

Running Head: CORRELATES OF SUICIDALITY

Correlates of Suicidality: Investigation of a Representative Sample of Manitoba

First Nations Adolescents

by

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A Thesis Submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

MASTER OF ARTS

Department of Psychology

University of Manitoba

Winnipeg

Defense date: August 19, 2009

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Abstract

The present study examined community/tribe, peer/family, and individual correlates of suicidal behaviour in a representative on-reserve sample of First Nations adolescents. Data came from the 2002-2003 Manitoba First Nations Regional Longitudinal Health Survey of Youth. Household interviews were conducted with adolescents ages 12-17 (n=1,125) from 23 First Nations communities in Manitoba. Bivariate logistic regression analyses were used to examine the relationships between a range of factors and lifetime suicidal ideation, suicide attempts, and any suicidality. A multivariate logistic regression analysis identified those correlates most strongly related to any suicidality. Findings showed that several correlates were found to be associated with an increased likelihood of suicidal behaviour, including being female, depressed mood, abuse/fear of abuse, a hospital stay, and substance use. Results of this study will likely be of importance in informing First Nations and government policy related to the implementation of suicide prevention strategies in Manitoban First Nations communities.

Acknowledgements

The author would like to thank her advisors Dr. Jitender Sareen, for his continuous mentorship and guidance throughout the project, and Dr. Bruce Tefft, for his support and generous assistance. The author would also like to thank the rest of her advisory committee, Drs. Brenda Elias and Maria Medved, for their extensive feedback. The author's sources of funding for the project included a Social Sciences and Humanities Research Council of Canada, Canada Graduate Scholarship (SSHRC-CGS), a Manitoba Graduate Scholarship, and an operating grant from the Canadian Institutes of Health Research led by Drs. Sareen and Elias (#166720). Finally, the assistance of Mrs. Madelyn Hall and Mr. Xingen Zhu in the preparation of the survey dataset for use in the study, of Ms. Shay-Lee Belik and Ms. Jolene Kinley for their suggestions and consultation on statistical analyses, and of the Swampy Cree Suicide Prevention Team for their feedback on the project, was much appreciated.

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Glossary of Terms

Aboriginal – A term used in this paper when referring to indigenous populations from Canada. Canadian Aboriginal samples often include Inuit, Métis, and First Nations peoples combined.

Adolescent/youth – These terms are used interchangeably throughout this paper and generally refer to individuals falling within the 12 to 17 year old age range. However, some studies described in the literature review used samples falling out of this age range, such as the study by Kirmayer, Boothroyd, and Hodgins (1998) where youth were between 15 and 24 years old.

First Nations (FN) – One of three broad groups of indigenous peoples in Canada (the other two types include Métis and Inuit peoples).

Indigenous – A global term that will be used to refer to first peoples from around the world. These peoples could include native individuals from Canada, Australia, and the United States (American Indian/Alaska Native/native Hawaiian). Some of these groups will also be discussed separately in the review of the literature.

Suicidal Ideation (SI) – Refers to having thoughts of suicide.

Suicidality/Suicidal Behaviour – Terms that can encompass both SI and suicide attempts.

Suicide Attempts (SA) – Refers to the act of trying to commit suicide.

Suicide – A completed suicide or a suicide attempt resulting in the death of the person.

Correlates of Suicidality: Investigation of a Representative Sample of Manitoba First Nations Adolescents

Chapter I: Introduction & Review of the Literature

Statement of the Problem

Indigenous populations worldwide have generally been found to suffer from poorer psychological well-being and increased suicidal behaviour and suicide completion than the general population. Alcohol and drug use, suicide and suicidality, poorer perceived quality of life, and several mental disorders (e.g., depression, posttraumatic stress disorder) are more common in indigenous peoples than in non-indigenous samples (Allard, Wilkins, & Berthelot, 2004; Barton, Thommasen, Tallio, Zhang, & Michalos, 2005; Beals et al., 2005; Clarke, Colantonio, Rhodes, & Escobar, 2008; Compton, Thomas, Stinson, & Grant, 2007; Hasin, Goodwin, Stinson, & Grant, 2005; Hasin, Stinson, Ogburn, & Grant, 2007; Kinzie et al., 1992; Kirmayer, Brass, & Tait, 2000; Michalos, Thommasen, Read, Anderson, & Zumbo, 2005; Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997a). The need for prevention and intervention strategies that are more conducive to the traditional culture and spirituality of indigenous peoples has been recognized by indigenous organizations and several researchers (e.g., Beals et al., 2005; Goldston et al., 2008; Health Canada, 2003; Katz et al., 2006). In order for these strategies to be developed, however, a thorough understanding of the risk and resiliency factors of psychological distress in indigenous populations is needed.

Increasingly, research has focused its examinations of mental distress in indigenous populations to adolescent samples. Indeed, suicide has been shown to be the third highest cause of mortality in individuals ages 10-14 in the Canadian general population, and the second highest cause in the 15-19 year old age range (Public Health

Agency of Canada, 2004). In Aboriginal adolescents, it is at least five times more likely than in other Canadian youth (Kirmayer et al., 2007). Within this younger age range, other indicators of poor mental well-being including SI, SA, substance use, and depressive symptomatology are also disproportionately prevalent in indigenous youth than in other adolescents (Frank & Lester, 2002; Gessner, 1997; Harris, Gordon-Larsen, Chantala, & Udry, 2006; Rutman, Park, Castor, Taulii, & Forquera, 2008; Saluja et al., 2004; Spear, Longshore, McCaffrey, & Ellickson, 2005; Whitbeck, Yu, Johnson, Hoyt, & Walls, 2008). Individuals of this age range and ethnic group combined, then, are likely a vulnerable population for greater all-around psychological distress. Paying special attention to the different factors which influence mental health outcomes such as suicidal behaviour in this population could help target interventions to improve the future well-being of indigenous communities.

Why indigenous peoples? A history of colonization.

The history of the colonization of the indigenous peoples of Canada and the U. S. and its effects on the mental health of these peoples has been reviewed elsewhere (Brave Heart & DeBruyn, 1998; Kirmayer et al., 2000; Kirmayer, Simpson, & Cargo, 2003). However, a brief synopsis of this work is warranted here. The arrival of the Europeans in North America during the 1500's marked the start of several centuries of continuing hardship for the indigenous populations residing there. Over time, most Aboriginal and American Indian individuals were removed from their traditional land base and relocated to new or less valuable lands with settler encroachment. Additionally, a host of new infectious diseases were introduced and spread to these peoples, and many traditional indigenous cultural practices were prohibited. Habitual ways of living were controlled by government authorities in an attempt to 'civilize' the indigenous population and much

death resulted by means of disease. In fact, some researchers have likened what was done to the indigenous peoples in North America to genocide (Brave Heart & DeBruyn, 1998; Kirmayer et al., 2000).

In the late 1800's, indigenous children were placed in boarding schools in the United States and residential schools in Canada (Brave Heart & DeBruyn, 1998; DeGagné, 2007; Kirmayer et al., 2007; Kirmayer et al., 2000; Kirmayer et al., 2003). During their operation in Canada from 1879 to 1973, thousands of indigenous children were taken from their communities and housed in these schools managed by the government and churches. Abuse of all kinds was common throughout these schools in North America and the goal was assimilation into society at the expense of leaving all forms of traditional culture and language behind (Brave Heart & DeBruyn, 1998; DeGagné, 2007; Kirmayer et al., 2007; Kirmayer et al., 2000; Kirmayer et al., 2003; Menzies, 2008). As has been disclosed by Aboriginal community members in Canada, "residential schools shamed and belittled Aboriginal values, beliefs, practices, and people...this resulted in disconnection or dissociation from painful feelings, low self-esteem, negative identity as an Aboriginal person, and lack of respect for traditional beliefs and practices" (Smith, Varcoe, & Edwards, 2005, p.47). Furthermore, the cumulative trauma inflicted upon these individuals has resulted in 'historical unresolved grief' (Brave Heart & DeBruyn, 1998) among the indigenous peoples living today. Researchers have discussed the potential influence that this intergenerational grief may have on a range of negative mental health outcomes including suicide (Brave Heart & DeBruyn, 1998; Kirmayer et al., 2000; Kirmayer et al., 2003).

Why adolescence? A sensitive period for suicidality.

Chandler and colleagues in British Columbia, Canada, have developed a theoretical explanation for why suicide and suicidal behaviour is a problem in adolescents (Chandler & Lalonde, 1998; Chandler, Lalonde, Sokol, & Hallett, 2003; Chandler & Proulx, 2006). These researchers argue that ‘self-continuity’, or, a connected personal past, present, and future, is at the core of having a sense of self. Without continuity, an individual is in danger of losing “any sort of substantive commitment to one’s own future wellbeing—an investment in the welfare of the person one is en route to becoming” (Chandler & Proulx, 2006, p.134). Adolescence is viewed as an especially sensitive life phase in terms of change in self-development and in how youth recognize and place themselves among their past, present, and future (Chandler & Lalonde, 1998; Chandler et al., 2003; Chandler & Proulx, 2006). This leaves adolescents at a naturally increased likelihood of experiencing times of distress in which they fail to see themselves as ‘personally persistent’ with a clear continuation into the future, and suicidal behaviour can become an option during these times (Chandler & Lalonde, 1998; Chandler et al., 2003; Chandler & Proulx, 2006).

Chandler and colleagues have been able to expand their theory in order to further explain the especially high rates of youth suicide among Aboriginals specifically (Chandler & Lalonde, 1998; Chandler et al., 2003; Chandler & Proulx, 2006). ‘Cultural continuity’ is the term they use to describe when a people have a vested interest of thriving into the future because of having experienced a collective past (Chandler & Lalonde, 1998; Chandler et al., 2003; Chandler & Proulx, 2006). As a united culture, “anything [colonialism] that works to cost such groups their meaningful ties to a common past, or to rob them of responsible commitments to a shared future is...likely to prove

corrosive to their collective well being—the very thing that makes living seem better than dying” (Chandler & Proulx, 2006, p.136).

Study Framework

Among adolescents, correlates of psychological distress are numerous and complex. Although many factors related to distress in indigenous youth are similar to those in other adolescents, a number of additional and/or different factors may also apply (Goldston et al., 2008). Culturally situating distress in this particular population, therefore, is necessary in order to begin identifying potential pathways to suicidal behaviour. It has generally been accepted that factors from a number of levels (e.g., community, family, individual) influence psychological health in indigenous youth (Borowsky, Resnick, Ireland, & Blum, 1999; Chino & Fullerton-Gleason, 2006; Cummins, Ireland, Resnick, & Blum, 1999; Kirmayer, 1994; MacNeil, 2008). Additionally, a number of researchers have emphasized the concept of resilience in their research with this population, and have used a framework which holds that it is a combination of both risk *and* protective factors which interact to impact mental health outcomes (Borowsky et al., 1999; Burack, Blidner, Flores, & Fitch, 2007; Carlton et al., 2006; Cummins et al., 1999; Pettingell et al., 2008).

A concept which posits that an array of factors at different levels influences human behaviour is that of the “human ecosystem” (Jasnoski, 1984, in White, 1998). The conceptual model based on this notion (Figure 1) has the individual positioned in the middle, and factors at the family, community, cultural, and societal levels, among others, encircled around the individual with each ring further from the centre (White, 1998, p. 279). The ‘human ecosystem’ model has been used in considering the different factors that act to influence suicidality in youth (White, 1998).

