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**RISK AND PROTECTIVE FACTORS  
FOR PROPENSITY FOR SUICIDE  
AMONG BRITISH COLUMBIA FIRST NATIONS ADOLESCENTS  
USING THE ADOLESCENT HEALTH SURVEY**

by

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## Abstract

The majority of research on resilience, or risk and protective factors for maladaptive behavior among adolescents, does not identify cultural or ethnic variables. Of the existing studies that include ethnicity as a factor, many are based on American samples. The present study explores factors (e.g., depression, substance use, parental support, self appraisal) that predict or prevent a particular maladaptive behavior--propensity for suicide attempt--among a large sample of Canadian minority adolescents, specifically British Columbia First Nations youth. The study also aims to determine the extent to which the selected factors contribute to high or low propensity for suicide, and whether these findings differ from those for non-First Nations youth. Research participants were 576 First Nations and 13,370 Non-First Nations youth ages 12-19, who participated in a province-wide health survey that was conducted in British Columbia in 1992. The final sample of 13,946 represented 89.7% of the total sample of 15,549 surveyed. Respondents completed a 123-item paper-and-pencil Adolescent Health Survey (AHS) that contained questions pertaining to health status and risk behavior, and included items on suicidal ideation and emotional distress. There were no meaningful differences between First Nations and non-First Nations groups in terms of propensity for suicide, even though the results were statistically significant due to the enormity of the sample sizes. There were also no differences in risk and protective factors for propensity for suicide between the two groups. Specifically, regression analyses revealed that depression and abuse were seen as the leading risk factors for propensity for suicide for both groups, and parental support and self-appraisal were leading protective factors for both groups. In terms of previous suicide attempts, however, 12.8% of the First Nations adolescents indicated they made at least one suicide attempt, compared to 6.5% of the non-First Nations adolescents. Policy implications are discussed.

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## Introduction

The majority of research on the concept of resilience, or risk and protective factors for maladaptive behavior as it applies to adolescents, does not examine cultural or ethnic variables. A few studies have examined risk and protective factors for maladaptive behavior in minority groups, but most are based on American samples (e.g., Animikwam Samuels, 1995; Baldwin et al., 1993; Blum, Harmon, Harris, Bergeisen, & Resnick, 1992; Luthar, Doernberger, & Zigler, 1993; O'Grady & Metz, 1987). To date, there does not appear to be much information available on risk and protective factors for maladaptive behavior pertaining to Canadian minority adolescents, specifically First Nations youth. One of the primary goals of the present research was to examine the extent to which being a First Nations adolescent is associated with a high risk for a particular maladaptive behavior -- suicide. The present research will also explore the extent to which risk factors contribute to propensity for suicide, and which factors protect one from propensity for suicide.

## The Concept of Resilience

In recent years, research on the relationship between stress and illness has become more prevalent, with psychosocial concepts such as resilience receiving considerable attention (Gore & Eckenrode, 1994; Hannah & Morrissey, 1987; Luthar & Zigler, 1991; O'Grady & Metz, 1987). Basically, the concept of resilience was developed to help explain why some people do well despite disadvantaged circumstances. The fact that some people grow up in inimical circumstances but do not show any apparent adverse consequences has been attributed to resilience (Baldwin et al., 1993). The development and nurturance of the concept of resilience has been influential and commendable, in that it has helped move traditional stress and illness research from a focus on pathology to a focus on wellness, and towards a more positive view of development and adjustment (Animikwam Samuels, 1995; Luthar & Zigler, 1991).

Among its many definitions, resilience has generally been defined as the adaptive competence and absence of psychiatric disorders despite the presence of significant

psychosocial stress, trauma, illness, or loss (Animikwam Samuels, 1995); “as good developmental outcomes despite high-risk status, sustained competence under stress, and recovery from trauma” (Werner, 1995, p. 81); when positive outcomes are evidenced in the face of being at significant risk for developing problems (Kaufman, Cook, Army, Jones, & Pittinsky; 1994); and when “one regains functioning following adversity to the level of adaptation and competence that characterized the individual prior to the pre-stress period” (Garmezy, 1993, p. 129).

In terms of research, there is no agreed upon way of classifying or measuring resilience. This is because the operational definition of resilience changes according to the specific outcome that is being measured. For example, some researchers may use school success as a way of classifying ‘resilient’ individuals, whereas others may have more of a focus on psychiatric illness, and yet others more of a focus on behavior problems. To illustrate this diversity in outcome measures, O’Grady and Metz (1987), for example, conducted a longitudinal study that examined psychological factors related to healthy adjustment in 109 6- to 7-year-old children who were classified at birth as high-risk for adverse outcome. Adverse outcome was operationalized as the presence of school problems, behavior problems, emotional indicators, and decreased social competence. They used the Children’s Behavior Checklist (Achenbach & Edelbrock, 1983) and Pupil Behavior Rating Scale (Lambert, Bower, & Hartsough, 1979) as the primary outcome measures from which they drew their conclusions about resilience. Mulholland, Watt, Philpott, and Sarlin (1991) examined academic performance (e.g., grade-point averages and teacher ratings of classroom behavior) of 96 middle-school adolescents of divorce before drawing their conclusions about resilience and vulnerability. Spencer et al. (1993) conceptualize resilience as adaptive coping, and measured it through academic performance and academic self-esteem. Animikwam Samuels (1995), who examined resilience in American Indian youth, defined resilience in two ways: the absence of psychiatric diagnoses as measured by the NIMH Diagnostic Interview Schedule for Children (DISC 2.1C; Costello, Edelbrock, Dulcan, Kalas, &

Kleric, 1982), and competence across a number of domains as assessed by the Social Adjustment Inventory for Children and Adolescents (SAICA, John, Gamon, Prussoff, & Warner, 1987). Kaufman et al. (1994) assessed academic achievement, social competence and clinical symptomology in 56 maltreated school-age children before drawing their inferences about resilience. These examples illustrate that methodological differences are as varied as the operational definitions of resilience. Kaufman et al. (1994) sum up this point succinctly stating that “it is concluded that the most appropriate definition of resiliency to be used in future investigations depends on the aims of the study” (p. 215).

However, even when researchers have produced what is deemed to be empirically sound research, within the confines of their own operational definition(s) and measurement(s) of resilience, generalizations are often not made or assumed. Researchers like Luther et al. (1993), for example, submit that although an individual’s behavior can be seen to reflect competence or resilience in one realm, an individual can still be unsettled in another realm. In other words, a label of resilience in one domain does not automatically provide immunity from difficulties or problems in other domains, nor does it generally “imply immunity to negative events” (Garmezy, 1991a, p. 466). Radke-Yarrow and Brown (1993) add that the study of resilience as it relates to children is further challenged by the need to consider factors within developmental contexts, while Masten (1989) suggests a need to keep in mind that whereas some factors can be considered stable (e.g., temperament), others may be more transient (e.g. social relationships). In the words of Masten, Garmezy, and Best (1990) “resilience, like adaptation in general, is always contextual” (p. 439).

#### Risk and Protective Factors

Although several theoretical explanations for the phenomenon of resilience have been suggested (Rutter, 1985), such as those mentioned above, all basically involve or imply the interaction of *risk* and *protective* factors (Garmezy, 1993; Pellegrini, 1990; Rae-Grant, Thomas, Offord, & Boyle, 1989; Werner, 1990). This is not to say, however, that

all risk factors are causal.

Risk factors have been described as “those factors that, if present, increase the likelihood of a child developing an emotional or behavioral disorder in comparison with a randomly selected child from the general population” (Rae-Grant et al., 1989, p. 262). Rutter (1987, 1993) prefers to use the word *mechanism* to factor, given he believes that what can be constituted as a risk in one situation can be considered protective in another situation. For example, he states that adoption may put a child from a lucrative background at risk for psychiatric illness, yet may be protective for a child from a family of strife or hardship (Rutter, 1987). Gest, Neemann, Hubbard, Masten, and Tellegen (1993) advocate the term *processes* instead of factors, given that they believe “any characteristic that may promote resilience (e.g., parenting quality) is likely part of multiple processes involving adversity and individual adjustment, including processes that alter the characteristic itself” (p. 664). The process of understanding resilience becomes even more complex when we consider that risk and/or protective factors are often interrelated and co-occurring (Cowen & Work, 1988; Pellegrini, 1990); that multiple stressful life experiences may have more than an additive effect (O’Grady & Metz, 1987); and that a clear linear relationship between complex variables and adverse outcomes does not always exist (Jensen, Bloedau, Degroot, Ussery, & Davis, 1990).

When ethnicity is a factor, not a mechanism nor process, in resilience research, Spencer and Markstrom-Adams (1990) assert that it is imperative to be aware that “the probability of obtaining a positive outcome may be compromised for minority children by prejudice, discrimination, relocation, and acculturation between generations, and/or culturally linked methods of coping” (pp. 292-293).

Table 1 is presented as an aid, outlining those factors that are discussed below. In general, “variables that have been identified in the child psychopathology and risk factor research might be categorized within three major groupings, which include characteristics of the child, parental factors, and family/environmental factors” (Jensen et al., 1990, p. 51).

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Insert Table 1 about here

---

### Critique of the Resilience/Risk and Protective Factor Literature

Because it could be misleading to take these at face value, a brief critique of the state of methodological affairs pertaining to this general literature, as interpreted by this author, follows. It is the hope that it will provide the reader a general gauge in which to interpret these data outlined in Table 1 as well as the ones presented below. This will then be followed by a brief overview of the literature pertaining to risk and protective factors for maladaptive behavior as it applies to American Indian youth, as well as a terse critique of the literature cited therein.

With regard to the general resilience literature, specifically as it applies to risk and protective factors for maladaptive behavior, it is difficult to appreciate the strengths and weaknesses of some of these factors given that many authors discuss the variables without providing empirical data to support their statements. Instead, remarks are often made to the effect that these variables have been “well documented” in the literature, leaving the reader to assume that either this is true or to seek out and evaluate the methodological soundness of the literature that are associated with or attached to these statements themselves. It would be remiss, however, not to point out that included in this category are review articles (e.g., Cowen & Work, 1988; Luthar & Zigler, 1991; Masten et al., 1990; Rutter, 1985). Other studies go one step further by discussing some of the risk and protective factors that have been previously documented, and back this up by sporadically providing some data, typically descriptive in nature, in support of their statements (e.g., Emory & Forehand, 1994; Garnezy, 1991a, 1991b, 1993). Little is mentioned, however, about the general or ipsative strengths of these results. For those studies that are empirical in nature (e.g., Animikwan, 1995; Gest et al., 1993; Luthar, Dornberger, & Zigler), many refer to previous works in a way that assumes the reader has a reasonable prior knowledge of general trends in the literature, but also undertake their

own studies with measurement instruments that have well documented reliability. Some of the popular instruments used in some of these studies include the Diagnostic Instrument for Children and Adolescents (DICA; Reich & Welner, 1990, as used by Baldwin et al., 1993); the Children's Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983, used by Gest et al., 1993; Jensen et al., 1990; and Kaufman et al., 1994; O'Grady & Metz, 1987; and Rae-Grant et al., 1989), and the Revised Children's Manifest Anxiety Scale (R-CMAS; Reynolds & Richmond, 1978, as used by Jensen et al., 1990), and the Children's Depression Inventory (CDI; Kovacs & Beck, 1977, as used by Jensen et al., 1990, and Luther et al., 1993). With this stated, the following are some of the documented factors that are associated with risk and protective factors for maladaptive behavior, as outlined in Table 1, that fall into general categories of factors within the child, parent, family/environment and community.

#### Risk Factors within the Child

In terms of child characteristics, some factors that often appear to be related to higher levels of psychopathology are temperamental characteristics (Jensen et al., 1990), chronic physical handicaps or illness (Barbarin, 1993; Jensen et al., 1990; Rae Grant et al., 1989), attachment problems (Barbarin, 1993), age and gender (Jensen et al., 1990, Rae Grant et al., 1989).

