encourage alcohol abstinence or moderation, the greater access to alcohol encourages them to drink.

This analysis revealed multiple socioeconomic, demographic, health and behaviour, and peer covariates to be independently associated with at least one form of alcohol use. Compared

to First Nations adolescents, Inuit adolescents had higher odds of all three alcohol use outcomes, and Métis adolescents had higher odds of 12-month and weekly alcohol use. These differences may be due to the 2012-APS excluding on-reserve First Nations adolescents, who tend to demonstrate higher rates of alcohol use (Lemstra et al., 2009; Lemstra et al., 2013). Surprisingly, living in the territories was significantly associated with a lower likelihood of all forms of alcohol use. This is inconsistent with research based on Aboriginal adults (Kyu, Georgiades, MacMillan, & Boyle 2015). However, one possible explanation is that adolescents living in the territories may experience high levels of difficulty in accessing alcohol because there is a substantial prevalence of community alcohol restriction laws in the territories, especially in communities with younger populations (Davison, Ford, Peters, & Hawe 2011).

These results should be viewed in the context of study strengths and limitations. Strengths include the national scope of the study, large sample size, and decreased information bias due to the exclusion of adolescents with proxy interviews (Morleo et al., 2013; O'Donnell et al., 2008). However, information bias may still exist as all variables were collected through self-report. Further limitations include that the cross-sectional study design may result in reverse causality, and the inability to adjust for potential confounders such as parents' alcohol use and boundary setting because these variables did not exist in the 2012-APS. In addition, while the 2012-APS had a respectable response rate of 76 percent, these respondents were chosen from the 2011-NHS which had a response rate of 68.6 percent, thus potentially decreasing generalizability. Furthermore, while the use of sample weights is likely to have decreased selection bias, the prevalence of alcohol use may be underestimated as adolescents with heavy alcohol use may be less likely to respond (Kypri, Stephenson, Langley, 2004).

Currently, alcohol use prevention programs targeting Aboriginal adolescents tend to incorporate a cultural component (Baydala et al., 2009; Donovan et al., 2015). This study adds to the accumulating evidence suggesting that cultural participation in itself may protect Aboriginal adolescents from alcohol use. However, caution should be taken given that this relationship has not been shown in longitudinal studies. Future research should focus on longitudinal studies to determine if a protective effect exists. Furthermore, qualitative studies may shed light on why Aboriginal adolescents find cultural participation protective against alcohol use.

## **Discussion**

Adolescent alcohol use is a pressing public health issue (Degenhardt, Stockings, Patton, Hall & Lynskey, 2016). According to the World Health Organization (WHO), in 2004, the greatest contributors to the health burden in 10 to 24 year olds were mental and substance use disorders (Gore et al., 2011). Furthermore, adolescents are undergoing cognitive changes in brain regions associated with motivation, impulsivity, and addiction making them vulnerable to the development of alcohol use disorders (Chambers, Taylor & Potenza 2003). For example, a large British longitudinal study found that adolescent alcohol use predicted adult alcohol dependence, illicit drug use, and psychiatric morbidity (Viner & Taylor, 2007). Thus, interventions that lessen alcohol use among adolescents may decrease both the health burden in this age group and the risk of alcohol use disorders as adolescents mature. Moreover, because Aboriginal adolescents tend to use alcohol at higher rates than their non-Aboriginal counterparts, determining factors that may protect Aboriginal adolescents from alcohol use is critical (Lemstra et al., 2009; Lemstra et al., 2013; Alberta Alcohol and Drug Abuse Commission, 2005; Elton-Marshall et al., 2011). Therefore, the objective of this study was to examine the relationship between cultural participation, including Aboriginal language knowledge and participation in extracurricular cultural activities based on Aboriginal culture, and alcohol use among off-reserve Aboriginal adolescents aged 15 to 18.

The results document that, among a national sample of off-reserve Canadian Aboriginal adolescents aged 15 to 18, speaking an Aboriginal language was associated with lower odds of 12-month alcohol use, HED, and weekly alcohol use. In addition, participating in extracurricular cultural activities was associated with lower odds of 12-month alcohol use. These findings strengthen the previous research on cultural participation and alcohol use (Stone et al., 2006;

Whitbeck et al., 2004b; Herman-Stahl et al., 2003; Currie et al 2011; LaFromboise et al., 2006) by being the first to document an inverse association between cultural participation and alcohol use among a national sample of off-reserve Canadian Aboriginal adolescents.

### *Historical Loss and Alcohol Use*

The forced assimilation experienced by North America's Aboriginal peoples after the arrival of Europeans has decimated Aboriginal culture, and some scholars suggest that this loss of culture contributes to the high rates of alcohol use evident in some Aboriginal communities today. There is evidence that both adults and adolescents, on- and off-reserve, are mourning their culture through thoughts of historical loss. For example, studies in diverse samples of Aboriginals show that 20.1 to 33.7 percent think about the loss of culture at least daily (Ehlers et al., 2013; Whitbeck et al., 2009; Whitbeck et al., 2004a; Wiechelt et al., 2012). Furthermore, these studies document that, in both on- and off-reserve Aboriginal adults, 48.8 percent to 65.9 percent report feeling sadness or depression and 50.5 to 61.9 report feeling anger stemming from thoughts of cultural loss (Ehlers et al., 2013; Whitbeck et al., 2004a; Wiechelt et al., 2012). Regulation negative emotions, or drinking to cope, is a frequently cited reason for alcohol use (Cooper et al., 1995). Thus, thoughts about forced assimilation may lead to negative emotions, which may lead to drinking to cope, and high rates of alcohol use. This concept is supported by studies demonstrating an association between thoughts of historical loss and 12-month alcohol abuse among on-reserve adults (Whitbeck et al., 2004b), and past 30-day alcohol use among American Indians residing in Baltimore, Maryland (Wiechelt et al., 2012).