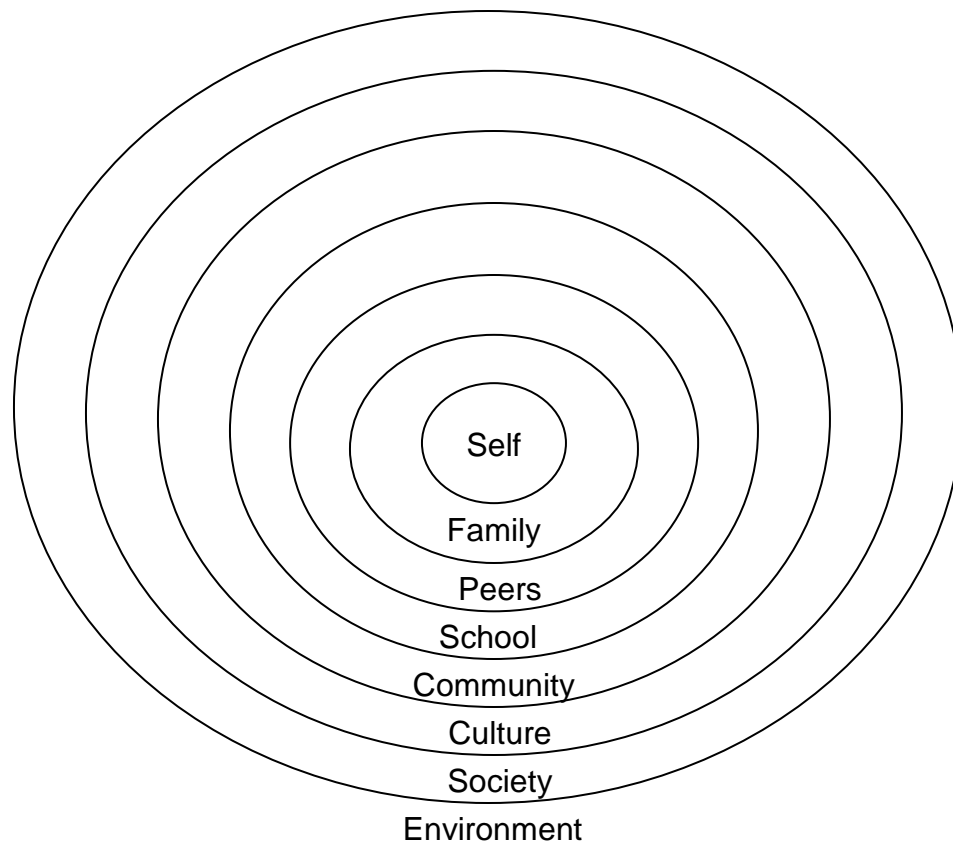


Figure 1. The human ecosystem model. From “Comprehensive youth suicide prevention: A model for understanding,” by Jennifer White. In Antoon A. Leenaars, Susanne Wenckstern, Isaac Sakinofsky, Ronald J. Dyck, Michael J. Kral, & Roger C. Bland (Eds.), *Suicide in Canada*, 1998, p. 279. Toronto: University of Toronto Press. Used with permission of the author.

At the recent World Psychiatric Association Epidemiology & Public Health Section Conference in Saskatchewan, Canada, Dr. R. Dale Walker (2008), an indigenous Professor of Psychiatry at the Oregon Health and Science University, presented a similar but more condensed model for considering the multi-level factors which impact mental health in indigenous populations. The circles surrounding the individual in this model include the influences of peer/family, then community/tribe, and finally, society. One of the advantages of these models is that they are not meant to be causal or uni-directional.

Rather, “all of the layers are capable of reciprocally influencing and interacting with one another” (White, 1998, p. 278). Such descriptive or conceptual models are useful in organizing a review of factors associated with suicidality and to guide analysis and interpretation of results. For this thesis, Walker’s model (2008) will be used to direct the review of a range of factors that have been empirically shown to be associated with suicidal behaviour in indigenous youth and to guide analysis and the interpretation of findings.

Community/Tribe Factors

Community caring.

A small body of literature has examined the influence of different facets of community caring, encompassing features such as support and safety, on the psychological well-being of indigenous individuals. Mignone and O’Neil (2005) have previously discussed the importance of a similar factor on well-being: “social capital emphasizes the quality of interactions among people in specific situations and places...the more...there is in a community, the better that community is for everyone’s health” (p.S51). These researchers further propose that social capital can potentially influence Aboriginal youth suicide either directly or indirectly by interacting with factors at other levels. The importance of healing at the community level has also been expressed by researchers and indigenous community members (DeGagné, 2007; Hanson & Hampton, 2000; McBride, 2003).

Quantitatively, the empirical literature examining the relationship between community caring and suicidality in indigenous youth is limited. In a bivariate analysis, residing in a dysfunctional neighbourhood was negatively associated with good mental

health (measure included assessment of SI) in American Indian adolescents (Silmere & Stiffman, 2006). Similarly, indicators of community safety such as association with gangs and knowledge of where to get a gun were positively associated with SA in American Indian/Alaska Native youth in a stringent model (Borowsky et al., 1999), although another study found no such association with gang involvement (Freedenthal & Stiffman, 2004). Additionally, isolation from one's community and family has been found to be associated with SA in Navajo youth (Grossman, Milligan, & Deyo, 1991), while perceived care from different community members has been protective for SA in American Indian/Alaska Native youth in bivariate models (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006). However, it did not emerge among the most important determinants of SA in more stringent models when other factors were also considered (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006). Finally, perceived connection to others (including friends) was not associated with previous SA in either male or female American Indian youth living in an urban area (Pettingell et al., 2008).

Geographical location.

More research is required examining differences in the prevalence of suicidal behaviour between indigenous youth living in remote communities versus those residing in or near urban areas. One study found SI to be higher in American Indian adolescents living on reserves than in those residing in urban areas, although no differences were found with regard to the prevalence of SA (Freedenthal & Stiffman, 2004). In a review of risk factors for completed suicide in individuals ages 15-24 years in Manitoba, most Aboriginal suicides occurred in urban followed by reserve areas, rather than in rural locations or in towns (Sigurdson, Staley, Matas, Hildahl, & Squair, 1994). Completed suicides on reservations were significantly higher than those in non-reserve areas in an

Aboriginal sample of all ages in Manitoba (Malchy, Enns, Young, & Cox, 1997). Finally, Chandler and Lalonde (1998) found FN youth suicide rates in British Columbia to be higher in urban areas than in remote communities.

Peer/Family Factors

General family and friend support and dysfunction.

The literature examining peer/family related factors in relation to suicidal behaviour in indigenous youth populations generally supports the finding that positive friendships and united, loving families serve as protective factors. An association of less suicidality with aspects of family and/or friend unity and support has been found in several studies of indigenous adolescents, at times even after taking a range of other individual, family, and community factors into account (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Dinges & Duong-Tran, 1994; Yuen et al., 1996).

Conversely, a number of studies have examined different forms of family dysfunction in relation to suicidality. Family conflict and violence have been shown to be high in American Indian/Alaska Native adolescent individuals who have engaged in suicidal behaviour (Chino & Fullerton-Gleason, 2006; Dinges & Duong-Tran, 1993; Zitzow & Desjarlait, 1994). Additionally, American Indian/Alaska Native adolescents in the high risk group for suicide were more likely to perceive little care from their families (Blum, Harmon, Harris, Bergeisen, & Resnick, 1992). An absent parent in the home has also been shown in some cases to be related to an increased likelihood of suicidal behaviour in indigenous youth, however usually not in multivariate models (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Gartrell, Jarvis, & Derksen, 1993; Grossman et al., 1991; Silviken & Kvernmo, 2007).

Friendship-related factors can also influence suicidality. In bivariate models in American Indian youth samples, having deviant peers has been negatively associated with good mental health (measure included assessment of SI) (Silmere & Stiffman, 2006), and positively associated with SA (Chino & Fullerton-Gleason, 2006). Having interpersonal difficulties has also been identified as a risk factor for suicidal behaviour in American Indian/Alaska Native adolescents with comorbid depression (Dinges & Duong-Tran, 1993).

Mental illness and previous suicidality in family and friends.

A recent study by Whitbeck, Hoyt, Johnson, and Chen (2006) found a very high prevalence of mental disorders in American Indian and Canadian FN parents or caretakers of children ages 10 to 12 years. Almost 75% of the sample had a minimum of one lifetime mental disorder according to DSM-III-R criteria, with substance use disorders being the most common. A link between familial substance use and SA in American Indian/Alaska Native youth has been shown in some models (Borowsky et al., 1999; Freedenthal & Stiffman, 2004; Grossman et al., 1991). A previous suicide attempt or completion by family members or friends has also been found to be associated with suicidal behaviour in indigenous youth in many bivariate and some multivariate analyses examining this factor (Blum et al., 1992; Borowsky et al., 1999; Gartrell et al., 1993; Grossman et al., 1991; LaFromboise, Medoff, Lee, & Harris, 2007; Manson, Beals, Dick, & Duclos, 1989). This finding may reflect a phenomenon known as “suicide clustering” that is generally more likely to occur in younger individuals ages 15 to 24 (Gould, Wallenstein, Kleinman, O’Carroll, & Mercy, 1990).

Residential schooling in family members.

The indirect effect of the residential school experience on youth mediated through negative parenting has been previously documented (e.g., Kirmayer et al., 2007). FN community members in Alberta, Canada have discussed the “wall of silence between parents and children” that occurred due to residential schooling, hindering the ability of these parents to be good role models for their offspring (Rothe et al., 2006). Community members from another Canadian FN community have also spoken about the importance of healing from the residential school experience in order to improve parenting and prevent its influence from continuing onwards to other generations: “Many levels of disconnection and alienation result[ed]...because children were taken from their families over multiple generations...parenting skills were disrupted” (Smith et al., 2005, p.47).

No known quantitative study has examined the influence of residential school attendance on suicidal behaviour, much less the relationship between having had a close family member who attended a residential school and suicidality in indigenous youth. However, having had a parent attend a residential school was found to be associated with sexual abuse in a sample of 14-30 year old Aboriginals who use drugs in a bivariate analysis (Cedar Project Partnership et al., 2008). On the other hand, no differences were found in terms of levels of happiness, quality of life, and quality of relationships with family members between Aboriginals who had and had not gone to residential schools (Barton et al., 2005). No associations were also found between boarding school attendance and mental disorders in a sample of American Indian/Alaska Native women in primary care (Duran et al., 2004) or with lifetime alcohol dependence in a Navajo sample (Henderson, Kunitz, Gabriel, McCright, & Levy, 1998). Finally, Koss and colleagues

(2003) found a relationship between attending boarding schools and alcohol dependence, but only in women.

Economic disparity.

Economic disparity is highly prevalent among indigenous peoples (Costello, Farmer, Angold, Burns, & Erkanli, 1997; Flores, Bauchner, Feinstein, & Nguyen, 1999; U.S. Government, Bureau of the Census, 1990, in Johnson & Tomren, 1999; Kirmayer et al., 2007), and has been shown to be associated with suicidality in such samples. Poverty has been related to completed suicide in Canadian Aboriginals (Bagley, 1991) and in American Indians (Young, 1990). Furthermore, the highest percentage of individuals engaging in suicidal behaviour tended to be unemployed in a sample of mostly Native peoples in Alaska (Wexler, Hill, Bertone-Johnson, & Fenaughty, 2008). Not all research has shown this association consistently, however. Lester found that the unemployment rate was significantly and positively related to the completed suicide rate of American Indians of all ages in New Mexico (1995). However, he failed to find the same relationship between national American Indian rates of completed suicide and the unemployment rate in the United States (1996). Additionally, Lester only found a positive relationship between unemployment and suicide rates in less stringent analyses in American Indian adolescents ages 15-19 years in New Mexico (1997). SI and/or SA were also not related to socioeconomic status in another sample of American Indian adolescents (Yoder, Whitbeck, Hoyt, & LaFromboise, 2006), to the employment status of the “main wage earner” in native Hawaiian youth (Yuen, Nahulu, Hishinuma, & Miyamoto, 2000), or to parental employment status in indigenous youth in Alberta (Gartrell et al., 1993).

*Individual Factors**Sociodemographic variables.*

A few personal sociodemographic variables have been examined in relation to suicidal behaviour in indigenous youth. A number of studies have reported a higher prevalence of SI and SA in females than in males in indigenous adolescent samples, although significance tests were not always conducted and gender was not usually significant in more stringent models (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Grossman et al., 1991; Howard-Pitney, LaFromboise, Basil, September, & Johnson, 1992; LaFromboise et al., 2007; Yuen et al., 2000). The male to female ratio for suicide completion in indigenous samples of varied age ranges, however, shows higher rates in males (Boothroyd, Kirmayer, Spreng, Malus, & Hodgins, 2001; Range et al., 1999).

Several studies examining the association between age and suicidal behaviour in indigenous adolescents have failed to find a relationship (Chino & Fullerton-Gleason, 2006; Manson et al., 1989; Silviken & Kvernmo, 2007; Yuen et al., 1996). However, a few studies have reported some findings. For example, Gartrell and colleagues (1993) found both SI and SA to be higher in older adolescents than in younger adolescents in a sample of Aboriginal youth from Alberta, although only in preliminary analyses. Borowsky and colleagues (1999) also found older age to be associated with SA, but the relationship was found only in boys and not girls. Another study by Dinges and Duong-Tran (1993) found that depression and comorbid SI was higher in older American Indian/Alaska Native youth, while the combination of having depression, SI, and SA was higher in 14-15 versus 16-17 year olds. However, the sample used in this study was

small. Finally, Yoder and colleagues (2006) found younger age to be associated with SI in one model.