#### Risk Factors within the Parent

With regard to parental characteristics, parental psychopathology (e.g., psychiatric illness) has been purported to predispose a child to adverse outcomes (Rae Grant et al., 1989), as has maternal adjustment, parental criminal behavior (Rae-Grant et al., 1989), and marital discord (Barbarin, 1993; Jensen et al., 1990; Rae-Grant et al., 1989).

#### Risk Factors within the Family/Environment

Some of the factors that have been found to be associated with placing children "at risk" for adverse outcome include living in conditions of chronic poverty (Barbarin, 1993; Garnezy, 1991b, 1993), divorce (Barbarin, 1993; Emery & Forehand, 1994; Jensen et al., 1990; Mulholland et al., 1991), familial discord (Cowen & Work, 1988; Jensen et al.,

1990), violence (Barbarin, 1993), lower SES (Rae-Grant et al., 1989), and homelessness (Barbarin, 1993).

#### Protective Factors within the Child

The most commonly acknowledged protective factors within the child include positive temperament (e.g., good natured, cuddly, active; Brooks, 1994; Emory & Forehand, 1994; Rae-Grant et al., 1989), gender and age (e.g., younger girls and older boys; Emory & Forehand, 1994; Masten et al, 1990), intelligence (Animikwam Samuels, 1992; Emory & Forehand, 1994; Werner, 1995), school competence, and social competence. Social competence has been defined as including academic achievement (Rae-Grant et al., 1989; Werner, 1995), participation in activities (Garmezy, 1991; Rae-Grant et al., 1989), and ability to relate to others (Garmezy, 1991; Rae-Grant et al., 1989). Traits that are believed to underlie social competence are high self-esteem and high self-efficacy (Rae-Grant et al., 1989; Rutter, 1985; Werner, 1995).

#### Protective factors within the Parent/Family

Both parent-child factors and parental qualities have been acknowledged to be protective factors for children. These include a warm, caring and supportive parenting style and environment (Garland & Zigler, 1993; Garmezy, 1991; Gribble et al., 1993; Rae-Grant et al., 1989), parental self-efficacy (Gribble et al., 1993), family harmony (Pellegrini, 1990; Rae-Grant et al., 1989), and the use of sound discipline practices (Gribble et al., 1993; Rae-Grant et al., 1989).

#### Protective factors within the Community

The most commonly acknowledged protective factors within the community include extrafamilial peer and adult support sources and positive identification models (Brooks, 1994; Garmezy, 1991; Rae-Grant et al., 1989). Werner (1990) suggests that resilient children also enjoy school.

#### Risk and protective factors among American Indian Youth

Spencer, Cole, DuPress, Glymph, and Pierre (1993) suggested that while “the odds against good development for minority youth have been articulated to the point of



redundancy” (p. 721), very little information in general exists about the specifics of risk and protective factors as they pertain to minority youth. Blum et al. (1992) concur, stating that although local and national adolescent health surveys have delineated prominent adolescent health concerns, relatively little is known about risk behaviors of a particularly “high risk” group -- American Indian youth. They perceive this as a serious gap in the literature as “these youth exhibit more serious problems than the US ‘all races’ population in such areas as depression, suicide, anxiety, substance use, general health status, and school drop-out” (p. 1637).

. In summary, whether one is referring to either the American Indian or the general literature pertaining to risk and protective factors for maladaptive behavior, it is clear that there is no one succinct identifiable way in which resilience is operationally defined and/or measured. As such, it is obvious that research in this area poses many challenges. For example, untangling and interpreting the impact of the factors become complicated at best especially when one wishes to consider such entities within the confines of these factors being buffering, mediating, moderating, potentiating, facilitating, or any of the vast array of combinations, permutations and interactions of such factors. Nonetheless, studying resilient and/or “high-risk” individuals is important and necessary because it can help to improve our understanding of both the nature and the etiology of psychopathology. Although there is a critical absence of research on resilience or risk and protective factors for maladaptive behavior as it applies American Indian adolescents, there is even less published data on resilience or risk and protective factors for maladaptive behavior, specifically suicide, in Canadian First Nations adolescents. The following section provides an overview of existing literature as it pertains to suicide in the general population at large, as well as among American Indian and First Nations peoples.

### Suicide

“Aboriginal people in Canada and the US appear to be particularly vulnerable to suicide, with rates exceeding those in the population at large” (Malchy, Enns, Young, &

Cox, 1997, p. 1134). Despite this finding, which has been known for some time, McShane (1988) states that "there is virtually no research concerning depression in Indian children or adolescents, let alone the relationship of depression to suicide; such research is critically needed and should be facilitated at the earliest possible time." (p. 107).

### Adolescents in general

It is well known that stressful life events are associated with increased risk for suicidal behavior (i.e., attempts) among adolescents (Shaffer, 1988), as is depression (Brent et al., 1988; Garland & Zigler, 1993; Shaffer, 1988; Shaffer & Gould, 1987; Spirito, Brown, Overholser, & Fritz, 1989) antisocial or aggressive behavior (Brent et al., 1988; Garland & Zigler, 1993; Shaffer, 1988; Shaffer & Gould, 1988, Spirito et al., 1989), substance abuse (Garland & Zigler, 1993; Shaffer, 1988; Shaffer & Gould, 1988), physical or sexual abuse (Spirito et al., 1989), learning disorders (Shaffer & Gould, 1988), poor peer relationships (Spirito et al., 1989), chronic illness (Spirito et al., 1989), family conflict (Spirito et al., 1989), prior history or family history of suicide (Brent et al., 1988; Garland & Zigler, 1993; Shaffer, 1988), and availability of firearms (Brent et al., 1988; Garland & Zigler, 1993).

With regard to those who committed suicide, Brent et al. (1988) found that the majority of suicidal inpatients and those who committed suicide met the criteria for any affective disorder, whereas Shaffer (1988) found that males who committed suicide were 8.6 times more likely to have been diagnosed with major depression than the control males. The results were even more startling for females. With regard to antisocial behavior, Brent et al. (1988) indicated that the 22.2% of those who committed suicide met criterion for conduct disorder, as did 26.8% of the suicidal inpatients. Shaffer (1988) found that 67% of males and 30% of the females who committed suicide met criteria for antisocial behavior as compared to 17% and 12% of the normal controls, respectively.

Concerning substance abuse, Shaffer (1988) reported that 37% of the males who committed suicide had a substance abuse problem as opposed to 7% of the normals, while Brent et al. (1988) reported that alcohol was a factor in one-third of the attempters he

studied.

With regard to a family history of suicide, Shaffer (1988) reported that 41% of the males who committed suicide had a family history of suicide, compared to 17% of the normals, and that the trend for females was similar with 33% of the females who committed suicide having had a family history of suicide compared to 13% of the controls.

In terms of the availability of firearms, Brent et al. (1988) indicated that firearms accounted for 55.6% of all the suicide deaths reported in his study, while Garland and Zigler (1993) reported that since 1950 the rates of suicide by firearms among 15-19 year olds have increased three times faster than the rates for all other methods.

### American Indian adolescents

Suicide has been reported to be the second most frequent cause of death in the U.S. American Indian adolescent population (Berlin, 1987). The rates for completed suicide among American Indian adolescents range from being close to the national annual average (12 per 100,000 population/year), to far above (i.e., 43.3 per 100,000/year) the national annual average (Berlin, 1987). For example, a 1987 report by Indian Health Service of the US Public Health Service indicated that the American Indian adolescent suicide rate (26.8 per 100,000) was more than double the national rate for adolescents of all races (Grossman et al., 1991).

Factors acknowledged in the etiology of completed or attempted suicide in American Indian adolescents include death in the immediate or extended family, divorce of parents, sudden illness of a parent, a family move with significant change in family atmosphere, loss of a romantic attachment, the onset of acute or chronic disease, or chronic disease from childhood (Berlin, 1987). Other critical factors acknowledged include having had more than one significant caretaker before age 15, five or more arrests of the primary caretakers, two or more losses by divorce or desertion, one or more arrests within one year prior to suicide, at least one arrest by age 15, and attending boarding school before the ninth grade (Dizman, 1974). Being sexually active (Blum et al., 1992), having had

or caused a pregnancy (Blum et al., 1992), having been sexually and/or physically abused (Blum et al., 1992; Grossman et al., 1991), inducing vomiting weekly (Blum et al., 1992), belief that their family does not understand them or that adults don't care (Blum et al., 1992), having had a friend attempt suicide (Blum et al., 1992; Grossman et al., 1991), as well as tribal instability, high unemployment rates, adoption (Berlin, 1987), and poor health (Blum et al., 1992, Grossman et al., 1991), also place aboriginal youth at a higher risk for suicide.

With regard to being sexually active, Blum et al. (1992) reported a statistically significant difference, among those who presented at high risk for suicide (44%) versus those who presented at low risk (28%). They also found a statistically significant difference in pregnancy between those who presented at high (10.2%) and low (5.3%) risk for suicide.

In terms of physical abuse, Grossman et al. (1991) reported that the American Indian youth who were physically abused had a risk of suicide 1.9 times greater than those who did not endorse that they had been physically abused. Blum et al. (1992) reported similar results; specifically, that 26.5% of those considered at high risk for suicide indicated they have been physically abused compared to 10.8% of those considered at low risk for suicide.

With regard to poor health, Blum et al. (1992) reported that 33.9% of those who considered their health as poor presented as high risk for suicide, as compared to 11.3% of those who considered themselves to be in excellent health. Further, they reported that students who perceived themselves to be in poor health were over twice as likely to have been abused, more than four times likely to report below-average school performance or poor body image, and present as three times more likely to have reported a history of suicide attempts, than those who described their health as excellent.

The Blum et al. (1992) study, which surveyed 13,454 grade 7 through 12 American Indian-Alaska Native youth, reported that 16.9% of their sample had made at least one suicide attempt in the past year. Similarly, Grossman et al. (1991), in a large controlled

study of suicide attempts among Navajo Native American adolescents, found that nearly 15% reported a suicide attempt.

### First Nations people in general

Health and Welfare Canada (1994a) reported that with regard to the major leading causes of death, the Status Indian Age Standardized Mortality Rate (ASMR) for suicide (3.8 per 10,000 population per year) was more than three times the provincial ASMR of 1.2 per 10,000 per year for the period of 1987-1992. A Health and Welfare Canada (1996) report on the ASMR for suicide death among B.C. Status Indians was quite similar, with the Status Indians' ASMR for suicide being 3.8, more than three times the total B.C. general population's ASMR of 1.1 per 10,000.

Suicide is seen as a major concern among First Nations people, with rates for First Nations and Inuit communities ranging up to 15 times that of the national rate (Health and Welfare Canada, 1994b). Mustard and Bobet (1995), for example, reported the Canadian Status Indian suicide rate to be 2-3 times higher than the general Canadian population rate, and Stuart and Gokiart (1990) suggest that the First Nation suicide rate is six times the national average. A report by Cooper, Karlberg, and Pelletier Adams (1991) indicated that the aboriginal suicide rate was between 23.6 and 27.4 per 100,000 per year, roughly 50% higher than the suicide rate in non-aboriginals, which was 16.1 per 100,000 per year. The latter two studies did not differentiate between Status and non Status people, however, whereas the Health and Welfare Canada rates reflect those of Status Indians.

Cooper et al. (1991) cited lack of purpose, high alcohol consumption, high levels of family disruption, loss of traditional culture and values, penetration of technological values from the dominant culture, and high unemployment rates, as risk factors for suicide. Regarding high unemployment rates, Health and Welfare Canada (1994) reported that unemployment was identified by 67.1% of the Status First Nations people living on and off-reserve as the biggest social problems facing First Nations communities. Other social problems that were endorsed were as follows: alcohol abuse (61.1%), drug

abuse (47.9%), family violence (39.2%), suicide (25.4%), and sexual abuse (24.5%).