Results of the present study, which document that cultural participation may be negatively associated with alcohol use among off-reserve Aboriginal adolescents aged 15 to 18, are in-line with this theory. By participating in Aboriginal culture adolescents regain some the culture that

has been lost over previous generations. Thus cultural participation may result in fewer thoughts about historical loss, accompanied by a reduction in drinking to cope and overall alcohol use. Indigenous scholars support the notion that cultural participation, in particular language knowledge, can result in positive psychological benefits. For example, Spielmann (1998) suggested that knowing an Aboriginal language may allow individuals to view history in an alternate, more accurate way. Thus, an Aboriginal adolescent who does not know an Aboriginal language may view the loss of Aboriginal culture as permanent while an adolescent who speaks an Aboriginal language may view it as a historic occurrence that he or she is helping reverse. McLeod (2000) proposed that knowing an Aboriginal language can allow the transmission of tribal memories, therefore allowing individuals to focus on the positive stories and traditions of Aboriginal culture instead of the negative consequences of assimilation. In addition, cultural participation may result in adolescents coming into contact with Aboriginal role models that provide them with the social support to decrease their alcohol consumption. For example, qualitative studies have documented that learning an Aboriginal language can only be successful with extensive family and community participation, potentially increasing the number of non-parental adults an adolescent would come into contact with (Moore & MacDonald, 2013; Jonk & Ens 2009).

### *Implications*

This study has implications for Aboriginal leaders, educators serving Aboriginal adolescents, public health departments, and anyone who is interested in improving the health and well-being of Aboriginal youth. The results suggest both macro and micro level approaches for decreasing alcohol use among Aboriginal adolescents.

At the macro level, funding for Aboriginal language and cultural programs should be increased. For example, Aboriginal language programs receive only five million Canadian dollars per year from the federal government (Pitawanakwat, 2009), while French language programs receive 1.6 to 1.8 billion dollars (Vaillancourt & Coche, 2009). Furthermore, because the prestige of a language is associated with its likelihood of being transmitted to the next generation (Crystal, 2000) providing some government services and signs in Aboriginal languages and Aboriginal language immersion programs where there is enough interest can encourage the transmission of Aboriginal languages to adolescents.

At the micro level, this research may help non-Aboriginal professionals understand that forced assimilation may still exert a negative emotional and psychological impact on Aboriginal adolescents and that some adolescents may find cultural participation protective against alcohol use. Professionals that work with Aboriginal youth may benefit from knowing about the Aboriginal cultural programs in the area; showing interest and respect for Aboriginal culture through inquiries about traditions, practices, and language; and confirming any concerns about cultural loss. In addition, the low level of federal funding currently allocated for the preservation of Aboriginal languages makes the role of individuals fluent in these languages critical. This applies to all Aboriginal languages, as even Cree and Ojibway, which have been deemed viable, are experiencing a decline (Norris, 2007).

### *Future Directions*

The results of this thesis have added to previous research on cultural participation and alcohol use (Stone et al., 2006; Whitbeck et al., 2004b; Herman-Stahl et al., 2003; Currie et al., 2011; LaFromboise et al., 2006; Ryan et al., 2016; Whitesell et al., 2014). by documenting that

cultural participation may protect off-reserve Aboriginal adolescents against alcohol use. However, the results have also invited questions for future research. For example, it would be interesting to explore whether cultural participation is associated with decreased thoughts of historical loss or with increased knowledge of non-alcohol related techniques in coping with such thoughts. Qualitative studies that explore the everyday encounters of off-reserve Aboriginal adolescents with alcohol and culture may shed light on why cultural participation is associated with alcohol abstinence and moderation and the types of cultural activities adolescents find most beneficial in helping them moderate their alcohol use. Further research questions include: Does learning an Aboriginal language through a school immersion program have a different effect on alcohol use than learning it from family? Are extracurricular cultural activities more potent at reducing alcohol use if they are led by a peer or an Elder? Does knowing the language of a tribe other than one's own have a different effect on alcohol use? Do the associations between cultural participation and alcohol use extend to First Nations adolescents on-reserve?

### *Conclusion*

This was one of the first studies to investigate the relationship between cultural participation and alcohol use among Aboriginal adolescents in Canada. As such, it provides a launching pad for future research on the relationship between cultural participation and alcohol use among both on- and off-reserve populations. In addition, the findings provide evidence that traditional culture is a strength of Canada's Aboriginal peoples and that preserving and promoting it may reduce alcohol use among Aboriginal adolescents.

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