Mental health problems.

Emotional problems have often been found to be associated with suicidal behaviour in indigenous youth. Although assessment of psychopathology has varied across studies with an emphasis on depressive symptomatology, mental health problems have been associated with SI and/or SA (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Dinges & Duong-Tran, 1994; Freedenthal & Stiffman, 2004; Grossman et al., 1991; Howard-Pitney et al., 1992; Manson et al., 1989; Silviken & Kvernmo, 2007; Yuen et al., 1996; Yuen et al., 2000) as well as with suicide completion (Kirmayer et al., 1998; Sigurdson et al., 1994) in bivariate and some multivariate models in indigenous youth in Canada, the U.S., and Norway.

Substance use.

A common finding in research examining correlates for suicidal behaviour in indigenous adolescents is alcohol and drug use (Blum et al., 1992; Chino & Fullerton-Gleason, 2006; Dinges & Duong-Tran, 1994; Freedenthal & Stiffman, 2004; Gartrell et al., 1991; Howard-Pitney et al., 1992; Manson et al., 1989; Yuen et al., 1996). Even in studies taking other community, family, and/or individual factors into account, associations have generally been found between substance use and increased suicidal behaviour in indigenous youth (Borowsky et al., 1999; Gartrell et al., 1993; Grossman et al., 1991; Kirmayer et al., 1998; LaFromboise et al., 2007; Silviken & Kvernmo, 2007; Yuen et al., 2000).

A less studied area is the relationship between suicidal behaviour and cigarette smoking in indigenous adolescents. Previous research has shown that adolescent and

young adult smokers in the general population show increased SI and SA (Afifi, Cox, & Katz, 2007; Bronisch, Höfler, & Lieb, 2008). Furthermore, out of a number of ethnic groups examined in the U.S., American Indian/Alaska Native adolescents ages 12 to 17 were found to have, by far, the highest smoking rates (Caraballo, Yee, Gfroerer, Pechacek, & Henson, 2006). Yet, despite this finding, only a few studies have examined the relationship between smoking and suicidality in samples of indigenous youth. Shaughnessy, Doshi, and Jones (2004) found a higher prevalence of tobacco use in American Indian youth who had undergone a past year SA than in those who had not, although significance tests were not performed. Additionally, other studies have shown positive associations between smoking and SI (Gartrell et al., 1993) and SA (Chino & Fullerton-Gleason, 2006; Freedenthal & Stiffman, 2004; Gartrell et al., 1993; Silviken & Kvernmo, 2007) in bivariate and some multivariate analyses.

Traditional culture, language, and spirituality.

Despite the long held belief by researchers and indigenous peoples alike of the positive relationship between traditional culture and mental well-being (Johnson & Tomren, 1999; Kirmayer et al., 2000; Strickland, Walsh, & Cooper, 2006; Wexler & Goodwin, 2006; Wolsko, Lardon, Hopkins, & Ruppert, 2006), the topic has not been extensively studied quantitatively. With regard to suicide, Chandler and colleagues have found that those FN communities in B.C. with higher levels of cultural continuity as measured by six markers (see Chandler & Lalonde, 1998; Chandler et al., 2003) have experienced a much lower number of adolescent suicides (Chandler & Lalonde, 1998; Chandler et al., 2003; Chandler & Proulx, 2006). Most recently, this team also found FN adolescent suicide to be very low in those communities where 50% or more of the population knew a FN language (Hallett, Chandler, & Lalonde, 2007). In an American

Indian sample of adolescents and adults combined, an association was found between a lower likelihood of SA and a higher level of “cultural spiritual orientations”, although no relationship emerged between SA and perceived importance of traditional spirituality (Garrouette, Goldberg, Beals, Herrell, & Manson, 2003). Finally, a study in American Indian youth found enculturation, a cumulative measure of traditional spirituality, cultural participation, and identification with traditional culture, to be associated with less SI in some models (Yoder, et al., 2006).

Other studies examining the relationship between traditional culture and suicidality have reported null findings. Self-reported degree of ‘traditionality’ was not related to either SI or SA in a sample of adolescent American Indians from the Zuni tribe (Howard-Pitney et al., 1992). Similarly, perceived cultural importance had no association with suicidal behaviour in a representative on-reserve sample of FN adults in Canada (Assembly of First Nations & First Nations Information Governance Committee, 2007). Reported immersion in traditional culture also showed no relationship to general mental health, a measure that included assessment of SI (Silmere & Stiffman, 2006), or to SA (Freedenthal & Stiffman, 2004) in American Indian adolescents. Finally, in a similar sample, increased participation in traditional activities was surprisingly associated with increased SI in bivariate correlations (LaFromboise et al., 2007).

With regard to the role of traditional language knowledge in influencing suicidal behaviour, findings are difficult to interpret because of the different contextual factors (e.g., degree of mainstream language spoken) in different indigenous samples. For example, a recent study of the Inuit in Greenland and Denmark found no association between SI and speaking the colonizer’s language exclusively or being bilingual

(although an association with less probable instances of mental disorder was found) (Bjerregaard, Curtis, & the Greenland Population Study, 2002). However, the authors were unable to examine whether speaking the country's *native* language was associated with better mental health because "it is not a threatened language: it is spoken by virtually all Inuit as their mother tongue" (p.46). A report of a representative Canadian sample of on-reserve FN adults also found no relationship between speaking a traditional language and suicidal behaviour (Assembly of First Nations & First Nations Information Governance Committee, 2007). However, preferring English over Inuit was associated with an increased desire to die in a sample of Canadian Inuit individuals (Haggarty, Cernovsky, Bedard, & Merskey, 2008).

It should be noted that there are at least two other potential reasons for the mixed findings in the areas of traditional indigenous culture, spirituality, and language and their associations with suicidal behaviour. First, a wide and inconsistent range of measures have been used in the assessment of these constructs. Second, whereas some research has examined these associations at an ecological level (e.g., the work by Chandler and colleagues), other studies have investigated them at the individual level. It is possible that these constructs have an indirect, but not necessarily a direct, protective association with suicidality in indigenous peoples.

General stressors and trauma.

Finally, indigenous peoples of all ages experience higher rates of traumatic events (e.g., sexual assault, physical abuse by romantic partner, motor vehicle accidents) than other individuals (Karmali et al., 2005; Rutman et al., 2008). A study by Shaughnessy and colleagues (2004) found a higher prevalence of physical and sexual abuse in American Indian youth who had attempted suicide in the past year than in those who had

not, although significance tests were not performed. Furthermore, abuse as well as a higher number of stressful life events (e.g., good friend moving, illness in the family, failing a class) have generally been shown to be associated with suicidal behaviour in indigenous youth in bivariate and several multivariate analyses (Blum et al., 1992; Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Freedenthal & Stiffman, 2004; Grossman et al., 1991; Howard-Pitney et al., 1992; Kirmayer et al., 1998; Yoder et al., 2006). Indigenous adolescents living in non-indigenous foster homes may also be at particularly increased risk of dying by suicide (Johnson & Tomren, 1999).

Study Objectives and Hypotheses

Interpretation of the findings of previous studies examining community/tribe, peer/family, and individual risk and resiliency factors for suicidal behaviour in indigenous adolescents is a challenge. The different measures used across studies to represent similar constructs render it difficult to generalize results to other indigenous populations. This is in addition to the drastic cultural and situational differences existing across tribes and communities (e.g., Chandler et al., 2003; Chandler & Proulx, 2006; Novins, Beals, Roberts, & Manson, 1999). Furthermore, the majority of studies using larger samples and examining a range of factors of suicidality in youth have been conducted in American Indian/Alaska Native and native Hawaiian individuals. Several of these studies have neglected to include measures of traditional language knowledge and cultural involvement in their models, and all of them have failed to include having had a close family member who attended residential schools.

Using Walker's model (2008) of concentric circles as a conceptual framework for our own investigation, the present study aims to examine associations of community/tribe, peer/family, and individual factors with SI, SA, and any suicidality.

This study is conducted using a representative on-reserve sample of over 1,100 FN adolescents in the province of Manitoba.

Although this work is largely an exploratory examination of correlates of suicidality, there are two general hypotheses for the study:

1) The following factors will be independently associated with a higher likelihood of suicidal behaviour: Living farther from a service facility (isolation), going to bed hungry all of the time/sometimes, unemployment in the household, parents not living together or at least one parent deceased, suicide completion by a friend or family member in the past year, having had either a parent or a grandparent in a residential school, endorsement of any of the lifetime peer/family and individual stressors, being female, being of older adolescence, experiencing depressed mood for two weeks or more in the past year, past year binge drinking, lifetime drug use, and smoking.

2) The following factors will be independently associated with a lower likelihood of suicidal behaviour: Higher perceived community caring, perceived importance of spirituality/faith, speaking a FN language fluently/relatively well, higher participation in cultural activities, and being of a traditional native religious background.

Chapter II: Method

Participants

The current study received full ethical approval from the Bannatyne Campus Health Research Ethics Board at the University of Manitoba. Data came from the population-based Manitoba First Nations Regional Longitudinal Health Survey of Youth (RHS), a part of the national regional health survey of FN individuals living on-reserve in Canada conducted in 2002-2003 (Assembly of First Nations & First Nations Information Governance Committee, 2007). The provincial territorial survey (AMC Health

Information Research and Governance Committee (HIRGC), Elias, & LaPlante, 2006), led by the Assembly of Manitoba Chiefs (AMC) and the Manitoba First Nations Centre for Aboriginal Health Research (MFN-CAHR), included 1,125 adolescents ages 12 through 17 randomly selected from 23 FN communities from the seven Tribal areas in Manitoba. A multi-stage stratified random sampling design by tribal area and community size (500 residents, 500-999 residents, over 1000 residents) was employed in order to ensure representation of all FN communities. Further stratification by age and sex occurred at the community level. The overall response rate was 70.1%. Respondents also completed the Manitoba Regional Supplement, an additional component to the core RHS survey that included questions exclusively for the Manitoba sample developed by Dr. Elias of the MFN-CAHR and the AMC Health Information and Research Governance Committee. Questions with regard to community caring, cultural practice, spirituality, and lifetime stressors and traumatic events were taken from this supplement.

Written consent was obtained by adolescents 14 years of age or older or a parent/legal guardian for participants under the age of 14. Adolescents completed the RHS youth survey via household interviews by community interviewers. When inquiries were of a more delicate nature or when conditions rendered a private one-on-one interview unfeasible, participants read queries and chose desired responses themselves. Interviewers were present to offer their assistance.

Measures

Community/tribe factors.

Geographical location - Current FN community of residence was grouped based on the remoteness index developed and utilized by Indian and Northern Affairs Canada to allocate funding to FN communities (Indian and Northern Affairs Canada, 2008). The

remoteness index is an indicator of how proximal the community lies in relation to service centres (isolation). Communities were placed in one of three categories: within 50 km, between 50 km-350 km, and air/rail/boat access only.

Community caring - Participants were given 27 statements regarding life in their community (Appendix A) to which they responded not at all true, a little true, pretty much true, or very much true. Nine items that had been reversed coded in the survey were recoded so that, for all items, the more true the statement was perceived to be, the more community caring was endorsed. An exploratory factor analysis of the 27 statements was conducted using SPSS version 15.0 in order to determine how to most appropriately examine them as correlates. Two eigenvalues ≥ 1 (22.42, 1.05) were produced from the community caring items by employing a principal components analysis using Oblique (Oblimin) rotation. These two factors accounted for 86.9% of the variance. Items with loadings ≥ 0.40 were interpreted as salient. All community caring items had a loading of well over 0.40 on factor 1, and no community caring item had a loading of 0.40 or over on factor 2. Additionally, factor 2 accounted for only 3.9% of the variance. Therefore, it was deemed that a single factor solution called “community caring” was most appropriate for these items (see Table 1 for pattern matrix). A continuous variable was formed (minimum to maximum caring) since the distribution of values appeared to approximate normality.

Peer/family factors.