With regard to another Canadian study that looked at alcohol and suicide, Malchy et al. (1997) reported that the Blood Alcohol Level (BAL) of aboriginal people in Manitoba who committed suicide between 1988 and 1994 was 28 mmol/L, compared to 12 mmol/L in non-aboriginal people.

#### First Nations adolescents

In terms of ASMR rates by age groups, Health Canada (1996) indicated that the ASMR for suicide for both male and female Status Indians aged 15-24 was more than six times higher than those 15-24 year olds in the general population. Similarly, MacMillan, MacMillan, Offord, and Dingle (1996) reported that the mean suicide rate of 37 per 100,000 for Canadian First Nations youth, from 1986-1990, was five times the national average. Malchy et al. (1997), in a study of Manitoba's aboriginal people, indicated that "among adolescents 15 to 19 years of age, the suicide rate among aboriginal people was nearly 7 times that among nonaboriginal adolescents"(p. 1137), specifically, 63.5/100,000 per year versus 9.6/100,000. Cooper et al. (1991) also reported that the 1984-1989 suicide rate among First Nations people aged 10-14 and 15-24 exceeded the rates for non-First Nations people at least two-fold. According to Health and Welfare Canada (1994b) from 1989 to 1991, suicide was the second leading cause of death for Canadians aged 15-19.

#### General population vs. aboriginal youth

Even though suicide is the second leading cause of death for both general population and American Indian and Canadian First Nations adolescents, this statistic becomes far more telling for these young aboriginal people when we take into account the youthfulness of their respective nations overall. For example, the average age of the US Indian population nationally, reported by Berlin (1987), was 17.3 years as compared to 29.5 years in the rest of the population. Similarly, in 1991, 39% of B.C.'s Status Indians were reported to be 19 years of age and under, double the rate found in B.C.'s general population of the same age range.

## Purpose of the Present Study

The present research explores factors that predict or prevent suicide propensity (e.g., attempts) among Canadian (British Columbia) First Nations youth. Specifically, the aim was to determine the extent to which factors contribute to high propensity for suicide attempts and the extent to which factors prevent the risk of suicide attempts among First Nations adolescents, and whether these findings differ from those for Non-First Nations youth. This study also attempts to determine whether perceived poor health is related to a history of abuse, poor school performance, and/or increased substance use. The factors that will be used in the present study are pulled from the 123-item McCreary Adolescent Health Survey (AHS). Generally speaking, AHS questions range from feelings about school, body image and weight, physical health status and practices, to emotional health and self-esteem, sexual behavior, anti-social behavior, and a variety of other risk-taking behaviors (The McCreary Centre Society, 1993). The AHS is described in more detail in the methodology section of this paper.

### Overview of the variables

To help the reader, Appendix G outlines the variables that will be used in the present study, delineating which factors will be classified as risk factors, and which variables will be classified as protective factors.

### The Research Questions

The present research aims to answer the following questions:

**Research Question 1: *Do First Nations adolescents show a higher propensity for suicide attempts than non-First Nations adolescents?***

It is hypothesized that First Nations youth have a higher propensity for suicide attempts than non-First Nations youth. Based on previous American based research and Health Canada statistics reported earlier, it is predicted First Nation youth will exhibit higher rates of suicidal ideation, previous suicide attempts, and overall suicide risk than non-First Nations youth.

**Research Question 2:** *What are the strongest predictors of propensity for suicide attempts among First Nations adolescents, and do these predictors differ from predictors for non-First Nations youth?*

The most commonly found factors that are associated with suicide risk among American Indian youth that can be measured by the McCreary AHS database include divorce of parents, poor health, depression, sexual activity, having had or caused a pregnancy, having been sexually and/or physically abused, belief that their family does not understand them, and parental unemployment.

Similarly, the common factors associated with suicide attempts in the general population that are present in the McCreary adolescent data base include depression, aggression, familial rejection, substance abuse, and poor health.

However, to date there does not appear to be any published research that compares the various risk factors across First Nations and non-First Nation populations. This study will investigate substance use, depression, physical abuse, sexual abuse, parental rejection, parental employment status, sexual activity, having had or caused a pregnancy, and health status. It is predicted that depression, substance use, parental employment status, health status, and abuse will be more predictive of suicide attempts in First Nations adolescents than they will in non-First Nations adolescents.

**Research Question 3:** *What are the strongest predictors of protection from suicidal propensity for attempts for First Nations adolescents, and do these factors differ than those for non-First Nations youth?*

It is predicted that school competence may be a protective factor for First Nations youth, but to a lesser extent than non-First Nations youth. This is based on the assumption that ethnic discrimination is more of an issue for First Nations youth than non-First Nations youth.

Additionally, since it has been documented that with mainstream adolescents, social competence (i.e., involvement in extracurricular activities and part-time employment) is also a protective factor, the present research will assess to what capacity this holds true



for First Nations youth. It is predicted that this social competence may also be a protective factor for First Nations youth, but to a lesser extent than non-First Nations youth.

**Research Question 4:** *Is poor health associated with sexual abuse, physical abuse, low school enjoyment, and substance use?*

The hypothesis that poor health will be associated with abuse, low school enjoyment, and substance use is based largely on the fact that this has been found to be true in American based Indian adolescent research (e.g., Blum et al., 1992).

## Method

### Research Participants

During 1992, The McCreary Centre Society, in conjunction with the British Columbia provincial Health Units, conducted a health status and risk behavior survey of grade 7 through 12 students enrolled in public and independent schools in B.C. In terms of the students that were selected to be surveyed, a 10% sample of students was drawn for each school district in the province. Schools and classrooms, representing grades 7 through 12 in public and independent schools, were then randomly selected. In the end, 48 of the 75 school districts in the province permitted access to the schools in their respective districts. These 48 districts contained 67% of all students enrolled in schools in the province at that time. In the end, 15,549 students from these 8 regions ( i.e., Greater Vancouver, Capital, Fraser Valley, Interior, Kootenays, Upper Island, Northwest, Northeast), 48 different school districts, across 174 schools, and in approximately 840 classrooms participated. Census estimates from 1992 indicated there were approximately 296,000 youth between the ages of 12 and 18 years in B.C., of whom 256,884 were enrolled in public and private schools. In other words, 87% of all youth in the province were included in the sampling frame by virtue of being enrolled in school. The overall response rate was 74%.

### Test Instrument: The Adolescent Health Survey (AHS)

The 123-item paper and pencil (self-administered) McCreary Adolescent Health Survey (AHS) Questionnaire represents the largest and most comprehensive survey to date of the health status and health risks of B.C. youth. Specific domains covered in the questionnaire include: 1) physical health, chronic illness/disability, and mental health; 2) behaviors that result in intentional and unintentional injuries; 3) sexuality, STDs, and pregnancy; 4) tobacco, drug, and alcohol use; 5) physical activities, school achievement, and self-esteem; 6) nutrition, eating behaviors, and dietary disorders; and 7) individual and family demographics (The McCreary Centre Society, 1993).

The questionnaire included 73 core risk behavior items from the Youth Risk Behavior Survey (YRBS), a component of the Youth Risk Behavior Surveillance System developed

by the Division of Adolescent and School Health at the U.S. Centers for Disease Control and Prevention, 32 demographic and health status items from the Minnesota Adolescent Health Survey, and a series of questions on self-esteem from the World Health Organization's Cross-National Youth Survey, in which Canada participated in 1990 (The McCreary Centre Society, 1993).

In terms of the reliability of the present AHS, test re-test data were not collected prior to the province-wide administration of this instrument. This was primarily because the McCreary Centre Society relied heavily on the technical summaries of previous works of the Minnesota AHS and YRBS in constructing the present AHS. Principal investigators of the Minnesota AHS stated that test-retest data were not collected for their study, given their study was cross-sectional in design. They stated they thus relied on the technical merits of the YRBS, from which their survey is largely similar, and/or used existing validated items from previously published works, and/or developed scales and indicators after data collection, using the usual methods of calculating validity and reliability, to document the acceptability and usability of those scales (M.D. Resnick, personal communication, June 2, 1997).

The test-retest reliability for the YRBS items as found by Brener, Collins, Kann, Warren, and Williams, 1995, that were part of a five-state administration of the instrument in 1992, are presented in Table 2. This table shows the kappas and prevalence rates for 1,679 adolescents from the five selected states (Illinois, Georgia, Wyoming, Florida, and Texas). Demographic characteristics of this sample include 46.1% male, 53.9, female, 18.3 % grade 7, 16.3% grade 8, 17.6%, grade 9, 14.4% grade 10, 19.0 grade 11, 14.3% grade 12, 35.5% white, 16.9% Black, 43.6% Hispanic, and 4.0% other.

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Insert Table 2 about here

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Table 2 shows that the kappas are reasonable, ranging from 64.2 (played on sports team) to 87.5 (ever used marijuana), although there is one considerably low outlier of

36.1 (cocaine in the past 30 days). Landis and Koch (1977) would describe these kappas as "substantial." A possible explanation for the low cocaine kappa may be that more than 30 days may have lapsed between a respondents last use of cocaine and the second YRBS administration, which was 14 days from the initial administration. In other words, while a respondent may have used cocaine within 30 days of the initial administration, this same person might have not used cocaine within 30 days of the second administration. For example, a respondents could have used cocaine three weeks before the initial YRBS administration, but not have used cocaine again before the second administration. This would mean they would not meet criterion on the retest.

Results of the YRBS study "adds to the growing literature on the reliability of self-reported health behavior data and provides evidence that a widely used adolescent survey has adequate reliability" (Brener et al., 1995). It is hoped that the McCreary AHS data can also contribute positively to this literature, as well as the literature that adds to an increased understanding of risk and protective factors for propensity for suicide among B.C. First Nations adolescents.

#### Scales Developed for this Project

For the purpose of the present study, six scales were developed (i.e., Propensity for Suicide, Alcohol Use, ESD, Abuse, Parental Support, and Self Appraisal). The scales were created as follows. First, individual items were grouped into like categories (i.e., the *Propensity for Suicide* scale contains four items that includes two questions pertaining to suicidal ideation, and two items pertaining to suicidal behavior). Second, items that were not be deemed by the principal investigator, in consultation with the dissertation committee, to be related in a general way or show acceptable face validity to the theoretical construct at hand were removed from further consideration of potential items proposed to be in the scale. For the alcohol scale, and the marijuana and cocaine individual items, only the items pertaining to use "in the past month" were considered. In other words, items that pertained to "during your life" were not considered. This was done in order to maintain consistency with the emotional stress and depression scale

items, whose items all pertained to “in the past month.” This was a way in which all the measures could be made somewhat parallel. Third, latent variable analyses was performed on each scale in order to determine and evaluate the integrity of each of the scales. Table 2 reports the kappas of items, from the Brener et al. (1995) study that were included in the present scales, and the results section of this paper reports the analyses of the psychometric properties of the scales.

## Scales

### Propensity for Suicide Scale

Appendix A contains the four items that comprise this scale: two items pertaining to suicidal ideation (1. During the past 12 months, did you ever consider attempting suicide?; 2. During the past 12 months, did you make a plan about how you would attempt suicide?), and two items pertaining to suicidal behavior (3. During the past 12 months, how many times did you actually attempt suicide?; 4. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning or overdose that had to be treated by a doctor or nurse?).

For the suicidal ideation items (i.e., Items 1 and 2), respondents were asked to endorse either a Yes (scored as 2 points) or a No (1 point) response. For Item 3, respondents were asked to endorse one of five choices (0 times; 1 time; 2 or 3 times; 4 or 5 times; 6 or more times), with 1, 2, 3, 4 and 5 points being awarded for the aforementioned choices respectively. For Item 4, respondents were asked to endorse either Yes (3 points), No (2 points), or I did not attempt suicide in the past 12 months (1 point). As such, the minimum score that can be obtained on this scale is 4, the maximum score 12.

Stated briefly, the coding strategy employed for this scale followed the general rule that more points are to be awarded for ideation or behavior that is perceived to denote higher propensity for suicide (e.g., 0 previous suicide attempts scoring 1 point, 1 previous suicide attempt scoring 2 points, etc.). Briefly, the higher the total score (points summed over all four items), the higher the propensity for suicide.

### Alcohol Use Scale

Appendix B contains the two items that comprise this scale. The first item pertains to how many days during the past 30 days the respondent has had at least one drink of alcohol; and the second item to how many days during the past 30 days the respondent has had 5 or more drinks of alcohol within a couple of hours.

The coding strategies employed for this scale are as follows. For both items, respondents are required to endorse one of seven choices (0 times; 1 or 2 times; 3 to 9 times; 10 to 19 times; 20 to 39 times; 40 to 99 times; 100 times or more). Similar to the Propensity for Suicide scale, responses are coded such that the higher the number endorsed, the higher the points awarded (e.g., 0 times scoring 1 point, 1 or 2 times scoring 2 points, 3 to 9 points scoring 3 points, etc.). Again, the higher the total score, the more the person engages in the particular behavior (i.e., drinking alcohol). The minimum score that can be obtained on this scale is 2, the maximum score 14.

### Emotional Stress and Depression (ESD) Scale

Appendix C contains the six items that comprise this scale. This scale employs the Minnesota AHS project's definition and items as a model (Minnesota Adolescent Health Database Project, 1988). The Minnesota scale, however, was based on 17 items, whereas the present scale includes 6 of those 17 items. This was solely due to the fact that the present database did not include the other 11 items that the Minnesota project did. The summary statistics for the 17 items scale were as follows:  $M = 27.58$ ,  $SD = 11.88$ ,  $Mdn = 27$ , Range = 0 to 72, and Missing = 2272 (17.6%). Chronbach's alpha was .87 for 7th grade males, .90 for 7th grade females, .88 for 12th grade males, and .90 for 12th grade females.

Similar to the other scales mentioned, items in this scale are also scored in a Likert manner and summed. Again, lower numbers denote less of the particular behavior, higher numbers more of the particular behavior. The six items that comprise this scale include questions about *general mood* (i.e., 1. How have you been feeling in general?, 2. Have you felt sad...?), *physical symptomology* (i.e., 3. Have you been bothered by bodily

illnesses....?, 4. Have you been waking up fresh and rested...?), and *strain and stress* (i.e., 5. Have you felt you were under any emotional stress, strain or pressure...?, 6. Have you been bothered by nervousness...?).

For the two general mood items respondents are asked to endorse one of five choices. For the first item, the choices include: in an excellent mood; in a very good mood; my moods have been up and down a lot; in a bad mood; and, in a very bad mood. For the second item, the choices are: extremely so, to the point I could not deal with things; quite a bit; some, enough to bother me; a little; and, not at all.

The physical symptomology items response choices also consist of five choices. For Item 3 (i.e., bodily illness), response choices are: all the time; most of the time; some of the time; a little of the time; and none of the time. For Item 4 (i.e., fresh and rested), the response choices are: every day; most every day; less than half the time; rarely; and, none of the time.

Response choices for Item 5 (i.e., emotional stress) are: yes, almost more than I could take; yes, quite a bit of pressure; yes, some/more than usual; yes, a little/about usual; and not at all. For item 6 (i.e., nervousness), response choices are: extremely so, to the point I could not do my work or deal with things; quite a bit; some, enough to bother me; a little; and not at all.

The coding and scoring strategies employed for this scale are based on, and similar to, the same strategies of the previously mentioned scales. Briefly, the more the respondent endorses the particular behavior(s), the more points awarded. For each of the six items, the first response earns 1 point. As the respondent moves one step down the continuum (i.e., more of the behavior is being endorsed than the previous choice), one additional point is added. As such, the minimum score that can be obtained in this scale is 6, the maximum score 30.

### The Abuse Scale

Two items comprise this variable (see Appendix D): "(1) Have you ever been physically abused or mistreated by anyone in your family or by anyone else? and, (2),

Have you ever been sexually abused?" The sexual abuse item was defined as "when someone in your family, or someone else touches you in a place you did not want to be touched, or does something to you sexually that you did not want." For both items, respondents were asked to endorse either yes or no. One point is allocated for each no answer, and two points for each yes. Again, the justification behind the point allocation, is that the higher number, the more the particular behavior is endorsed. The minimum score that can be on this variable is 2, and the maximum score is 4. A score of two would mean that the respondent has reported that she or he has never been physically or sexually abused, whereas a score of 3 would indicate that the respondent reported she or he has been either physically or sexually abused, and a score of 4 that the respondent has reported she or he has been both physically and sexually abused, as defined by this variable.

#### The Parental Support Scale

Appendix E contains the 7 items that comprise this scale. This scale was constructed in order to provide an indication of the degree of support the respondent perceives to be getting from his/her parents. Two of these items pertain to home life (1. I have a happy home life; 2. There are times when I would like to leave home) and five questions to the respondent's relationship with their parent(s) (e.g., 3. My parents trust me, 4. My parents expect too much of me). Within this scale, five items are stated in an affirmative way (i.e., my parents trust me), while two items are stated in an inverse manner (i.e., I have a lot of arguments with my parents). For each question respondents are asked to endorse one of three choices: yes, no, or don't know. For affirmative questions, yes responses earn 3 points, don't know responses 2 points, and no responses 1 point. For inverse questions, yes responses earn 1 point, don't know 2 points, and no responses 3 points. The minimum score that can be obtained on this scale given the scoring criteria is 7, which would denote minimal parental support; the maximum score that can be obtained is 21, which would denote ultimate parental support.



### Self Appraisal Scale

Appendix F contains the three items that comprise this scale. For each item, respondents are asked to endorse a yes, no, or don't know response with regard to questions about self perception. One question is stated affirmatively (i.e., 1. I like myself), and two questions are stated negatively (i.e., 2. I often wish I were someone else, 3. I would change how I looked if I could). Each affirmatively asked yes and inversely asked no response earns three points, whereas each affirmatively asked no and inversely asked yes response earns one point. All don't know responses earn two points. The minimum score than can be obtained on this scale is 3 (denoting low self appraisal) and the maximum score 9 (denoting high self-appraisal).

### Individual Items

The individual items that will be examined in the present study are as follows.

#### Parental Employment Item

Although not defined as a scale, this individual item was constructed from two items, one item pertaining to the respondent's s father's employment status, and one item pertaining to the respondent's mother's employment status, in order to provide an indication of the average employment status of the respondent's parent(s). If the respondent provided data for the employment status of both parents on this item, the results were combined and averaged. If the respondent provided employment status for one parent only, then that particular response was used. The scoring of this variable was as follows: responses of unemployed permanently (disabled or retired), househusband, or full-time homemaker earned 1 point, responses of intermittently employed earned 2 points, responses of seasonably employed earned 3 points, and responses of permanently employed earned 4 points.

#### Drug Use Item, Marijuana

This single item asks how many times the respondent has used marijuana during the past 30 days. Respondents are asked to endorse one of seven choices (0 times; 1 or 2 times; 3 to 9 times; 10 to 19 times; 20 to 39 times; 40 to 99 times; 100 times or more).

For each of those choices, the higher the number endorsed, the higher the points awarded (i.e., 0 times scores 1 point, 1 or 2 times scores 2 points, 3 to 9 times scores 3 points, etc.). As such, the minimum score that can be obtained on this item is one, the maximum score is 7.

#### Drug Use Item, Cocaine

This single item asks how many times the respondent has used any form of cocaine during the past 30 days. Respondents are asked to endorse one of six choices (0 times; 1 or 2 times; 3 to 9 times; 10 to 19 times; 20 to 39 times; 40 or more times). For each of those choices, the higher the number endorsed, the higher the points awarded (i.e., 0 times scores 1 point, 1 or 2 times scores 2 points, 3 to 9 times scores 3 points, etc.). As such, the minimum score that can be obtained on this item is one, the maximum score is 6. Obviously, the lower the score the lower the drug use, and the higher the score, the higher the drug use.

This item was originally proposed to be combined with the marijuana use item, to comprise an illicit drug use scale; however, statistical analyses found these two variables to be very separate entities. Consequently, they will be examined separately.

#### Health Item

The variable comprises a single item: "in general, how would you describe your health?" For this item respondents respond on a 4-point Likert scale, with choices that include excellent, good, fair, and poor, that are scored as 4 points, 3 points, 2 points, and 1 point, respectively.

Initially, this item was proposed to be combined with two other items to form a 3-item health scale variable. Preliminary statistical analyses of the three items, however, indicated that this variable is the single best indicator of health status. The other two items that were initially considered for this scale were "Do you have a physical condition or health problem that limits the amount of time you spend in school each day?", and another item that contained a conglomerate of 24 illnesses/conditions (i.e., diabetes, epilepsy) to which the respondents are asked to endorse no, yes, or yes, limits me to each

of the illnesses.

### Sexually Active Item

This variable consists of one question: "Have you ever had sexual intercourse ("gone all the way")? Respondents endorse either yes (2 points) or no (1 point).

### Pregnancy Item

This variable also consists of one item; specifically, "How many times have you been pregnant or gotten someone pregnant?" The response choices are: 0 times, 1 time, 2 or more times, and not sure. Not sure responses were coded as 0 points, 0 times as 1 point, 1 time as 2 points, and 2 or more times as 3 points.

### School Enjoyment Item

This single item pertains to the respondent's perception of school (i.e., How do you feel about going to school?). Response choices include hate school (scored as 1 point), don't like school very much (2 points), like school some (3 points), like school quite a bit (4 points), and like school very much (5 points). With regard to the scoring of the item, more points are awarded the more the respondent endorses the particular behavior; in this case, enjoyment of school. The minimum score that can be obtained on this item is 1 (i.e., low school enjoyment), the maximum score 5 (high school enjoyment).

This item was originally planned to be combined with four other items to form a 5-item school participation scale. However, preliminary data analyses revealed that the best indicator of school participation is the present item. The other items that were initially considered for this scale were items that pertain to whether the respondent has ever failed a grade, what kind of student the respondent perceives him or herself to be compared to peers, when the respondent expects to complete his or her education, and how often the respondent missed full days of school because he or she skipped or 'cut.'

### Work Item

The single item that makes up this variable pertains to the degree the respondent works at a part-time job. For this item, respondents have five choices from which to respond, that include: I don't work (scored as 1 point), 1-4 hours a week (2 points), 5-9

hours a week (3 points), 10-20 hours a week (4 points), and over 20 hours a week (5 points). The minimum score that can be obtained on this item is 1, the maximum score 5. In sum, the higher the score, the more hours per week the respondent works.

This item was initially going to be combined with two other variables into a 3-item extracurricular involvement scale; however, preliminary data analyses indicated the three items are distinct. The other two items pertained to sports team involvement within the school, and sports team involvement outside the school.

#### Extracurricular Sports Team Item

This single item asks: "During the past 12 months, on how many sports teams run by organizations outside of your school, did you play?" Respondents are asked to choose one of four responses that include none (1 point), 1 team (2 points), 2 teams (3 points), and 3 or more teams (4 points). Again, the higher the score the more teams the respondent participates. The minimum score that can be obtained on this item is 1, the maximum score 4.

#### Ethnicity Item

For the AHS item that read "To which ethnic or cultural group(s) do you belong, if any? (If necessary, mark more than one answer)," respondents were provided a choice of 20 responses (e.g., Chinese, Polish, East Indian, North American Indian). A respondent was considered First Nations if he or she endorsed the "North American Indian" response, or "other" ethnic or cultural group that was identified as "First Nations" or "Aboriginal." All other respondents were considered non-First Nations.

## Results

### Data Cleaning

Although the original AHS database comprised 15,549 adolescents (672 First Nations, 14,877 non-First Nations), the total number of cases used in this project was 13,946 (576 First Nations, 13,370 non-First Nations). This represents 86% and 90% of the total original First Nations and non-First Nations cases.