Economic disparity - Although household income was not inquired about in the survey, two questions were used in order to form an indication of socioeconomic disparity: “During the past 30 days, did you ever go to bed hungry because there was not

enough food to eat?” (never vs. all the time/sometimes), and “In this house, who works at a job for money?” (someone vs. no one).

Parental cohabitation status - Participants were given the statement, “Are your birth (biological) parents...” accompanied with the following options: living together/married, living together/not married, divorced, not living together/separated, one parent deceased, and both deceased. A three-level variable was created from responses (parents living together, parents not living together, one or both parents deceased).

Residential schooling - Survey participants were asked two questions regarding residential schooling: “Was your mother or father ever a student of a residential school?” and “Were any of your grandparents students of a residential school?” Responses to these questions were used to create a four-level variable: no/don’t know, parent(s) only, grandparent(s) only, both.

Previous suicide by friend or family member - The question “In the past 12 months, has a close friend or family member committed suicide?” was used to assess whether a previous completed suicide by a loved one had occurred, and was dichotomized into a no vs. yes variable.

Traumatic events & stressful life events - Participants were asked “Have you ever experienced any of the following events or situations that caused you a great amount of worry or unhappiness?” and were given a series of life stressors and had to “mark all that apply”. Seventeen of these events (see Appendix B) were examined in the present study and represented both peer/family and individual factors. Due to being conceptually similar, the items “illness/injury of friend” and “illness/injury of a family member” were collapsed to create an “illness/injury of a friend or family member” variable. The items

“conflict between parents”, “conflict between family members”, “conflict between friends”, and “a fight with a friend” were collapsed into “family or friendship related conflict”. All variables were dichotomized as no vs. yes.

Individual factors.

Sociodemographic characteristics - Sex and age were dichotomized into male and female, and 12-14 and 15-17 years old, respectively.

Depressed mood - A single question was used to assess depressed mood: “During the past 12 months, was there ever a time when you felt sad, blue or depressed for 2 weeks or more in a row?”, which was dichotomized into a no vs. yes variable.

Substance use - Participants were given a list of nine drugs or drug categories (Appendix C) and were asked whether they had ever used them without a prescription and how often. Responses were used to create a dichotomous variable (no vs. yes) of ever having used any of these substances.

The sample was asked separately about tobacco smoking: “At the present time, do you smoke cigarettes daily, occasionally, or not at all?”, and a three-level variable was created based on responses.

Finally, with regard to alcohol, participants were asked how often in the past 12 months they had had five or more alcoholic beverages (never, < once/mth., once/mth., 2-3 times/mth., once/wk, > once/wk, everyday), which was dichotomized into an any past year binge drinking variable (no vs. yes).

Language knowledge - Language knowledge was assessed with the question, “What languages do you speak?” Participants were asked to “mark all that apply”, and, for each language endorsed, had to select a single response from four choices – fluently, relatively well, a few words, and don’t understand. Among the language choices was a

list of 32 FN languages. A dichotomous variable assessing FN language fluency was created (fluently/relatively well vs. few words/don't understand).

Cultural practice - Participants were asked whether they engaged in any of a range of 16 cultural activities (see Appendix D). An exploratory factor analysis of the 16 activities was conducted using SPSS version 15.0 in order to determine how most appropriately to examine them as correlates. The pattern matrix for the cultural practice items can be found in Table 2. Four eigenvalues ≥ 1 (2.40, 2.50, 2.21, 2.25) were produced by employing a principal components analysis using Oblique (Oblimin) rotation. These four factors accounted for 52.0% of the variance. One cultural practice item ("go camping with family/friends") did not have any factor loading over 0.40 and therefore, was excluded from all further analyses. The four cultural practice factors produced from the exploratory factor analysis were named "traditional medicine and spirituality", "hunting activities", "community festivities", and "active community participation". They accounted for 22.7%, 12.2%, 10.2%, and 6.9% of the variance, respectively. All four factors showed skewed distributions and therefore, were dichotomized at the point where there was a noticeable change in the frequency of responses: traditional medicine and spirituality (0 activities vs. any activities), hunting activities (0 or 1 activity vs. 2+ activities), community festivities (0-2 activities vs. 3+ activities), and active community participation (0 or 1 activity vs. 2+ activities).

Traditional spirituality - Participants were asked, "At this time, what religion or belief do you follow?", and were asked to "mark all that apply" from the following choices: Traditional Native, Catholic, Anglican, United, Methodist, Pentecostal, None,

and Other. From these choices, a four-level variable was made – none/don't know traditional Native, non-indigenous, and both.

Participants were also asked “How important is spirituality/faith to you?”, which was dichotomized into not very important/don't know vs. very/somewhat important.

Outcome variables.

Suicidal behaviour - Participants were asked two questions regarding suicidal behaviour: “Have you ever thought about committing suicide?” and “Have you ever attempted suicide?” They marked all applicable responses from the following choices: 1) yes, when I was under 12 years of age, 2) yes, when I was an adolescent (12-17 years of age), 3) yes, during the past year, 4) never. Because preliminary analyses showed that nearly all FN youth who had attempted suicide had also ideated, three dichotomous variables were created from responses to the above two questions in order to capture the potentially different correlate profiles of each individual behaviour: 1) SI vs. no SI or SA, 2) SA vs. no SI or SA, and 3) any suicidality vs. no suicidality.

Procedures

Correct weights were applied to the statistical analyses conducted in order for the sample to be representative of all on-reserve FN youth in Manitoba. A variance estimation technique known as Taylor Series Linearization was also used in order to correct for the complex sampling design of the RHS. This procedure was completed using the SUDAAN program (Research Triangle Institute, 2000).

A table of unweighted frequencies and weighted prevalence estimates for categorical variables, and of the mean and standard error for the continuous variable, was constructed for all independent variables. The unweighted frequencies and weighted percentages of missing data due to don't know, refuse, and/or unknown responses were

also calculated for each variable. Bivariate logistic regression analyses were employed in order to examine the associations between each community/tribe, peer/family, and individual factor and lifetime SI, SA, and any suicidality at a significance level of $p < 0.05$. Gender by correlate interactions were also conducted for each significant correlate at the bivariate level.

For several individual variables, the percentage of missing data was relatively high. This rendered separate multivariate analyses of correlates of SI and SA difficult given the aggregation of missing cases from the covariates in the model and therefore, diminished sample size and statistical power. Therefore, in order to gain an indication of the strongest correlates of suicidal behaviour in FN youth, a multivariate logistic regression analysis was conducted on only the 'any suicidality' variable, with every significant correlate in bivariate analyses being entered as a covariate in the model.

Chapter III: Results

A considerable proportion of participants in the RHS youth sample reported having engaged in suicidal behaviour in their lifetimes, with 18.6% (n=194) of the sample having ever ideated about suicide (9.0%, n=105 missing cases) and 9.2% (n=93) having made a suicide attempt (8.5%, n=102 missing cases). A total of 19.0% (n=198) of the sample had experienced any suicidality (9.7%, n=114 missing cases). The prevalence of SI after removing those participants who had attempted suicide was 9.3% (n=86) with 19.4% (n=226) missing cases, and the prevalence of SA after those youth who had ideated about suicide but had not attempted had been removed from the sample was 10.3% (n=93), with 18.5% (n=219) missing cases.

Tables 3 to 5 display the prevalence of each independent variable in the present study. The number and percentage of missing data for each correlate is also displayed. Almost two thirds of the sample resided in a community that was between 50 and 350 km away from a service centre. The mean level of perceived community caring was 64.8 (95% standard error [SE] 63.6-66.0), with scores ranging from 28 to 108. With regard to peer/family variables, over one tenth of the sample experienced unemployment in their household as well as going to bed hungry at least sometimes in the past 30 days. The majority of youth reported that their parents lived together. Approximately one quarter of the sample had a close family member or friend who had committed suicide in the past year and over half disclosed having had a parent and/or grandparent attend a residential school. The frequency of peer/family related stressful life events ranged from approximately 10% to 60%. The RHS sample included approximately equal proportions of males and females, with two thirds of the sample being in the 15 to 17 year old age range. Over one third of FN youths reported engaging in lifetime substance use and in daily smoking. Almost 30% of the sample disclosed having experienced depressed mood for at least two weeks in the past year and individual traumatic events were also relatively prevalent. Most youth considered spirituality/faith to be at least somewhat important to them, and the largest proportion of the sample (approximately 41%) were of a non-indigenous faith exclusively. The majority of youth did not fluently speak a FN language. With regard to cultural practice, most of the sample did not participate in any traditional medicine and spirituality activities, and participated in either zero or one hunting activities or active community participation activities. Over 60% of FN youth, however, reported taking part in three or more community festivities.

Table 6 shows the results of unadjusted logistic regression analyses between SI, SA, and each community/tribe factor. Geographical location was not associated with either SI or SA, although an increasing level of community caring was found to be protective for both of these behaviours. Neither of the gender by community caring interactions, however, were significant, indicating that the relationship was similar in both male and female youth.

Table 7 displays the results of bivariate logistic regression analyses between SI, SA, and each peer/family factor, as well as gender by correlate interactions for each significant correlate. A similar pattern of relationships with correlates was found for both SI and SA. Economic disparity indicators and parental cohabitation status were not found to be significantly associated with either suicidal behaviour, while death by suicide of a friend or family member in the past year was associated with an increased likelihood of both SI and SA (odds ratio [OR] 1.86, 95% confidence intervals [CI] 1.32-2.62 and OR 1.76, 95% CI 1.01-3.08, respectively). No association was found between SI or SA and having had a parent or grandparent who attended a residential school. On the other hand, a number of peer/family related traumatic/stressful life events were found to be strongly associated with an increased likelihood of SI and SA, including divorce/separation of parents, family or friendship related conflict, and illness or injury of a friend or family member (OR range 2.94-8.60). Additionally, alcoholism and/or mental illness in the family was positively associated with only SI (OR 4.40, 95% CI 4.40-11.80), while a breakup with a significant other was associated with an increased likelihood of SA (OR 2.25, 95% CI 1.28-3.96). No significant gender by correlate interactions were found with

the exception of the association between SI and alcoholism or mental illness in the family being significantly stronger in girls.

Table 8 displays the results of unadjusted logistic regression analyses between SI, SA, and each individual factor as well as gender by correlate interactions for each significant correlate. Females were significantly more likely than males to report SI and SA, and adolescents ages 15 to 17 were over twice as likely as 12 to 14 year old FN youth to have experienced both suicidal behaviours. Positive associations were found between SI and SA and several traumatic events, and the relationships with abuse/fear of abuse were the strongest (OR 8.49, 95% CI 3.01-23.92 for SI and OR 10.84, 95% CI 5.74-20.45 for SA). It should also be noted that 100% of youth who disclosed both SI and abuse/fear of abuse were girls. Associations between SI, SA and substance use, including drugs, alcohol, and smoking, were also strong (OR range 3.49-9.75), as were the relationships with depressed mood (OR 4.88, 95% CI 2.42-9.85 for SI and OR 10.84, 95% CI 5.74-20.45 for SA). Finally, being of a traditional native religion or both a traditional and non-indigenous religion was associated with a higher likelihood of SA than having no religion. Partaking in two or more active community participation activities versus 0 or 1 activity was also associated with a higher likelihood of SA. These relationships were not found with SI.

Table 9 presents the results of the bivariate and multivariate logistic regression analyses for the relationships between any suicidality and community/tribe correlates. Geographical location did not emerge as a significant correlate. Community caring, on the other hand, emerged in the bivariate analysis as protective for suicidal behaviour,

although the gender by correlate interaction was not significant. Community caring remained a significant protective correlate of any suicidality in the multivariate model.

Table 10 displays the results of the bivariate and multivariate regression analyses examining the relationship between any suicidality and peer/family factors. Although several correlates were significantly associated with any suicidality in bivariate models, no peer/family correlate emerged as significant in the final multivariate model.

Additionally, there was no significant gender by correlate interaction.

Table 11 shows the results of the bivariate and multivariate analyses examining the relationships between any suicidality and individual factors. Again, many variables were significant in unadjusted models. In the more stringent model, female gender, a stay in a hospital, abuse/fear of abuse, depressed mood for two weeks or more in the past year, lifetime drug use, and past year binge drinking emerged as the strongest correlates of any suicidality (adjusted odds ratio [AOR] range 2.51-11.73).

Table 12 presents a summary of all significant correlates of SI, SA, and any suicidality in bivariate models as well as the correlates of any suicidality in the final multivariate model.

Chapter IV: Discussion

To the best of the author's knowledge, the present study is the first in Canada to use a large and regionally representative sample of on-reserve FN youth to investigate a wide range of correlates of suicidal behaviour. Furthermore, the RHS is unique in that it is "world renowned as the first survey of choice of First Nations, designed and implemented by First Nations for First Nations" (Grand Chief Ron Evans in AMC Health Information Research and Governance Committee (HIRGC) et al., 2006). Thus, cultural

sensitivity was ensured and issues of concern to communities were incorporated into survey questions.

A number of important findings emerged from the study. First, suicidal behaviour is relatively common in on-reserve FN adolescents in Manitoba. When comparing the overall prevalence rates of SI and SA in the RHS sample to those of adolescents ages 12-17 in the U.S. general population (Waldrop et al., 2007),¹ the prevalence of SI was slightly lower in FN youth (18.6% vs. 23.3%). However, the prevalence of SA was three times as high (9.2% vs. 3.1%). Similar results were recently found in a comparison of the prevalence of suicidal behaviour between American Indians and the U.S. general population ages 15 years and older (Belik, 2008). Such findings may indicate that some indigenous populations engage in more impulsive suicidal behaviour (Belik, 2008; LeMaster, Beals, Novins, Manson, AI-SUPERPPF Team, 2004). Additionally, because alcohol has been found to be more commonly involved in suicide completion by indigenous individuals than by comparison groups (Malchy et al., 1997; May et al., 2002; Sigurdson et al., 1994), increased lack of inhibition at the time of suicidal thinking may also be present among this ethnic group, thus contributing to spontaneous SA. In any case, this alarming finding suggests that the window of opportunity for possible suicide intervention may be narrower in FN youth than in other adolescents.

Many of the correlates that were hypothesized to be associated with an increased likelihood of suicidality displayed positive relationships in the present study. Overall, individual factors showed the strongest associations with suicidal behaviour in FN adolescents. FN female youth were found to be more likely than males to experience SI, SA, and any suicidality in bivariate analyses, and gender remained significantly

associated with any suicidality in the stringent multivariate model after adjusting for a range of other covariates. Other studies in indigenous adolescent samples have also shown a higher prevalence of suicidal behaviour in females (not all studies conducted significance tests) and some significant associations between gender and suicidality in mostly bivariate analyses (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Grossman et al., 1991; Howard-Pitney et al., 1992; LaFromboise et al., 2007; Yuen et al., 2000). Previous research in different samples has shown that this relationship likely occurs because of the more lethal means that males typically use with which to attempt suicide, which lead to higher rates of completion than women (Gibb, Beautrais, & Fergusson, 2005; Sigurdson et al., 1994). Therefore, male youth who have had a SA may be less likely to be alive in order to complete a survey such as the RHS. Women, on the other hand, are more likely to survive an attempt, which may place them at an increased likelihood of engaging in multiple SA (Gibb et al., 2005; Sigurdson et al., 1994). In bivariate analyses, older youth were also found to be at an increased likelihood of engaging in SI, SA, and any suicidality. However, age did not emerge as a significant correlate of suicidality in the multivariate analysis, suggesting that other factors such as a higher degree of substance use in older adolescents (Whitbeck et al., 2008) may be accounting for much of this relationship.

Most individual stressful/traumatic life events were also found to be significantly associated with all outcome variables in unadjusted models. Particularly noteworthy was abuse/fear of abuse, which was strongly related to SI, SA, and any suicidality in bivariate analyses and remained a significant correlate of suicidality in the most stringent multivariate model. Victims of abuse have been shown to be at risk for a range of

negative outcomes in indigenous samples, including several mental disorders and engagement in problem behaviour (Cedar Project Partnership et al., 2008; Libby et al., 2005; Robin, Chester, Rasmussen, Jaranson, & Goldman, 1997b). It is possible that in communities where most people know one another, youth who are abused are at risk of not getting help because they have no one whom they trust to disclose their experience. Instead, they may be more likely to keep silent and express their pain in detrimental ways, including suicidal behaviour.

It is also noteworthy that 100% of FN youth who experienced both abuse/fear of abuse and SI were girls. This finding is somewhat discrepant with previous studies that have found abuse and/or distress about abuse to be related to thoughts of suicide in boys as well as girls, with a particularly strong relationship in boys in some studies (e.g., Logan, Leeb, & Barker, 2009; Martin, Bergen, Richardson, Roeger, & Allison, 2004; see review by Tyler, 2002). However, none of these studies focused on indigenous youth. It may be that among FN adolescents, girls are more likely than boys to display internalizing symptoms such as suicidal thinking (without attempting) in response to abuse.

Another individual stressful/traumatic event that emerged as a significant correlate in the multivariate analysis was a stay in a hospital. It can be speculated that a large proportion of hospital stays in this sample were due to suicidal behaviour, thus accounting for much of the relationship. However, strong relationships between suicidal behaviour and self reported health status/concerns and mental conditions have also been identified in indigenous samples (Borowsky et al., 1999; Grossman et al., 1991; LeMaster et al., 2004). It is likely that hospital stays represent the more severe cases of these

illnesses, and may be a reason why this factor, and not personal injury or illness, remained significant in the multivariate analysis in the present study. Furthermore, in some FN communities in Manitoba, adolescents are forced to travel considerable distances from their homes in order to be hospitalized. This might also contribute to the traumatic experience of the youth and elicit suicidal behaviour.

Depressed mood for two or more weeks in the past year and all kinds of substance use (drugs, binge drinking, smoking) were found to be significantly associated with an increased likelihood of SI, SA, and any suicidality in FN youth in bivariate models. Furthermore, only smoking behaviour failed to be associated with any suicidality in the multivariate analysis. Relationships between these factors and suicidal behaviour have been shown in indigenous youth and in other adolescent samples (e.g., Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Goldston et al., 2009; Howard-Pitney et al., 1992; Freedenthal & Stiffman, 2004; Peter, Roberts, Buzdugan, 2008; Schilling, Aseltine, Glanovsky, James, & Jacobs, 2009). Furthermore, mood and substance use disorders have been found to be prevalent in different samples of youth who completed suicide (e.g., Portzky, Audenaert, & van Heeringen, 2005; Marttunen, Aro, Henriksson, & Lönnqvist, 1991; Sigurdson et al., 1994). The feelings of hopelessness that often accompany depressive symptoms may be operating as a mechanism in this relationship. Furthermore, alcohol and drugs may be forms of self-medication for emotional pain in the general population (Bolton, Robinson, & Sareen, 2009), and the lack of inhibition caused by substance use may exacerbate this pain to the point of rash suicidal behaviour. A recent study supported these hypotheses in a large sample of adolescents, showing a significant relationship between attempting suicide and “drinking while down”, which

was particularly strong among individuals who had not undergone SI before they attempted (Schilling et al., 2009).

With regard to peer/family factors, the economic disparity indicators examined in the current study were not found to be associated with SI, SA, or any suicidality. These findings are in line with several studies showing no relationship between variables related to economic disparity and suicidal behaviour and completed suicide in indigenous populations (Gartrell et al., 1993; Lester, 1996; Yoder et al., 2006; Yuen et al., 2000). It is likely that because poverty is so prevalent in this population, it did not emerge as a significant correlate on account of there being little variation within the sample. Additionally, it is possible that other family factors, such as parental bond or quality of intra-family relationships, may be more linked to suicidal behaviour in FN adolescents than economic disparity alone. After all, although they did not emerge as significant correlates in the multivariate analysis, several other factors involving family were strongly related to SI and/or SA and to any suicidality in unadjusted analyses, including alcoholism or mental illness in the family (majority of individuals endorsing both SI and this factor were girls), family or friendship related conflict, family or friend injury or illness, close friend or family member suicide in the past year, and divorce/separation of parents. These latter findings are generally consistent with previous studies in indigenous youth and other adolescent samples that have included different family factors in their examinations of correlates of suicidal behaviour and completed suicide (Agerbo, Nordentoft, & Mortensen, 2002; Borowsky et al., 1999; Blum et al., 1992; Chino & Fullerton-Gleason, 2006; Dinges & Duong-Tran, 1993; Freedenthal & Stiffman, 2004;

Gould, Fisher, Parides, Flory, & Shaffer, 1996; Grossman et al., 1991; Zitzow & Desjarlait, 1994).

The present study also showed that peer related factors were associated with suicidality. As mentioned above, the factors family or friendship related conflict, family or friend injury or illness, and a close friend or family member suicide in the past year were associated with all three outcomes in bivariate analyses, and a breakup with a significant other was also related to SA and to any suicidality in the unadjusted (but not the multivariate) model. Other literature in indigenous youth has found significant associations between positive and negative peer factors and suicidal behaviour in bivariate and some multivariate analyses (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006; Dinges & Duong-Tran, 1993; Grossman et al., 1991). Friends as well as parents act as important attachment figures to youth throughout adolescence (Freeman & Brown, 2001; Nickerson & Nagle, 2005), and the results of this study support the importance of peer and parental relationships in the lives of FN youth. It should be noted that although no peer/family factor emerged as a significant correlate of suicidality in the adjusted model, different risk and protective peer/family factors have been found in relation to variables that were significant in the multivariate analysis such as substance use and depressive symptoms, in native samples (Goebert et al., 2000; King, Beals, Manson, & Trimble, 1992; Kulis, Okamoto, Rayle, & Sen, 2006; Radin et al., 2006). Furthermore, it has been found that family members make up a substantial proportion of perpetrators of abuse in different samples (Halperin et al., 1996; Tyler & Cauce, 2002; Robin et al., 1997b). The indirect influence of peer/family factors on suicidal behaviour was outside the scope of this study, however, their relationship to suicidality should not

be discounted on account of them failing to be significant in the most stringent model (LaFromboise et al., 2007).

There were also, however, several non-significant findings with regard to family factors and their relationships to suicidality. Variables such as parental cohabitation status, death of parents, stay in a foster home, and parent and/or grandparent in residential school were not associated with SI, SA, or any suicidality in the present study. Although somewhat surprising and contrary to the author's hypothesis, these variables do not directly assess the strength of the youths' relationships with their parents/guardians or the stability of their home environment. For example, a FN adolescent might be exposed to a loving and nurturing environment within a foster family or a single-parent home. Furthermore, the parental cohabitation question in the RHS survey did not specifically inquire about whether the youth lived with the parent(s) to begin with. Many indigenous grandparents, for example, have a primary role in childrearing (e.g., Mutchler, Baker, & Lee, 2007). Additionally, number of years in a single parent home was not found to be associated with subsequent SI or SA in unadjusted analyses in a birth cohort study (Fergusson, Boden, & Horwood, 2007). Future research should distinguish between aspects of positive and negative parenting by the legal guardian and home environment instead of parent/guardian status. Some studies in different samples have found that factors such as family conflict, quality of foster care, and parenting style may be more important in influencing a range of negative outcomes (Fergusson et al., 2007; Kessler et al., 2008; McFarlane, Bellissimo, & Norman, 1995).

With regard to community/tribe factors, geographical location was not found to be associated with suicidal behaviour in on-reserve FN youth in Manitoba. These findings

are partially consistent with those of Freedenthal and Stiffman (2004), one of the few known studies to examine a similar factor in relation to suicidal behaviour in indigenous adolescents. In this study, rates of SA were found to be similar between American Indian youth residing on reserves versus those living in urban areas. Rates of SI, however, were found to be higher in on-reserve youth, although the sample used was small and non-representative. Youth living in increased isolation may be expected to be at a higher risk for suicidality because of less access to resources and opportunities (Goldston et al., 2008). However, the lack of significant differences in the present study may be due to the different, but not necessarily less detrimental, set of risks associated with living in closer proximity to service centres, such as potentially increased access to alcohol and drugs.

Few variables hypothesized to be protective for suicidal behaviour were associated with decreased suicidality in FN youth living on reserves. However, consistent with the author's hypothesis, community caring was found to be a significant protective factor for suicidality in the final multivariate model. Similar factors have shown significant bivariate relationships with SA in previous studies in American Indian/Alaska Native youth (Borowsky et al., 1999; Chino & Fullerton-Gleason, 2006). The present finding supports the need for a collective and safe extended environment for FN adolescent development.