In all, 1,603 cases (10.31%) were dropped from the original database. First, six cases (0.04%) were excluded because no age or gender responses were endorsed. Second, 1,300 cases (8.4%) were excluded because they did not respond to two or more items relevant to the study, including 214 cases (1.38%) where there was no response on either of the parental employment items. Of these 14,243 remaining cases, an additional 297 cases (1.91%) of these were dropped if the one response the record was missing pertained to the “have you ever had sexual intercourse” item. This was solely because this was the most frequently non-endorsed item, representing about 2% of the total cases. For all other items the percentage of missing responses ranged from about 0.1 to 0.4% of the total cases. Rather than have this anomaly potentially confound the interpretation of the results, it was decided to drop these cases from all analyses.

To fill in the missing values in the database, referring to places where a particular case was missing one response only, the mean score was then inserted. If the case belonged to the First Nations group then the First Nations mean on that item was inserted, and if the case belonged to the non-First Nations group then the non-First Nations mean was inserted. As such, the final database of 13,946 cases contains a score for all items used in the present study. All analyses are therefore conducted with 13,946 complete records, which includes 576 First Nations cases and 13,370 non-First Nations cases.

### Characteristics of the sample

The mean age of the research participants was 15.04 ( $SD = 1.85$ ). The mean age of the First Nations adolescents was 15.31 ( $SD = 1.87$ ), whereas the mean age of the non-First Nations adolescents was 15.03 ( $SD = 1.84$ ) (See Table 3).

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Insert Table 3 about here

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There was roughly equal representation of males and females in the study. Overall, 48.3% ( $n = 6,729$ ) of the participants were male, and 51.7% ( $n = 7,217$ ) of the participants were female. Gender representation was also relatively equal by ethnicity, with 50% of the First Nations participants being male ( $n = 288$ ) and 50% being female ( $n = 288$ ). Similarly, 48.2% of the non-First Nations participants were male ( $n = 6,441$ ) and 51.8% ( $n = 6,929$ ) were female. Grades 7 through 12 were also roughly equally represented in the study. For the total sample, the breakdown was 15.5%, 15.6%, 16.9%, 16.7%, 16.9%, and 18.4%, for Grades 7, 8, 9, 10, 11, and 12, respectively. Representation was again similar across ethnicity. Table 4 outlines the breakdown of grade by ethnicity and gender.

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Insert Table 4 about here

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Table 5 outlines the breakdown of grade by ethnicity and gender of the database prior to data cleaning. As can be seen, the percentages remain remarkably similar.

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Insert Table 5 about here

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### **About the Statistics**

In studies with very large samples, statistical tests are typically uninformative. This is because as sample sizes increase, standard error decreases, which allows very small differences to produce statistically significant differences irrespective of its clinical meaningfulness. Examining the effect sizes, or magnitude of the effects, of these significant differences is the only way in which the meaningfulness of these results can be determined. Since the present study involves very large samples, all statistical results

are best interpreted in the context of the effect size, or  $\eta^2$ .

### Demographic Effects

In order to examine and account for any differences that could potentially be attributed to demographic effects, each item was subject to ANOVA to examine the main effects of region, school district, school, grade, and gender on the data. Interactions (e.g., region x school district) were not examined. The results of the main effect of the former three (i.e., region, school district, school) are presented in Table 6, the latter two (i.e., grade, gender) in Table 7. Bonferroni corrections to the .05 alpha was employed in order to avoid elevation of Type I errors commonly encountered when numerous multiple comparisons are done.

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Insert Table 6 about here

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In summary, the vast majority of the items within each of the main effects were statistically significant due to the large sample size; however, effect sizes ( $\eta^2$ ) were very small. For example,  $\eta^2$  for the main effects of region ranges from .001 to .031, with a mean  $\eta^2$  of .005, while  $\eta^2$  for main effects of school district ranges from .003 to .040 ( $M = .01$ ). The  $\eta^2$  associated with the main effects of school are also trivial, as they are for the main effects of grade and gender. As can be seen in Table 6, the  $\eta^2$  for the main effects of grade range from .000 to .080 ( $M = .04$ ), while the  $\eta^2$  for the main effects of gender range from .000 to .072 ( $M = .002$ ).

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Insert Table 7 about here

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In order to control for these demographic effects, despite their relative unimportance, all the mean effects due to these variables were removed from each item by using within group deviation scores. The main effects of ethnicity were not removed, given that examining ethnic differences was the major thrust of the present study. All ensuing data

analyses (e.g., regression analyses, correlations) were conducted with these deviation scores.

### Analyses of Scale Reliabilities

To determine and evaluate the integrity of each of the scales that were developed for the present study, latent variable analyses was performed with version 8.12a of LISREL (Joreskog & Sorbom, 1993). For each scale, a variance-covariance matrix of items proposed to belong to the same scale were submitted to a structural equation model, which used maximum likelihood estimates to provide such information as estimates of factor loadings, estimates of unique variance, and goodness-of-fit (GFI) indices (Joreskog & Sorbom, 1993). The GFIs provide an indication of how well the data fits the proposed model; in this case, how well the items fit the proposed scales. A GFI of 1.00 indicates a perfect fit of the data to the model, a GFI of 0.00 indicates no fit of the data to the model. Adjusted GFIs (AGFI) correct for the model's degrees of freedom. Reliability estimates were then calculated with the factor loading and unique variance, as outlined by McDonald (1985). For scales containing two items the reliability =  $k \cdot f^2 / k \cdot f^2 + u^2$ , where  $k$  denoted the number of items in the scale,  $f$  corresponded to the estimate of the factor loading ( $\lambda_x$ ), and  $u^2$  represented the estimate of the unique variance ( $\theta\delta$ ). For scales containing three or more items,  $u^2$  reflected an average of the unique estimates. The measurement model applied for scales with two items was Parallel, and Tau-Equivalent for scales with more than two items.

Definitions of scales developed for the present study, along with their GFIs, AGFIs, and reliability estimates, presented in Table 8, are as follows.

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Insert Table 8 about here

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Reliability estimates ranged from .62 to 1.00, the GFIs from .90 to 1.00, and the AGFIs from .81 to 1.00. The GFIs and AGFIs reveal that the items fit the proposed scales very well. This suggests that the scales developed for the study are



unidimensional and appropriate to use in further analyses.

### Statistics on Items and Scales.

Table 9 shows the Means, Standard Deviation, and  $\eta^2$  for the difference between the First Nations and non-First Nations Mean scores for all individual items and scales in the study.

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Insert Table 9 about here

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First Nations adolescents perceive themselves to have high parental support (e.g., mean of 15.7 on a 7-21 point scale), moderately high school enjoyment, self appraisal, and health appraisal, average emotional stress/depression, extracurricular involvement (e.g., sports and part-time employment), and low propensity for suicide, substance use, and abuse. Findings for non-First Nations youth are markedly similar. Even with Bonferroni corrections to the .05 alpha being employed in order to avoid elevation of Type I errors commonly encountered when numerous multiple comparisons are done, no meaningful differences were found even though nearly 40% of the comparison produced statistically significant differences. The very small effect sizes ( $\eta^2$ s) attached to these findings reflect primarily the enormity of the sample size.

Descriptive data analyses (e.g., frequencies) revealed that 12.8% of the First Nations youth indicated that they made at least one suicide attempt, compared to 6.5% of the non-First Nations youth. While the corresponding  $\chi^2(1, N = 13,946) = 36.005, p < .001$ , produced a practically non-existent  $\eta^2$  of .0026, this finding is quite meaningful, and will be discussed later in this paper. Of note is that 12.8% First Nations suicide attempt rate is reasonably similar to the 16.9% reported in Blum et al.'s (1992) study that surveyed 13,454 grade 7 through 12 American Indian-Alaska Native youth, and the 15% rate that Grossman et al. (1991) found in their large controlled study of Navajo adolescents.

### Research Question 1

Research Question 1 predicted that First Nation youth would exhibit higher rates of

suicide ideation (i.e., consider, plan), previous suicide attempts, and imminent suicide risk (propensity for suicide) than non-First Nations youth. The hypothesis was not supported in the present study.

Once again, there were no meaningful differences even though the predictions were supported statistically due to the largeness of the sample sizes (See Table 9). Associated effect sizes were very tiny. For example, for the first suicidal ideation item -- "consider",  $F(1,13944) = 25.21, p < .00125$ , the  $\eta^2$  was .0018. The findings were similar for the other items; specifically, the second suicidal ideation item "plan",  $F(1, 13944) = 28.50, p < .00125, \eta^2 = .0020$ ; the suicide attempt comparison,  $F(1, 13944) = 36.42, p < .0001, \eta^2 = .0026$ ; and overall suicide propensity score,  $F(1,13944) = 45.00, p < .05, \eta^2 = .0020$ .

### Research Question 2

Research Question 2 sought to determine what the strongest predictors of propensity for suicide attempts were among First Nations adolescents, and whether these predictors differ from predictors for non-First Nations youth.

For this question, and Research Question 3 which pertains to protective factors, a regression loading approach with BMDP was used to pare down the predictors from 16 to a smaller number, and then was followed by all possible subset regression. Regression loading is defined as each item's correlation with propensity for suicide, divided by the  $R$  from the regression analyses. This provides the correlation between the item and the predicted value of suicide based on the regression model. The higher the correlation, the more important the item is in contributing to the prediction. The reason for this process was two-fold; first, in order to provide a preliminary look at the data; and second, to render useful information which would then direct the ensuing decisions whether to include or not include each of the variables in further analyses based on how important the item is in contributing to the prediction. In the end, it was determined that the regression model that best explained the data was a 4-item model containing two risk and two protective factors regressed on propensity for suicide,  $F(4, 572) = 41.30, p < .0001$ . This produced an Adjusted  $R^2$  of .218659 ( $R^2$  of .224085), and a Mallows' CP of 4,

which is presented in Table 10.

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Insert Table 10 about here

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An indication of the potency of this model is reflected in the fact that this 4-item model accounted for only 3% less of the variance than was explained by the full model that contained all risk and protective factors and produced an Adjusted  $R^2$  of .248629 ( $R^2$  of .268196), and a Mallows' CP of 15.

The two strongest predictors (e.g., risk factors) of suicide propensity among First Nations adolescents from this 4-item model was emotional stress and depression (ESD) and abuse, in that order. Specifically, the Adjusted  $R^2$  for ESD alone was .139130,  $R^2 =$  .140625, while the Adjusted  $R^2$  of the abuse factor was .098290 ( $R^2 =$  .099856). Stated differently, ESD accounts for 13.9% of the variance alone, and abuse 9.8% alone. Together they account for 19.1%.

BMDP 9R analyses also indicated that the same 4-item model, with the same top two risk factors and same top two protective factors, was the best model that fit the non-First Nations data,  $F(4, 13366) = 893.07$ ,  $p < .0001$ . This produced an Adjusted  $R^2$  of .210663 ( $R^2 =$  .210889), and a Mallows' CP of 4 (see Table 11).

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Insert Table 11 about here

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The Adjusted  $R^2$  for ESD alone was .142820,  $R^2 =$  .140625, while the Adjusted  $R^2$  of the abuse factor was .086959 ( $R^2 =$  .099856). ESD accounted for 14.2% of the variance alone, while abuse accounted for approximately 8.7% alone, and together they accounted for 18.1% of the variance.

Again, given that all the other factors combined accounted for less than 3% of the variance in propensity for suicide, further discussion was not deemed necessary.

In summary, the top two predictors of propensity for suicide attempts in First Nations

youth were ESD and abuse, and these predictors did not differ from the top two predictors of propensity for suicide attempts among non-First Nations youth.

### Research Question 3

Research Question 3 sought to determine what the strongest predictors of protection from propensity for suicide attempts were for First Nations adolescents, and whether these factors differ from those for non-First Nations youth.

As previously reported, regression analysis indicated that the model that best fit both the First Nations and non-First Nations data were four-item models that included the same two risk factors and same two protective factors. The top two predictors of protection from propensity for suicide for both First Nations and non-First Nations youth were parental support and self appraisal, in that order.

In terms of the First Nations results (presented in Table 10), the Adjusted  $R^2$  for parental support was .122380 ( $R^2 = .123904$ ), and the Adjusted  $R^2$  for self appraisal .064941 ( $R^2 = .066564$ ). Parental support accounted for 12.2% of the variance, self appraisal for 6.5%, and together they accounted for 14.2% of the variance.

The non-First Nations data, presented in Table 11, shows that the Adjusted  $R^2$  of parental support was .104262 ( $R^2 = .104329$ ), and the Adjusted  $R^2$  for self appraisal .079455 ( $R^2 = .079524$ ). Parental support accounted for 10.4% of the variance, self appraisal for 8.0%, and combined for 13.5%.

Again, the relative contributions of the other protective factors on propensity for suicide attempts were not meaningful for either the First Nations or non-First Nations adolescents relative to the previously mentioned results, and are not discussed further.

### Research Question 4

Research Question 4 predicted that for First Nations adolescents, poor health will be associated with abuse, less school enjoyment, and substance use. These hypotheses were not supported in any meaningful way either. Although Pearson Product-Moment Correlations for each item with health were statistically significant due to the sample size, the  $\eta^2$  s were once again small, ranging from zero to two percent of the variance

accounted for. The correlations were small, ranging from -0.021 (Health and Marijuana Use) to 0.160 (Health and School Enjoyment). The same pattern held for the non-First Nations adolescents. Table 12 reports the Pearson Product-Moment Correlation matrix for the aforementioned variables for both First Nations and non-First Nations youth.

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Insert Table 12 about here

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## Discussion

This study is distinct in that it represents one of the first reported major investigations of risk and protective factors for propensity for suicide among British Columbia First Nations adolescents. For the most part, past research on maladaptive behavior among adolescents has been based on American samples and has not routinely identified ethnicity as an important factor. There is a growing body of research on risk factors for suicide among Canadian First Nations people per se, but very little exists with specific reference to both risk and protective factors among adolescents, other than that which is garnered from psychological autopsy studies.

The primary goals of the present study were to investigate whether First Nations adolescents show a higher propensity for suicide attempt than non-First Nations youth, and whether risk and protective factors for this propensity differ between First Nations and non-First Nations adolescents. In summary, First Nations adolescents did not show a higher meaningful propensity for suicide, as operationally defined and evaluated in the present study, than non-First Nations youth, nor were their risk and protective factors for propensity for suicide attempt different in any consequential way from those of non-First Nations youth.

The lack of meaningful differences between First Nations and Non-First Nations youth with regard to propensity for suicide attempt, and risk and protective factors for propensity for suicide, does not mean that all results obtained within the study were contrary to previous findings in the field. Rather, numerous trends frequently acknowledged by others were supported in this study. For example, the assumption that depression is associated with increased risk for suicidal behavior (e.g., Brent et al., 1988; Garland & Zigler, 1993; Shaffer, 1988; Shaffer & Gould, 1988; Spirito et al., 1989) was supported, as was the physical or sexual abuse and suicidality relationship (Blum et al., 1992; Grossman et al., 1991; Spirito et al., 1989). Additionally, the protective capacity of high self-esteem and self-efficacy, operationally defined in the present study as positive self appraisal, was also supported (Grossman et al., 1991; McCormick, under review;

Rae-Grant et al., 1989; Rutter, 1985; Werner, 1995), as was the positive protective quality of parental support (Garland & Zigler, 1993; Garmezy, 1991; Gribble et al., 1993; Rae-Grant et al., 1989). The association of suicidality and drug use was also found to be consistent with results reported by others (e.g., Garland & Zigler, 1993; Grossman et al., 1991; Shaffer, 1988; Shaffer & Gould, 1988), as was the association of poor health and abuse, lower school enjoyment, and more drug use (Blum et al., 1992).

With regard to the Hypothesis 1 that predicted that First Nations youth would show a higher propensity for suicide than non-First Nations youth, the hypothesis was not supported in a meaningful way. However, the 2:1 First Nations (12.8%) to non-First Nations (6.5%) ratio for suicide attempt is quite meaningful. This 12.8% prevalence of suicide attempts among First Nations youth was initially thought to be somewhat consistent with the prevalence found by other researchers studying American Indian youth (e.g., 16.9%, Blum et al., 1992; 15%, Grossman et al., 1991); however, our rates can be considered as a somewhat conservative estimate given that our sample included adolescents from public schools, and the American samples involved students from Indian Health Service schools. Implications of this finding will be discussed further in the policy implication section, which follows shortly.

With regard to Hypothesis 2 regarding the top risk factors for propensity for suicide attempt for First Nation youth, and whether these factors would differ from the top risk factors for non-First Nations youth, it was revealed that emotional stress and depression and abuse were the top risk factors for all (i.e., First Nations and non-First Nations) youth. Although emotional stress and depression and abuse are intuitive, if not expected factors, that are associated with propensity for suicide, it is nonetheless especially disconcerting for First Nations youth for a number of reasons, which will also be discussed in the policy implications section.

Referring to Hypothesis 3, that inquired what the top protective factors for propensity for suicide attempt among First Nations youth were and whether these factors would be different among non-First Nations adolescents, regression analyses revealed once again

that the two top factors (i.e., parental support, self appraisal) were similar between the groups. This is encouraging, and the contention that risk and protective factors can be interrelated makes sense here. For example, it seems logical that youth who feel supported by their parents would also tend to feel good about themselves. Taking it a step further, one could purport that youth who have a positive sense of self will be less likely to become depressed, and would therefore present as less of a risk for suicide. Also, since it is well known that a mental health problem (e.g., depression) can impede a student's ability to function in school, it follows that it can contribute to a person dropping out of school. The act of dropping out of school can then contribute to feelings of failure and hopelessness, which in turn can lead to the development, maintenance, or worsening of the mental health problem (e.g., depression), which in turn can contribute to increased propensity for suicide and other maladaptive behaviors (e.g., delinquency, substance abuse). Thus it can be seen how fostering positive self esteem in our young people could potentially have positive ramifications at multiple levels. The costs associated with not fostering positive senses of self in these young people is colossal; generally, low self-esteem and depression are potentially amenable to treatment, suicide is not.

Research Question 4, which revealed that poor health is associated with increased physical and sexual abuse, substance use, and decreased school enjoyment, is also an important finding, and is consistent with the finding reported by Blum et al. (1992). Research directed at determining whether poor health precedes these other problems, or these other problems precede poor health could add considerably to the existing literature.

Although these findings are certainly welcomed in view of the existing literature and statistics pertaining to suicide among First Nations people in general, and First Nations adolescents in particular, it is critically important to remember the context in which these data were collected. The sample included only adolescents who were in school at the time of the data collection. Survey participants consisted of only about 5% of the province's youth between 12 and 19 years of age. It would be interesting to know



whether different results would have been obtained had the sample been, or at least included, youth who were not in school (e.g., street kids, drop-outs), those who lived on reserve land as well as off reserve land, and those school-going youth who did not participate in the study for whatever reason (e.g., those who were absent from school the day the survey was being conducted in their particular classroom because they were suspended or expelled, those whose parents did not provide consent to have their child partake in the study, and those schools that chose not to participate in the study). It seems logical to speculate that if the present study were replicated with First Nations special population youth who are not in school (e.g., homeless youth, delinquent youth, drop-outs), the suicide attempt data would likely have been higher than what was found in this present sample of school-going youth. Future research that includes a diverse sample of First Nations youth may shed considerable light on my speculation that perhaps the physical presence of being in school is “protective” in itself. Blum et al. (1992) and Grossman et al. (1991) have made similar statements. It seems reasonable that young people who spend a fair portion of their waking hours in school and doing homework, spend less time on the streets and less time partaking in activities that could potentially lead to misadventure. In other words, it seems intuitive that youth who are emerged in the structured and disciplined atmosphere of school likely make more meaningful life choices (e.g., career) than those youth who are not involved in such a system.

### Policy Implications

The 2:1 (12.8:6.5%) Rate Ratio First Nations:non-First Nations prevalence of suicide attempts confirms once again that suicidality should remain a major policy concern among aboriginal youth. It is critically important to note that if the completion rate is higher among First Nations kids than non-First Nations kids, which is a common trend found, than our Rate Ratio may be greater than 2.00. The implication of this finding is that there is a need for more effective mental health interventions for at risk First Nations youth. The reality is that aboriginal people do not tend to utilize mainstream mental health services (Malchy et al., 1997; McCormick, under review), nor have adequate

resources available to them within their own communities. The fact that roughly 40% of B.C.'s First Nations peoples are aged 19 years and under adds further credence to the need for effective strategies for dealing with suicidality and associated ills in these youth. Generally, treatment programs designed specifically for First Nations youth who are depressed, have been abused, or are suicidal, are meager. Programs and/or services for the dually diagnosed (e.g., depressed and substance abusing) are even more scarce.

An obvious solution would be to develop and fund more programs designed by First Nations peoples for First Nations peoples, and ultimately staffed by First Nations peoples. At best, these are long-term goals. In the interim, given that a vast majority of First Nations youth attend school, one way to fill this void would be to initiate school-based programs that are, at minimum, geared towards mental health screening. These school-based programs could well integrate both school and community mental health services. For example, teachers could be trained to recognize and in effect screen those students who are at risk, and refer them to the school counselor. School counselors could then intervene, or refer at-risk students to community services. Given that community adolescent mental health budgets and/or resources are generally inadequate or limited, the role of school counselors can become more crucial. Peer counseling programs, parent-teacher initiatives, and adult education classes are other ways in which the schools can help teens themselves, parents, coaches, and the community at large to become more actively involved in the lives of these young people. Even simple initiatives like educating the public about symptoms and signs of depression, suicidality, and substance abuse can have a positive impact. Sex education could also be a prosperous initiative, given that considerably more First Nations youth in this study indicated they are sexually active than did non-First Nations youth. For parents/adults who are faced with some of the same challenges as the youth (e.g., depression, suicidality, substance abuse), independent initiatives could be developed for these adults in the hope that as they begin to feel better about themselves they will become more constructively involved in the lives of other people -- the youth of their immediate families, extended families, and

communities. Promoting healthy role models within these communities can help these youth develop values. Healthy people, whether they be adolescent, adult, or elder, can play a key role in any community development program in the teaching of life skills, self awareness, and personal growth. Initiatives developed and operated by each community for its own community would certainly ensure that resources are both available and accessible.

But these initiatives need not only be directed at issues pertaining to risk (c.g., depression, substance abuse) to be effective. The fact that positive self appraisal was protective in terms of propensity for suicide is an exciting finding. Keeping more First Nations kids in school who feel good about themselves, and who look forward to post-secondary education and their communities with visions of hope and commitment is a reward that is immeasurable. This is exponentially important given that First Nations youth tend to drop out of formal education more readily than mainstream youth. If the act of being in school is protective, then efforts directed towards those First Nations youth not in school would seem to be a priority.

It may be premature, however, to develop programs for prevention until it is demonstrated that factors predictive of parasuicide, as examined in the present study, also predict completed suicide. As the present study revealed that there were no differences in risk and protective factors for propensity for suicide attempt between the two groups, similar interventions could reasonably be applicable to all youth in the province, not necessarily just First Nations youth.

#### Advantages and Limitations

The major advantage of this project is that the AHS database includes adolescents from a wide array of regions, school districts, and schools province-wide. The sheer number of research participants, and that grades 7-12 and gender are relatively equally represented, is another obvious strength of this project. The fact that the data were obtained directly from the young people themselves also provided depth to the study, especially when this is viewed in the context that some researchers drew conclusions

about young people based on others' ratings of them (e.g., parents, teachers), and not directly from the adolescents themselves. Another advantage of this project was in the self-report presentation. Although corroborating data, such as that derived from medical records and the likes, may have brought further validity to the project, the anonymity of the self-report may have enabled youth to disclose things that they normally would not have disclosed had the process been more public.