Almost none of the cultural variables emerged as significant correlates of suicidal behaviour in bivariate models, and all fell short of being entered into the multivariate analysis. The non-significant results are in line with some previous findings that have failed to find a relationship between cultural variables and suicidality (e.g., Assembly of First Nations & First Nations Information Governance Committee, 2007; Freedenthal &

Stiffman, 2004; Howard-Pitney et al., 1992). The present findings may reflect the crudeness of the measure used for cultural practice, as it did not inquire about the frequency of exposure to each activity. Therefore, a FN youth who had been to a few pow-wows would have been placed in the same group as those adolescents who participate in them regularly. Similarly, the importance of spirituality variable inquired about self-perceived importance and not practice or involvement. There were two exceptions to the null findings between suicidal behaviour and cultural variables. First, active community participation was associated with a significantly *increased* likelihood of SA. Although the reasons for this finding are unclear, it is possible that those youth who are most involved in the community (e.g., attending community meetings, church activities) are also those who are most invested in preserving it, and consequently, most discouraged by its shortcomings and limitations. Second, those youth who endorsed being of a traditional or both a traditional and a non-indigenous religion were also at a significantly *increased* likelihood of experiencing SA in bivariate analyses. A previous study in indigenous Hawaiian youth found that a greater association with the native culture was linked to an increased likelihood of SA (Yuen et al., 2000). Additionally, LaFromboise and colleagues (2007) found that increased participation in traditional activities was associated with increased SI in an unadjusted correlation in American Indian youth. One of the proposed hypotheses for these kinds of relationships is the higher level of acculturative stress that indigenous youth may experience when affiliated with their traditional culture amidst mainstream society (Yuen et al., 2000). Furthermore, “one could hold negative attitudes about oneself as an Indian and toward Indians as a group yet maintain customs and norms that reflect identification with Indian culture”

(LaFromboise et al., 2007, p. 135). Finally, as this study was cross-sectional with no way of discerning the temporality of events, a proportion of the youth may have been perceived to be at-risk for suicidal behaviour and encouraged to participate in cultural and traditional spiritual activities as a way to start to build a cultural identity.

Limitations

There were a number of limitations of the current study. First, the RHS survey was cross-sectional and thus, causal relationships between dependent and independent variables could not be deduced from this data. Furthermore, while lifetime variables were used for SI, SA, and any suicidality, several of the correlates examined inquired about events or behaviours occurring at the current time or in the past year. Recall bias in responses may have also been an issue, particularly for the lifetime variables. Second, the psychometric properties of the community caring and cultural practice measures have yet to be evaluated, although exploratory factor analyses guided the division of items into unified constructs. Additionally, a number of variables in the current study assessed their respective constructs relatively crudely. By merely endorsing or not endorsing a particular event or behaviour, information such as severity (e.g., depressive symptoms, intent to die for suicidal behaviour) and frequency (e.g., how often does participation in cultural activities occur?) is lost and may have affected findings. Third, the RHS survey did not assess mental disorders, which have been consistently and strongly identified as correlates of suicidal behaviour and/or completed suicide in FN populations (Belik et al., 2008; Boothroyd et al., 2001; LeMaster et al., 2004). Fourth, there was a significant proportion of missing responses from a number of variables due to causes such as interviewer error as well as “don’t know” and “refuse” responses. This missing data accumulated across correlates when they were entered as covariates in multivariate

models, and did not allow for a separate multivariate analysis of SI and SA because of a diminished sample and thus, reduced statistical power. Although missing data was to be expected given the sensitive nature of some of the questions, some results may be biased. Finally, the findings of the current study examined suicidal behaviour only, and are not generalizable to completed suicides.

Implications & Future Directions

Nonetheless, the findings of this research have several implications. First, the results of this study suggest that clinicians and front line workers in FN communities should be screening for factors such as depressive symptomatology, substance use, and abuse history when assessing suicidal behaviour in FN youth. Furthermore, with approximately one third of the sample engaging in substance use and experiencing past year depressed mood, and with the strong relationship found between suicidality and these factors, the need for more mental health professionals in these communities is reinforced. Accessible mental health treatment for adolescent victims of abuse and other trauma is also of high priority. Second, the implementation of drug and alcohol prevention and intervention programs for FN adolescents is likely a critical step in reducing suicidal behaviour among this age group. A multi-component approach, including building awareness in youth around the detrimental effects of drugs and alcohol, teaching social and judgement skills, and improving self-esteem, might be most efficacious in these communities (Moran & Reaman, 2002). For reducing childhood maltreatment including abuse in American Indian/Alaska Native communities, culturally sensitive and integrative prevention and intervention efforts including violence awareness, parenting skills, and support groups to educate youth on how to prevent violence behaviour, have been proposed (DeBruyn, Chino, Serna, & Fullerton-Gleason,

2001). Finally, the present study identified perceived community caring as a strong protective factor for suicidal behaviour. This finding suggests that all suicide prevention programming should involve the participation and support of all significant community figures for youth including parents/guardians, other family, teachers, and peers (DeBruyn et al., 2001; Moran & Reaman, 2002).

The need for future research in the area of indigenous youth suicidal behaviour, especially in Canada, is dire. It is hoped that the current study will encourage other Canadian regions to examine the correlates of suicidal behaviour in their own FN youth in order to corroborate the findings of this research. However, it is also necessary for future research examining risk and protective factors of suicidal behaviour in FN adolescent populations to use more methodologically rigorous longitudinal designs, as there have been no longitudinal studies to date of this nature in indigenous youth samples. Furthermore, studies using more standardized and validated assessments of different constructs are needed. Finally, in their recent review, Goldston and colleagues stated that American Indian/Alaska Native youth “experience many of the same risk factors as other youths” (2008, p.20). The present study seems to support this statement; however, future studies using representative samples should include a control group of youth from the general population in order to compare findings.

The present study identified community/tribe, peer/family, and individual correlates of suicidal behaviour in a representative sample of FN youth in Manitoba. Results showed that those youth who are female, engage in substance use, have experienced prolonged depressed mood in the past year, have been abused or are afraid of being abused, and have had a hospital stay are at an increased likelihood of engaging in

suicidal behaviour. Residing in a community that the youth perceive as being caring, on the other hand, is protective for suicidality. Findings will likely help to guide future research, prevention and intervention strategy design, and clinical work in this population.

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Footnotes

¹No comparable data was found using Canadian general population youth.

Appendix A

Community Caring Items

1. All the different families in this community get along.
2. Youth in this community help the elders.
3. Only some families in this community are willing to help other families.
4. I trust the people who live next door.
5. People respect other people in this community.
6. Some people living in my community have problems trusting other community people.
7. Families in this community teach the youth how to trust.
8. People of this community make sure the youth get involved in community activities.
9. Men in this community work hard to make the community a better place to live.
10. The elders in our community care about the future of the youth.
11. Women in this community work hard at making the community a better place to live.
12. Youth in this community work hard to make the community a better place to live.
13. My community has a lot of activities to keep youth busy.
14. Overall, I think people in this community are happy.
15. People here are not very proud of who they are.
16. My family is happy living in this community.
17. My friends do not like living in this community.
18. Overall, I like living in this community.
19. There is no gang activity in my community.
20. My community is a safe place to live.
21. Some people in my community break things of other people.
22. Some people in my community use illegal drugs.
23. Some people physically hurt other people in my community.
24. Some people steal from other people in this community.
25. I trust the people in this community will not hurt me.
26. There are some people who sell drugs in my community.
27. Not many youth get into trouble in this community.

Appendix B

Traumatic Events & General Life Stressors

1. Death of parents
2. Death in family
3. Divorce/separation of parents
4. Moving to another community or home
5. Stay in hospital
6. Stay in foster home
7. Other separation from parents
8. Personal injury or illness
9. Illness/injury of friend
10. Illness/injury of a family member
11. Abuse/fear of abuse
12. Alcoholism or mental health disorder in family
13. Conflict between parents
14. Conflict between family members
15. Conflict between friends
16. A fight with a friend
17. A break-up with a boyfriend or girlfriend

Appendix C

Substances

1. Marijuana (weed, grass)/Hash
2. PCP/Angel dust
3. Acid/LSD/Amphetamines
4. Ecstasy
5. Inhalants (glue, gas, paint)
6. Sedatives/Downers (Valium, etc.)
7. Cocaine/Crack/Freebase
8. Codeine/Morphine/Opiates (Percodan, Tylenol 3, etc.)
9. Heroin

Appendix D

Cultural Practices

1. Do you go out on the land with family or friends to hunt, trap, fish or gather plants?
2. Do you go camping with family or friends?
3. Do you go on picnics with family or friends?
4. Do you help butcher animals, skin animals or clean fish?
5. Do you help clean or prepare animal hides?
6. Do you help prepare traditional foods for meals?
7. Do you do traditional crafts or clothing (like carving, beading, making baskets, clothing, etc.)
8. Do you attend community meetings where adults talk about political or community issues?
9. Do you participate in community events like carnivals or celebrations?
10. Do you use any traditional medicines to prevent or cure sickness?
11. Do you gather traditional medicines for personal use or gather medicines for a family member or friend?
12. Have you ever been to a traditional medicine person/healer?
13. Do you go to pow-wows?
14. Do you participate in spiritual ceremonies?
15. Do you attend church activities?
16. Do you participate in community feasts?

Table 1. *Factor Pattern Matrix for Community Caring Items*

Community Caring Items	Factor 1	Factor 2
1. Different families get along	0.90	0.19
2. Youth help elders	0.92	0.17
3. Families help other families	0.90	0.22
4. I trust people next door	0.92	0.17
5. People respect other people	0.78	0.25
6. People trust other people	0.88	0.21
7. Families teach youth to trust	0.90	0.22
8. Youth get involved in activities	0.93	0.18
9. Men work to make community better place to live	0.93	0.21
10. Elders care about the future of the youth	0.92	0.20
11. Women work to make community better place to live	0.92	0.20
12. Youth work to make community better place to live	0.93	0.17
13. Community has a lot of activities to keep youth busy	0.93	0.14
14. Overall, people are happy	0.91	-0.10
15. People are proud of who they are	0.88	-0.07
16. My family is happy in community	0.92	-0.15
17. My friends like living in community	0.91	-0.14
18. Overall, I like living in community	0.93	-0.12
19. There is no gang activity	0.90	-0.18
20. My community is a safe place to live	0.95	-0.15
21. People do not break things of others	0.93	-0.22

Community Caring Items (continued)	Factor 1	Factor 2
22. People do not use illegal drugs	0.93	-0.26
23. People do not physically hurt others	0.92	-0.25
24. People do not steal from others	0.93	-0.25
25. I trust people in community will not hurt me	0.92	-0.21
26. People do not sell drugs	0.87	-0.27
27. Not many youth get into trouble	0.92	-0.26

Note. Items ≥ 0.40 in bold.

Table 2. *Factor Pattern Matrix for Cultural Practice Items*

Cultural Practice Items	Factor 1	Factor 2	Factor 3	Factor 4
1. Go out on land to hunt, trap...	-0.09	0.72	0.06	0.04
2. Go camping with family/friends	-0.25	0.30	0.38	0.33
3. Go on picnics with family/friends	-0.36	0.15	0.46	0.25
4. Butcher animals, skin animals, clean fish	0.06	0.87	-0.03	-0.14
5. Clean or prepare animal hides	0.18	0.72	-0.04	-0.04
6. Prepare traditional foods or meals	0.24	0.30	-0.05	0.51
7. Traditional crafts or clothing	0.29	-0.03	0.06	0.59
8. Attend community meetings	0.24	-0.18	-0.10	0.67
9. Participate in community events	-0.03	0.02	0.69	0.09
10. Use any traditional medicines	0.70	0.17	0.04	0.09
11. Gather traditional medicines for personal use or for family/friend	0.56	0.26	-0.07	0.20
12. Been to a traditional medicine person/healer	0.68	-0.00	0.14	-0.05
13. Go to pow-wows	0.28	-0.15	0.76	-0.28
14. Participate in spiritual ceremonies	0.63	-0.08	0.21	0.19
15. Attend church activities	-0.20	0.05	0.10	0.52
16. Participate in community feasts	0.15	0.04	0.67	0.01

Note. Items ≥ 0.40 in bold.