An obvious limitation of this study is that the research participants in this study were not randomly selected. This points out a very important limitation pertaining to generalizability of the findings. Basically, the sample included only a portion of adolescents who were in school at the time of the data collection. A further drawback of the present study was that this project utilized a database that was originally designed to obtain general population statistics (e.g., descriptive) on a broad array of adolescent and health risk behaviors; and as such, the only measurement devices (e.g., scales) that were used for this study were ones that were created, in a post hoc fashion, specifically for this study. Although reliability estimates were found to be reasonably acceptable, little can be said about the construct validity of the scales, for example. As such, there was no way of measuring whether similar findings would have been obtained had different more refined assessment instruments been used. On the other hand, because it appeared essentially impossible to create a standardized measure for resiliency, advances in the field can nonetheless be achieved by continuing to examine risk and protective factors as they pertain to all maladaptive behaviors. Basically, we must know what places people at risk before we can put into place mechanisms that prevent people from becoming at risk in the first place.

### Closing Comments

The study indicates, overall, that the vast majority of British Columbia First Nations youth are happy and healthy, both physically and emotionally. However, for 12.8% of First Nations youth, and 6.5 % of non-First Nation youth, who present as at-risk, there are some mental health needs of young people that need to be accommodated. If we are to be

successful in eradicating or lowering the suicide rate among young people, especially among first Nations youth, a comprehensive integrated system involving the schools, families, and community mental health services must be put in place.

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### Authors Notes

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Table 1

**Risk and protective factors for psychopathology, general literature**

	<b>Risk Factors</b>	<b>Protective Factors</b>
<b>Within the Child</b>	temperamental characteristics chronic physical handicap/illness attachment problems age gender	temperamental characteristics age gender intelligence school/social competence
<b>Within the Parent</b>	parental psychopathology maternal adjustment parental criminal behaviour marital discord	supportive parenting style supportive parenting environment parental self-efficacy sound discipline practices
<b>Within the Family</b>	chronic poverty divorce familial discord violence lower SES homelessness	extrafamilial peer and adult support positive identification models familial harmony

Table 2

Kappas and prevalence rates for 1,679 adolescents from five selected states, Youth Risk Behavior Survey, 1992.

Item	Kappas (%)	Prevalence time 1* (%)	Prevalence time 2* (%)
<b>Unintentional and Intentional Injury Behaviors</b>			
Considered suicide in the past 12 months	83.8	25.3	24.5
Planned suicide during the past 12 months	77.0	15.6	16.8
Had ( 1 suicide attempt during	76.4	7.2	7.1
Had injurious suicide attempt during the past 12 months	60.2	1.4	2.0
<b>Tobacco use</b>			
Ever used cigarettes	83.8	71.5	72.0
Ever smoked cigarettes regularly	86.8	14.4	15.7
Smoked ( 1 cigarette during the past 30 days	76.2	16.3	16.1
<b>Alcohol and other drug use</b>			
Ever used alcohol	86.0	77.5	74.5
Used alcohol during the past 30 days	67.8	45.5	42.5
Ever used marijuana	87.5	18.8	19.7
Used marijuana during the past 30 days	70.8	7.6	8.7
Ever used cocaine	72.5	4.0	5.8
Used cocaine during the past 30 days	36.1	1.4	3.4
<b>Sexual behaviors</b>			
Ever had sexual intercourse	86.9	49.4	53.6
Has been pregnant ( 1 time during lifetime	71.0	4.9	6.6
<b>Physical activity</b>			
Played on school sports team	69.3	37.1	36.1
Played on school sports team	64.2	32.7	31.9

\* None of the differences between time 1 and time 2 were significant

Table 3

Age Breakdown by Ethnicity

Age	First Nations		non-First Nations		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
12	31	5.4	1286	9.6	1317	9.4
13	84	14.6	2038	15.2	2122	15.2
14	92	16.0	2204	16.5	2296	16.5
15	113	19.6	2161	16.2	2274	16.3
16	90	15.6	2249	16.8	2339	16.8
17	83	14.4	2202	16.5	2285	16.4
18	57	9.9	1030	7.7	1087	7.8
19	26	4.5	200	1.5	226	1.6



Table 4

**Grade and Gender Breakdown by Ethnicity (13,496)**

		<u>First Nations</u>		<u>non-First Nations</u>		<u>Total</u>	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Grade 7	Male	45	52.3	1042	50.2	1087	50.3
	Female	41	47.7	1034	49.8	1075	49.7
	Total	86	100.0	2076	100.0	2082	100.0
Grade 8	Male	44	51.8	974	46.6	1018	46.8
	Female	41	48.2	1116	53.4	1157	53.2
	Total	85	100.0	2090	100.0	2175	100.0
Grade 9	Male	50	46.3	1071	47.5	1121	47.5
	Female	58	53.7	1183	52.5	1241	52.5
	Total	108	100.0	2254	100.00	2362	100.0
Grade 10	Male	50	46.7	1101	49.5	1151	49.4
	Female	57	53.3	1123	50.5	1180	50.6
	Total	107	100.0	2224	100.0	2331	100.0
Grade 11	Male	57	61.3	1102	48.8	1159	49.3
	Female	36	38.7	1155	51.2	1191	50.7
	Total	93	100.0	2257	100.0	2350	100.0
Grade 12	Male	42	43.3	1151	46.6	1193	46.5
	Female	55	56.7	1318	53.4	1373	53.5
	Total	97	100.0	2469	100.0	2566	100.0

Table 5

Grade and Gender Breakdown by Ethnicity (15,309)\*

		<u>First Nations</u>		<u>non-First Nations</u>	
		<i>f</i>	%	<i>f</i>	%
Grade 7	Male	64	55.7	1227	51.0
	Female	51	44.3	1117	49.0
	Total	115	100.0	2344	100.0
Grade 8	Male	52	51.8	1104	47.5
	Female	49	48.2	1221	52.5
	Total	101	100.0	2325	100.0
Grade 9	Male	62	50.0	1207	48.6
	Female	62	50.0	1275	51.4
	Total	124	100.0	2482	100.00
Grade 10	Male	57	46.3	1213	50.4
	Female	66	53.7	1196	49.6
	Total	123	100.0	2409	100.0
Grade 11	Male	61	59.8	1208	49.9
	Female	41	40.2	1215	50.1
	Total	102	100.0	2423	100.0
Grade 12	Male	48	44.9	1235	47.6
	Female	59	55.1	1359	52.4
	Total	107	100.0	2594	100.0

\* NOTE: 240 cases did not endorse the ethnicity item

Table 6

Main Effects of Region, School District and School for each item

Item	<u>Region</u>		<u>School District</u>		<u>School</u>	
	F-Ratio	$\eta^2$	F-Ratio	$\eta^2$	F-Ratio	$\eta^2$
Abuse, physical	6.112*	.003	1.688	.000	1.746*	.021
Abuse, sexual	10.875*	.005	2.998*	.010	2.260*	.028
Alcohol, 1 drink/day	62.826*	.031	12.322*	.043	10.118*	.113
Alcohol, 5 drinks/day	48.104*	.024	9.971*	.033	8.552*	.097
Drugs, cocaine	3.745*	.002	1.929*	.006	1.294	.000
Drugs, marijuana	15.956*	.008	5.257*	.017	2.130*	.026
Employment, father	4.510*	.002	3.598*	.012	7.260*	.084
Employment, mother	8.125*	.004	3.040*	.010	1.890*	.023
Parental Support, arguments	0.830	.000	.995*	.003	1.242	.000
Parental Support, expect too much	10.303*	.005	2.714*	.009	2.009*	.025
Parental Support, happy home life	5.492*	.003	1.495*	.005	1.391*	.017
Parental Support, like to leave	13.644*	.007	3.053*	.010	2.580*	.031
Parental Support, think of me	4.513*	.002	1.201	.000	1.202	.000
Parental Support, trust me	4.504*	.001	1.751	.000	1.595*	.020
Parental Support, understand me	2.175	.000	1.402	.000	1.901*	.023
Propensity for Suicide, attempt	5.698*	.003	1.991*	.007	1.469*	.018
Propensity for Suicide, consider	8.731*	.004	2.718*	.009	1.944*	.024
Propensity for Suicide, plan	5.565*	.004	2.458*	.008	1.883*	.023
Propensity for Suicide, injury	6.064*	.003	1.841*	.006	1.403*	.017
School Enjoyment	27.892*	.014	5.687*	.019	3.789*	.046
Self Appraisal, I like myself	2.966	.000	1.488	.000	1.193*	.015
Self Appraisal, I often wish	2.830	.000	1.550	.000	1.688*	.021
Self Appraisal, I would change	4.066*	.002	1.789*	.006	1.378*	.017
Sex, intercourse	2.154	.000	1.643	.000	1.174	.000
Sex, pregnancy	8.617*	.004	2.651*	.009	1.489*	.018
Sports participation	3.816*	.002	1.724	.000	1.259	.000
Stress/Depression, feeling	4.065*	.002	1.629	.000	1.843*	.023
Stress/Depression, hopeless	4.803*	.002	1.935*	.007	2.078*	.025
Stress/Depression, illness	3.926*	.002	1.967*	.007	1.764*	.022
Stress/Depression, nerves	4.118*	.002	1.743*	.006	2.271*	.028
Stress/Depression, rested	7.139*	.004	2.455*	.008	3.549*	.043
Stress/Depression, strain	11.937*	.006	4.020*	.013	7.215*	.083
Work	3.930*	.002	2.049*	.007	1.359*	.017

\* p&lt;.00125

Table 7

Main Effects of Grade and Gender for each item

Item	<u>Grade</u>		<u>Gender</u>	
	F-Ratio	$\eta^2$	F-Ratio	$\eta^2$
Abuse, physical	14.908*	.005	223.368*	.016
Abuse, sexual	25.643*	.009	1085.350*	.072
Alcohol, 1 drink/day	243.332*	.080	25.321*	.002
Alcohol, 5 drinks/day	216.005*	.072	45.851*	.003
Drugs, cocaine	4.006*	.001	38.885*	.003
Drugs, marijuana	80.009*	.001	61.305*	.004
Employment, father	2.755	.000	2.993	.000
Employment, mother	.681	.000	27.791*	.002
Parental Support, arguments	10.521*	.004	33.768*	.002
Parental Support, expect too much	18.607*	.007	7.518	.000
Parental Support, happy home life	5.783*	.002	120.413*	.009
Parental Support, like to leave	34.326*	.012	148.815*	.011
Parental Support, think of me	6.494*	.002	.007	.000
Parental Support, trust me	17.071*	.005	36.443*	.003
Parental Support, understand me	27.469*	.010	165.005*	.012
Propensity for Suicide, attempt	8.982*	.003	104.215*	.007
Propensity for Suicide, consider	13.003*	.005	273.900*	.019
Propensity for Suicide, plan	15.819*	.006	152.162*	.011
Propensity for Suicide, injury	7.018*	.003	86.565*	.006
School Enjoyment	28.167*	.010	91.040*	.006
Self Appraisal, I like myself	6.991*	.003	545.646*	.038
Self Appraisal, I often wish	26.330*	.009	574.904*	.040
Self Appraisal, I would change	14.508*	.005	793.682*	.054
Sex, intercourse	2.591	.000	8.838	.000
Sex, pregnancy	20.619*	.007	.873	.000
Sports participation	2.811	.000	118.883*	.008
Stress/Depression, feeling	17.270*	.006	399.277*	.028
Stress/Depression, hopeless	14.579*	.005	693.042*	.047
Stress/Depression, illness	17.011*	.006	384.572*	.027
Stress/Depression, nerves	48.816*	.017	591.314*	.041
Stress/Depression, rested	83.511*	.029	143.009*	.010
Stress/Depression, strain	280.536*	.091	291.383*	.020
Work	7.723*	.003	32.462*	.002

\*  $p < .00125$

Table 8

**Measures of Scale Integrity**

<b><u>Scale</u></b>	<b><u>Reliability</u></b>	<b><u>Items in Scale</u></b>	<b><u>Measurement Model Applied</u></b>	<b><u>GFI</u></b>	<b><u>AGFI</u></b>
Abuse Scale	.63	2	Parallel	.98	.93
Alcohol Use Scale	.89	2	Parallel	1.00	1.00
Parental Support Scale	.81	4	Tau	.97	.95
Propensity for Suicide Scale	.80	4	Tau	.90	.81
Self Appraisal Scale	.62	3	Tau	.96	.87
Stress/Depression Scale	.70	6	Tau	.92	.87

Table 9

Mean Score Comparisons: Individual Items and Scales

Variable	FN M (SD)	NFN M (SD)	Eta <sup>2</sup> For Differences
Abuse Scale	2.5130 (0.7461)	2.3123 (0.6062)	.0042*
• physical abuse	1.2958 (0.4562)	1.1838 (0.3971)	.0032*
• sexual abuse	1.2172 (0.4125)	1.1285 (0.3345)	.0027*
Alcohol Use Scale	4.1358 (2.6961)	3.4461 (2.2862)	.0035*
• 1 drink/day	2.1375 (1.3450)	1.8384 (1.2042)	.0024*
• 5 drinks/day	1.9983 (1.4750)	1.6077 (1.2053)	.0041*
Drugs, Cocaine	1.0504 (0.3376)	1.0368 (0.3124)	.0001
Drugs, Marijuana	1.5278 (1.1356)	1.2720 (0.8077)	.0038*
Health Appraisal	3.0816 (0.7635)	3.1818 (0.7088)	.0008*
Parental Employment	3.1997 (0.9251)	3.3794 (0.8201)	.0019
Parental Support Scale	15.7688 (4.2522)	16.2284 (4.1211)	.0005
• understand me	2.2118 (0.8828)	2.2127 (0.8902)	.0000
• think of me	2.5590 (0.7712)	2.5619 (0.7601)	.0000
• like to leave	1.7810 (0.9622)	1.9248 (0.9721)	.0009
• expect too much	2.2083 (0.9427)	2.2215 (0.9319)	.0000
• happy home life	2.3542 (0.8524)	2.5127 (0.7790)	.0016*
• trust me	2.4480 (0.8086)	2.5157 (0.7759)	.0003
• arguments	2.2066 (0.9550)	2.2791 (0.9231)	.0002
School Enjoyment	3.0104 (0.9250)	3.0993 (0.9676)	.0003
Self Appraisal Scale	6.7105 (2.2149)	6.8529 (2.1386)	.0002
• like myself	2.5984 (0.7201)	2.6563 (0.6582)	.0003
• wish	2.2371 (0.9397)	2.2910 (0.9234)	.0001
• change	1.8750 (0.9628)	1.9056 (0.9542)	.0000
Sex, Intercourse	1.5174 (0.3692)	1.3257 (0.2985)	.0009
Sex, Pregnant	1.0573 (0.2053)	1.0260 (0.1897)	.0001
Sports Team Participation	2.7135 (0.5336)	2.7243 (0.5533)	.0000
Stress/Depression Scale	15.2136 (4.4955)	14.7365 (4.3843)	.0005
• feeling	2.5087 (0.7271)	2.4965 (0.7205)	.0000
• strain	2.9618 (1.2533)	2.9752 (1.2295)	.0000
• rested	3.1615 (1.1065)	3.1011 (1.0836)	.0001
• illness	2.0868 (1.0547)	1.9763 (1.0299)	.0005
• nerves	2.1407 (1.1539)	2.0499 (1.0794)	.0003
• hopeless	2.3542 (1.3053)	2.1375 (1.2695)	.0011*
Suicidal Propensity	4.9117 (0.4083)	4.5575 (0.3808)	.0030
• consider	1.2396 (0.4272)	1.1606 (0.3670)	.0018*
• plan	1.2173 (0.4125)	1.1382 (0.3451)	.0020*
• attempt	1.2344 (0.7167)	1.1091 (0.4754)	.0026*
• injury	1.2205 (0.4917)	1.1344 (0.3932)	.0019*
Work	2.8870 (0.3768)	2.9267 (0.3095)	.0006

\* p&lt;.00125

Table 10

**Regression Results: First Nations Adolescents**

	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>CP Mallow</b>	<b>Variable(s)</b>
<b>1 predictor</b>				
	0.140625	0.139130	59.53	ESD
	0.123904	0.122380	71.85	Parental Support
	0.099856	0.098290	89.58	Abuse
	0.066564	0.064941	114.12	Self Appraisal
<b>2 predictors</b>				
	0.193763	0.190954	22.35	Abuse+ESD
	0.185909	0.183072	28.14	Parental Support+ESD
	0.169851	0.166958	39.98	Abuse+Parental Support
	0.157012	0.154075	49.45	Self Appraisal+ ESD
	0.144795	0.141815	58.45	Self Appraisal+Parental Support
	0.137729	0.134725	63.66	Abuse+Self Appraisal
<b>3 predictors</b>				
	0.219680	0.215594	5.25	Abuse+Parental Support+ESD
	0.203236	0.199064	17.37	Abuse+Self Appraisal+ESD
	0.192626	0.188399	25.19	Self Appraisal+Parental Support+ESD
	0.184351	0.180081	31.29	Abuse+Self Appraisal+Parental Support
<b>4 predictors</b>				
	0.224085	0.218659	4.00	Abuse+Self App.+Parental Support+ESD

**Statistics for 'best' subset**

Mallows' CP	4.00
Squared Multiple Correlation	0.22409
Multiple Correlation	0.47338
Adjusted Squared Mult. Corr.	0.21866
Residual Mean Square	0.779984
Standard Error of Est.	0.883167
F-statistic	41.30
Numerator Degrees of Freedom	4
Denominator Degrees of Freedom	572
Significance (tail prob.)	0.0000

Table 11

**Regression Results: Non-First Nations Adolescents**

	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>CP Mallow</b>	<b>Variable(s)</b>
<b>1 predictor</b>				
	0.142884	0.142820	1150.06	ESD
	0.104329	0.104262	1803.12	Parental Support
	0.087025	0.086957	2096.22	Abuse
	0.079524	0.079455	2223.27	Self Appraisal
<b>2 predictors</b>				
	0.181578	0.181456	496.66	Abuse+ESD
	0.175285	0.175162	603.25	Parental Support+ESD
	0.160949	0.160824	846.07	Self Appraisal+ESd
	0.149618	0.149491	1038.00	Abuse+Parental Support
	0.140226	0.140097	1197.09	Abuse+Self Appraisal
	0.135303	0.135173	1280.48	Self Appraisal+Parental Support
<b>3 predictors</b>				
	0.202861	0.202682	138.16	Abuse+Parental Support+ESD
	0.195786	0.195606	257.99	Abuse+Self Appraisal+ESD
	0.184498	0.184315	449.20	Self Appraisal+Parental Support+ESD
	0.174084	0.173898	625.60	Abuse+Self Appraisal+Parental Support
<b>4 predictors</b>				
	0.210899	0.210663	4.00	Abuse+Self App.+Parental Support+ESD
<b>Statistics for 'best' subset</b>				
Mallows' CP			4.00	
Squared Multiple Correlation			0.21090	
Multiple Correlation			0.45924	
Adjusted Squared Mult. Corr.			0.21066	
Residual Mean Square			0.789278	
Standard Error of Est.			0.888413	
F-statistic			893.07	
Numerator Degrees of Freedom			4	
Denominator Degrees of Freedom			13366	
Significance (tail prob.)			0.0000	



Table 12

Correlations of Health with Abuse, School Enjoyment, and Substance Use Variables

	Health Appraisal	Abuse	Likes School	Alcohol Use	Marijuana Use	Cocaine Use
Health	1.000	-0.154	0.160	-0.086	-0.021	-0.038
Abuse		1.000	-0.106	0.140	0.122	0.003
Likes School			1.000	-0.233	-0.230	-0.099
Alcohol Use				1.000	0.500	0.195
Marijuana Use					1.000	0.395
Cocaine Use						1.000

## Appendix A

### Propensity for Suicide Scale

The propensity for suicide scale is comprised of the following items:

1. During the past 12 months, did you ever seriously consider attempting suicide?
  - Yes
  - No
  
2. During the past 12 months, did you make a plan about how you would attempt suicide?
  - Yes
  - No
  
3. During the past 12 months, how many times did you actually attempt suicide?
  - 0 times
  - 1 time
  - 2 or 3 times
  - 4 or 5 times
  - 6 or more times
  
4. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning or overdose that had to be treated by a doctor or nurse?
  - I did not attempt suicide during the past 12 months
  - Yes
  - No

## Appendix B

### Alcohol Use Scale

The alcohol use scale is comprised of the following items:

1. During the past 30 days, on how many days have you had at least one drink of alcohol?

- 0 times
- 1 or 2 times
- 3 to 9 times
- 10 to 19 times
- 20 to 39 times
- 40 to 99 times
- 100 times or more

2. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?

- 0 times
- 1 or 2 times
- 3 to 9 times
- 10 to 19 times
- 20 to 39 times
- 40 to 99 times
- 100 times or more

## Appendix C

### Emotional Stress and Depression (ESD) Scale

The ESD scale is comprised of the following items:

1. How have you been feeling in general (during the last month)?
  - In an excellent mood
  - In a very good mood
  - My moods have been up and down a lot
  - In a bad mood
  - In a very bad mood
  
2. Have you felt so sad, discouraged, hopeless, or had so many problems that you wondered if anything was worthwhile during the past month?
  - Extremely so, to the point I couldn't do my work or deal with things
  - Quite a bit
  - Some, enough to bother me
  - A little
  - Not at all
  
3. Have you been bothered by any bodily illness, bodily disorder, pains or fears about your health during the past month?
  - All of the time
  - Most of the time
  - Some of the time
  - A little of the time
  - None of the time
  
4. Have you been waking up fresh and rested during the past month?
  - Every day
  - Most every day
  - Less than half the time
  - Rarely
  - None of the time
  
5. Have you felt you were under any emotional strain, stress, or pressure during the past month?
  - Yes, almost more than I could take
  - Yes, quite a bit of pressure
  - Yes, some/more than usual
  - Yes, a little/about usual
  - Not at all
  
6. Have you been bothered by nervousness or 'nerves' during the past month?
  - Extremely so, to the point I couldn't do my work or deal with things.
  - Quite a bit
  - Some, enough to bother me
  - A little
  - Not at all

## Appendix D

The Abuse Scale

The items that comprise this scale are as follows:

1. Have you ever been physically abused or mistreated by anyone in your family or by anyone else?
  - Yes
  - No
  
2. Have you ever been sexually abused? Sexual abuse is when someone in your family, or someone else, touches you in a place you did not want to be touched, or does something to you sexually which you did not want.
  - Yes
  - No

## Appendix E

The Parental Support Scale

The items that comprise this scale are as follows:

	Yes	No	Don't Know
1. I have a happy home life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. There are times when I would like to leave home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. My parents trust me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. My parents expect too much of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I have a lot of arguments with my parents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. My parents understand me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. What my parents think of me is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix F

The Self Appraisal Scale

The following items comprise this scale:

	Yes	No	Don't Know
1. I like myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I often wish I were someone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I would change how I look if I could	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix G

The risk and protective factors, as defined and classified by the present study, are as follows:

### Risk Factors

Abuse  
Alcohol Use  
Drug Use, Cocaine  
Drug Use, Marijuana  
Emotional Stress and Depression  
Parental Employment Status  
Sex, Intercourse  
Sex, Pregnancy

### Protective Factors

Health Status  
Parental Support  
School Enjoyment  
Self Appraisal  
Sports Involvement  
Work/Employment