Table 3. *Frequency of Community/Tribe Factors in the RHS Youth Sample*

COMMUNITY/TRIBE FACTORS	n (%)	n (%) Missing Cases
Geographical Location		0 (0.0)
Within 50 km	176 (22.3)	
Between 50-350 km	683 (65.2)	
Air/rail/boat access	266 (12.6)	
	Mean (SE)	n (%) Missing Cases
Community Caring	64.8 (0.6)	484 (47.3)

Note. SE – Standard error.

All *n*'s were unweighted. Percentages, mean, and SE were weighted.

Table 4. *Frequency of Peer/Family Factors in the RHS Youth Sample*

PEER/FAMILY FACTORS	n (%)	n (%) Missing Cases
Went to bed hungry in past 30 days		158 (16.6)
Never	829 (84.9)	
All of the time/sometimes	138 (15.1)	
Who works at a job for money		225 (20.7)
Someone	756 (87.5)	
No one	144 (12.5)	
Parental cohabitation		58 (4.2)
Parents living together	807 (72.4)	
Parents not living together	204 (21.6)	
1+ parent deceased	56 (6.0)	
Family/friend committed suicide past year		148 (13.4)
No	752 (75.6)	
Yes	225 (24.4)	
Parent/grandparent in residential school		60 (6.9)
No/don't know	522 (47.0)	
Parent(s) only	114 (9.3)	
Grandparent(s) only	318 (28.9)	
Both	111 (14.7)	

PEER/FAMILY FACTORS (continued)

	n (%)	n (%) Missing Cases
Traumatic/stressful life events		272 (27.3)
Death of parents		
No	767 (90.3)	
Yes	86 (9.7)	
Death in family		
No	382 (41.8)	
Yes	471 (58.2)	
Divorce/separation of parents		
No	690 (80.0)	
Yes	163 (20.0)	
Stay in foster home		
No	772 (89.2)	
Yes	81 (10.8)	
Other separation from parents		
No	787 (89.4)	
Yes	66 (10.7)	
Illness/injury of a friend/family member		
No	643 (75.4)	
Yes	210 (24.6)	

PEER/FAMILY FACTORS (continued)

	n (%)	n (%) Missing Cases
Alcoholism/mental disorder in family		
No	756 (86.2)	
Yes	97 (13.8)	
Family/friendship related conflict		
No	469 (55.5)	
Yes	384 (44.5)	
Breakup with a girlfriend/boyfriend		
No	660 (76.7)	
Yes	193 (23.3)	

Note. All *n*'s were unweighted. All percentages were weighted.

Table 5. *Frequency of Individual Factors in the RHS Youth Sample*

INDIVIDUAL FACTORS	n (%)	n (%) Missing Cases
Sex		0 (0.0)
Male	520 (50.7)	
Female	605 (49.3)	
Age		0 (0.0)
12-14	478 (34.0)	
15-17	647 (66.0)	
Traumatic/stressful life events		272 (27.3)
Stay in hospital		
No	786 (93.2)	
Yes	67 (6.9)	
Personal injury/illness		
No	737 (84.4)	
Yes	116 (15.7)	
Moving to another community/home		
No	703 (79.6)	
Yes	150 (20.4)	
Abuse/fear of abuse		
No	762 (89.3)	
Yes	91 (10.7)	

INDIVIDUAL FACTORS (continued)	n (%)	n (%) Missing Cases
Past year depressed mood for 2+ weeks		147 (11.7)
No	685 (71.6)	
Yes	293 (28.4)	
Lifetime drug use		105 (13.7)
No	714 (63.2)	
Yes	306 (36.8)	
Past year binge drinking (5+ drinks on one occasion)		93 (8.5)
No	748 (64.8)	
Yes	284 (35.2)	
Smoking behaviours		61 (4.7)
Not at all	628 (52.3)	
Occasionally	146 (12.2)	
Daily	290 (35.6)	
Importance of spirituality/faith		150 (15.8)
Not very important/don't know	321 (35.4)	
Very/somewhat important	654 (64.6)	
FN language knowledge		6 (0.3)
Few words/don't understand	894 (82.4)	
Fluently/relatively well	225 (17.6)	

INDIVIDUAL FACTORS (continued)	n (%)	n (%) Missing Cases
Religion		149 (17.1)
None/don't know	306 (31.8)	
Traditional Native	235 (21.6)	
Non-indigenous	359 (40.6)	
Both	76 (6.0)	
Traditional medicine and spirituality		178 (18.0)
No activities	565 (60.2)	
Any activities	382 (39.8)	
Hunting activities		159 (16.1)
0 or 1 activity	751 (77.1)	
2+ activities	215 (22.9)	
Community festivities		173 (16.8)
0-2 activities	372 (38.8)	
3+ activities	580 (61.2)	
Active community participation		174 (17.9)
0 or 1 activity	633 (68.9)	
2+ activities	318 (31.1)	

Note. All *n*'s and were unweighted. All percentages were weighted.

Table 6. Relationships between SI, SA, and Community/Tribe Variables

COMMUNITY/TRIBE VARIABLES	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Geographical Location			N/A			N/A
Within 50 km	12 (7.2)	1.00		14 (7.1)	1.00	
Between 50-350 km	56 (9.9)	1.41 (0.42-4.77)		59 (11.4)	1.68 (0.77-3.66)	
Air/rail/boat access	18 (9.7)	1.38 (0.38-5.06)		20 (9.9)	1.44 (0.65-3.19)	
	B	SE	Gender X Correlate Interaction OR (95% CI)	B	SE	Gender X Correlate Interaction OR (95% CI)
Community Caring	-0.08*	0.03	0.97 (0.90-1.06)	-0.04*	0.01	1.00 (0.93-1.07)

Note. OR – Unadjusted odds ratio.

SE – Standard error.

All *n*'s were unweighted. All percentages and standard errors were weighted.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 7. Relationships between SI, SA, and Peer/Family Factors

PEER/FAMILY FACTORS	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Went to bed hungry in past 30 days			N/A			N/A
Never	62 (8.3)	1.00		69 (9.9)	1.00	
All of the time/ Sometimes	13 (16.8)	2.23 (0.92-5.42)		15 (18.7)	2.09 (0.69-6.34)	
Who works at a job for money			N/A			N/A
Someone	60 (10.0)	1.00		67 (12.2)	1.00	
No one	13 (8.6)	0.84 (0.33-2.16)		11 (5.3)	0.40 (0.15-1.06)	
Parental cohabitation			N/A			N/A
Parents living together	59 (9.0)	1.00		65 (10.5)	1.00	
Parents not living together	15 (5.9)	0.63 (0.25-1.58)		16 (8.5)	0.79 (0.43-1.46)	
1+ parent deceased	8 (18.9)	2.35 (0.85-6.51)		9 (18.0)	1.88 (0.48-7.39)	

PEER/FAMILY FACTORS (continued)	n (%)	SI (n=86)		SA (n=93)	
		OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Family/friend committed suicide past year			5.14 (0.92-28.53)		3.41 (0.48-24.51)
No	56 (8.6)	1.00		55 (9.6)	1.00
Yes	27 (14.8)	1.86 (1.32-2.62)**		29 (15.8)	1.76 (1.01-3.08)*
Parent/grandparent in residential School			N/A		N/A
No/don't know	38 (7.9)	1.00		35 (8.7)	1.00
Parent(s) only	13 (14.6)	2.01 (0.64-6.27)		8 (7.9)	0.89 (0.26-3.08)
Grandparent(s) only	23 (10.4)	1.36 (0.56-3.28)		33 (12.7)	1.52 (0.83-2.79)
Both	10 (9.0)	1.16 (0.40-3.41)		15 (13.9)	1.68 (0.75-3.79)

PEER/FAMILY FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Traumatic/Stressful Life Events						
Death of parents			N/A			N/A
No	62 (9.9)	1.00		62 (10.8)	1.00	
Yes	9 (12.9)	1.35 (0.32-5.63)		16 (24.5)	2.69 (0.76-9.54)	
Death in family			N/A			N/A
No	24 (8.2)	1.00		23 (11.0)	1.00	
Yes	47 (11.6)	1.47 (0.91-2.36)		55 (12.8)	1.18 (0.62-2.24)	
Divorce/separation of parents			1.64 (0.13-21.45)			3.19 (0.27-37.5)
No	45 (7.6)	1.00		53 (9.0)	1.00	
Yes	26 (21.3)	3.28 (2.03-5.32)***		25 (24.8)	3.34 (1.62-6.88)**	

PEER/FAMILY FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Stay in foster home			N/A			N/A
No	60 (9.8)	1.00		61 (11.0)	1.00	
Yes	11 (13.3)	1.41 (0.34-5.90)		17 (20.7)	2.10 (0.69-6.44)	
Other separation from parents			N/A			N/A
No	62 (9.3)	1.00		65 (11.6)	1.00	
Yes	9 (16.7)	1.95 (0.36-10.52)		13 (15.6)	1.41 (0.49-4.09)	
Illness/injury of a friend/family member			1.59 (0.53-4.75)			0.54 (0.11-2.71)
No	34 (7.0)	1.00		42 (7.7)	1.00	
Yes	37 (22.1)	3.75 (2.12-6.65)***		36 (27.5)	4.55 (2.02-0.25)***	

PEER/FAMILY FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Alcoholism/mental disorder in family			6.27 (1.00-39.08)*			N/A
No	50 (7.7)	1.00		66 (11.0)	1.00	
Yes	21 (27.0)	4.40 (1.64-11.80)**		12 (20.1)	2.03 (0.65-6.33)	
Family/friendship related conflict			1.28 (0.42-3.92)			0.73 (0.12-4.25)
No	22 (6.2)	1.00		26 (3.5)	1.00	
Yes	49 (16.3)	2.94 (1.73-4.98)***		52 (23.8)	8.60 (2.41-30.74)**	
Breakup with a girlfriend/boyfriend			N/A			1.43 (0.23-8.86)
No	45 (9.3)	1.00		45 (9.8)	1.00	
Yes	26 (13.4)	1.51 (0.77-2.96)		33 (19.7)	2.25 (1.28-3.96)**	

Note. OR – Unadjusted odds ratio.

All n's were unweighted. All percentages were weighted.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 8. Relationships between SI, SA, and Individual Variables

INDIVIDUAL FACTORS	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Sex						N/A
Male	25 (5.9)	1.00	N/A	22 (4.9)	1.00	
Female	61 (13.1)	2.40 (1.79-3.21)***		71 (16.3)	3.76 (2.10-6.74)***	
Age			0.99 (0.32-3.09)			0.32 (0.04-2.54)
12-14	26 (5.2)	1.00		19 (4.9)	1.00	
15-17	60 (11.5)	2.36 (1.12-4.99)*		74 (13.3)	2.97 (1.25-7.04)*	
Traumatic/stressful life events						
Stay in hospital			3.17 (0.45-22.08)			1.40 (0.38-5.14)
No	59 (8.6)	1.00		67 (10.7)	1.00	
Yes	12 (34.4)	5.57 (2.46-12.60)***		11 (33.3)	4.16 (1.95-8.87)***	

INDIVIDUAL FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Personal injury/illness			2.64 (0.86-8.15)			0.38 (0.10-1.41)
No	51 (7.8)	1.00		56 (9.1)	1.00	
Yes	20 (25.1)	3.96 (1.42-11.03)*		22 (29.6)	4.19 (2.25-7.80)***	
Moving to another community/home			N/A			0.22 (0.03-1.54)
No	52 (9.9)	1.00		54 (10.4)	1.00	
Yes	19 (11.3)	1.16 (0.54-2.52)		24 (18.3)	1.93 (1.11-3.37)*	
Abuse/fear of abuse			See below ⁺			1.96 (0.33-11.73)
No	49 (7.6)	1.00		53 (8.4)	1.00	
Yes	22 (41.0)	8.49 (3.01-23.92)***		25 (49.7)	10.84 (5.74-20.45)***	

INDIVIDUAL FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Past year depressed mood for 2+ weeks			0.59 (0.11-3.11)			0.59 (0.19-1.87)
No	29 (5.1)	1.00		24 (4.4)	1.00	
Yes	47 (20.9)	4.88 (2.42-9.85)***		62 (29.1)	9.01 (5.45-14.88)***	
Lifetime drug use			1.66 (0.23-11.88)			2.92 (0.83-10.37)
No	32 (4.1)	1.00		34 (4.7)	1.00	
Yes	47 (18.6)	5.30 (2.19-12.80)***		49 (19.7)	5.00 (2.73-9.15)***	
Past year binge drinking (5+ drinks on one occasion)			2.13 (0.81-5.58)			0.74 (0.32-1.71)
No	34 (4.3)	1.00		36 (5.6)	1.00	
Yes	46 (18.8)	5.22 (2.30-11.83)***		45 (17.2)	3.49 (2.20-5.54)***	

INDIVIDUAL FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Smoking behaviours			1.13 (0.39-3.29)			1.09 (0.50-2.38)
Not at all	31 (4.5)	1.00		20 (3.9)	1.00	
Occasionally	16 (16.8)	4.14 (1.38-12.41)*		26 (28.1)	9.75 (3.96-24.03)***	
Daily	39 (16.3)	4.18 (1.71-10.19)**		47 (16.1)	4.78 (2.24-10.19)***	
Importance of spirituality/faith			N/A			N/A
Not very important/ don't know	26 (7.4)	1.00		28 (11.2)	1.00	
Very/somewhat important	51 (10.6)	1.49 (0.59-3.76)		53 (10.8)	0.96 (0.65-1.42)	

INDIVIDUAL FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
FN language knowledge			N/A			N/A
Few words/don't understand	69 (9.3)	1.00		74 (10.3)	1.00	
Fluently/relatively well	17 (9.4)	1.01 (0.41-2.49)		19 (10.4)	1.01 (0.54-1.86)	
Religion			N/A			1.24 (0.59-2.58)
None/don't know	31 (11.5)	1.00		19 (9.1)	1.00	
Traditional Native	19 (11.9)	1.05 (0.46-2.40)		27 (16.2)	1.92 (1.04-3.53)*	
Non-indigenous	23 (6.1)	0.50 (0.16-1.58)		31 (8.2)	0.89 (0.31-2.52)	
Both	5 (21.8)	2.16 (0.47-9.87)		6 (25.0)	3.31 (1.42-7.75)**	

INDIVIDUAL FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Traditional medicine and spirituality			N/A			N/A
No activities	42 (7.8)	1.00		40 (10.0)	1.00	
Any activities	33 (12.9)	1.74 (0.91-3.33)		39 (13.4)	1.37 (0.76-2.49)	
Hunting activities			N/A			N/A
0 or 1 activity	62 (9.8)	1.00		62 (10.7)	1.00	
2+ activities	13 (8.3)	0.84 (0.21-3.41)		18 (9.5)	0.88 (0.28-2.77)	
Community festivities			N/A			N/A
0-2 activities	29 (9.9)	1.00		40 (10.8)	1.00	
3+ activities	46 (9.3)	0.93 (0.38-2.29)		40 (10.4)	0.96 (0.48-1.91)	

INDIVIDUAL FACTORS (continued)	SI (n=86)			SA (n=93)		
	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)
Active community participation			N/A			1.12 (0.78-1.59)
0 or 1 activity	50 (9.4)	1.00		48 (9.4)	1.00	
2+ activities	26 (10.3)	1.11 (0.59-2.10)		32 (13.7)	1.54 (1.08-2.19)*	

Note. OR – Unadjusted odds ratio.

All *n*'s were unweighted. All percentages were weighted.

[†]Interaction analysis could not be completed because 100% of respondents with SI were girls.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 9. Relationships between Suicidality and Community/Tribe Factors

COMMUNITY/TRIBE FACTORS	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Geographical Location			N/A	N/A
Within 50 km	27 (14.1)	1.00		
Between 50-350 km	129 (20.5)	1.58 (0.69-3.62)		
Air/rail/boat access	42 (19.5)	1.49 (0.55-4.03)		
	B	SE	Gender X Correlate Interaction OR (95% CI)	Adjusted B (SE)
Community Caring	-0.06***	0.01	0.99 (0.94-1.04)	-0.08** (0.02)

Note. OR – Unadjusted odds ratio. AOR – Adjusted odds ratio. (Adjusted for significant correlates in bivariate analyses).

SE – Standard error.

All *n*'s were unweighted. All percentages were weighted.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 10. *Relationships between Suicidality and Peer/Family Factors*

PEER/FAMILY FACTORS	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Went to bed hungry in past 30 days			N/A	N/A
Never	140 (17.5)	1.00		
All of the time/sometimes	35 (33.0)	2.33 (0.95-5.71)		
Who works at a job for money			N/A	N/A
Someone	141 (21.0)	1.00		
No one	26 (15.6)	0.70 (0.28-1.74)		
Parental Cohabitation			N/A	N/A
Parents living together	139 (19.1)	1.00		
Parents not living together	34 (14.7)	0.73 (0.47-1.14)		
1+ parent deceased	17 (31.2)	1.91 (0.85-4.30)		

PEER/FAMILY FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Family/friend committed suicide past year			3.09 (0.50-19.24)	
No	126 (17.9)	1.00		1.00
Yes	58 (27.4)	1.73 (1.27-2.35)**		1.37 (0.67-2.80)
Parent/grandparent in residential school			N/A	N/A
No/don't know	80 (16.5)	1.00		
Parent(s) only	25 (22.8)	1.49 (0.67-3.28)		
Grandparent(s) only	58 (21.2)	1.36 (0.87-2.14)		
Both	29 (21.7)	1.40 (0.73-2.67)		
Traumatic/stressful life events				
Death of parents			N/A	N/A
No	134 (19.7)	1.00		
Yes	28 (33.6)	2.06 (0.76-5.59)		

PEER/FAMILY FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Death in family			N/A	N/A
No	49 (18.1)	1.00		
Yes	113 (23.1)	1.36 (0.86-2.17)		
Divorce/separation of parents			2.30 (0.22-23.91)	
No	109 (16.5)	1.00		1.00
Yes	53 (38.3)	3.14 (1.87-5.28)***		2.77 (0.91-8.41)
Stay in foster home			N/A	N/A
No	130 (19.6)	1.00		
Yes	32 (32.3)	1.95 (0.64-5.96)		
Other separation from parents			N/A	N/A
No	139 (20.1)	1.00		
Yes	23 (28.0)	1.55 (0.63-3.81)		

PEER/FAMILY FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Illness/injury of a friend/family member			0.91 (0.38-2.22)	
No	83 (14.3)	1.00		1.00
Yes	79 (41.8)	4.30 (2.34-7.91)***		1.47 (0.65-3.29)
Alcoholism/mental disorder in family			1.78 (0.53-5.98)	
No	126 (17.9)	1.00		1.00
Yes	36 (40.8)	3.17 (1.29-7.80)*		0.40 (0.09-1.81)
Family/friendship related conflict			1.20 (0.33-4.39)	
No	53 (9.6)	1.00		1.00
Yes	109 (35.3)	5.11 (2.58-10.11)***		1.92 (0.92-4.00)
Breakup with a girlfriend/boyfriend			1.73 (0.33-9.12)	
No	95 (17.9)	1.00		1.00
Yes	67 (31.3)	2.10 (1.24-3.55)**		0.57 (0.21-1.60)

Note. OR – Unadjusted odds ratio. AOR – Adjusted odds ratio (Adjusted for significant correlates in bivariate analyses). All *n*'s were unweighted. All percentages were weighted. * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 11. *Relationships between Suicidality and Individual Factors*

INDIVIDUAL FACTORS	Any Suicidality (n=198)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
	n (%)			
Sex			N/A	
Male	53 (11.1)	1.00		1.00
Female	145 (27.3)	3.01 (2.03-4.47)***		2.51 (1.03-6.12)*
Age			0.78 (0.25-2.43)	
12-14	51 (10.5)	1.00		1.00
15-17	147 (23.5)	2.62 (1.62-4.23)***		0.84 (0.22-3.21)
Traumatic/stressful life events				
Stay in hospital			2.11 (0.57-7.84)	
No	138 (18.8)	1.00		1.00
Yes	24 (50.8)	4.47 (2.12-9.41)***		11.73 (2.13-64.75)**

INDIVIDUAL FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Personal injury/illness			1.08 (0.39-2.95)	
No	118 (16.9)	1.00		1.00
Yes	44 (43.2)	3.75 (1.83-7.70)***		0.49 (0.23-1.07)
Moving to another community/home			N/A	N/A
No	113 (19.2)	1.00		
Yes	49 (28.2)	1.66 (0.97-2.82)		
Abuse/fear of abuse			5.87 (0.97-35.67)	
No	113 (15.9)	1.00		1.00
Yes	49 (63.1)	9.07 (4.34-18.97)***		2.43 (1.14-5.19)*
Past year depressed mood for 2+ weeks			0.67 (0.28-1.57)	
No	58 (9.6)	1.00		1.00
Yes	119 (42.0)	6.83 (4.11-11.36)***		4.72 (1.32-16.90)*

INDIVIDUAL FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Lifetime drug use			2.33 (0.56-9.69)	
No	73 (9.0)	1.00		1.00
Yes	107 (34.4)	5.31 (2.76-10.23)***		6.82 (1.44-32.24)*
Past year binge drinking (5+ drinks on one occasion)			1.31 (0.66-2.60)	
No	78 (10.0)	1.00		1.00
Yes	101 (32.8)	4.41 (2.98-6.52)***		3.65 (1.00-13.25)*
Smoking behaviours			1.12 (0.58-2.16)	
Not at all	59 (8.9)	1.00		1.00
Occasionally	43 (37.0)	6.03 (2.55-14.27)***		0.53 (0.08-3.35)
Daily	96 (29.9)	4.38 (2.51-7.64)***		0.65 (0.13-3.34)

INDIVIDUAL FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Importance of spirituality/faith			N/A	N/A
Not very important /don't know	60 (18.1)	1.00		
Very/somewhat important	114 (20.4)	1.16 (0.74-1.83)		
FN language knowledge			N/A	N/A
Few words/don't understand	157 (19.0)	1.00		
Fluently/relatively well	41 (19.7)	1.05 (0.51-2.17)		
Religion			N/A	N/A
None/don't know	54 (19.3)	1.00		
Traditional Native	52 (26.4)	1.50 (0.93-2.41)		
Non-indigenous	59 (14.6)	0.72 (0.27-1.93)		
Both	12 (38.8)	2.65 (0.83-8.48)		

INDIVIDUAL FACTORS (continued)	Any Suicidality (n=198) n (%)	OR (95% CI)	Gender X Correlate Interaction OR (95% CI)	AOR (95% CI)
Traditional medicine and spirituality			N/A	N/A
No activities	88 (17.2)	1.00		
Any activities	81 (24.3)	1.54 (0.89-2.67)		
Hunting activities			N/A	N/A
0 or 1 activity	138 (19.9)	1.00		
2+ activities	33 (16.8)	0.82 (0.27-2.43)		
Community festivities			N/A	N/A
0-2 activities	75 (20.0)	1.00		
3+ activities	95 (18.8)	0.92 (0.58-1.48)		
Active community participation			N/A	N/A
0 or 1 activity	107 (18.2)	1.00		
2+ activities	64 (22.5)	1.30 (0.89-1.90)		

Note. OR – Unadjusted odds ratio. AOR – Adjusted odds ratio. (Adjusted for significant correlates in bivariate analyses).

All *n*'s were unweighted. All percentages were weighted.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 12. *Summary of Significant Correlates of SI, SA, and Any Suicidality*

	SI Bivariate	SA Bivariate	Any Suicidality Bivariate	Any Suicidality Multivariate
Community caring	X	X	X	X
Family/friend committed suicide past year	X	X	X	NS
Divorce/separation of parents	X	X	X	NS
Illness/ injury of a friend/family member	X	X	X	NS
Alcoholism/mental disorder in family	X ⁺	NS	X	NS
Family/friendship related conflict	X	X	X	NS
Breakup with a girlfriend/boyfriend	NS	X	X	NS
Sex	X	X	X	X
Age	X	X	X	NS
Stay in hospital	X	X	X	X
Personal injury/illness	X	X	X	NS
Moving to another community/home	NS	X	NS	NS
Abuse/fear of abuse	X [*]	X	X	X

	SI Bivariate	SA Bivariate	Any Suicidality Bivariate	Any Suicidality Multivariate
Past year depressed mood for 2+ weeks	X	X	X	X
Lifetime drug use	X	X	X	X
Past year binge drinking (5+ drinks on one occasion)	X	X	X	X
Smoking behaviours	X	X	X	NS
Religion	NS	X	NS	NS
Active community participation	NS	X	NS	NS

Note. NS – Non-significant.

⁺Gender by correlate interaction was significant.

*100% of participants who reported both SI and abuse/fear of abuse were girls.