

**THE RELATIONSHIP BETWEEN RESIDENTIAL SCHOOL
ATTENDANCE AND HEALTH STATUS IN LATER LIFE AMONG
FIRST NATION ELDERS IN B.C.**

by

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The Relationship Between Residential School Attendance and Health Status in Later Life Among First Nation Elders in B.C.

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ABSTRACT

This project provides an exploratory examination of the relationship between residential school attendance and health status in later life among First Nation Elders in B.C. The sample population (n = 539) was obtained from regional data collected during the First Nation and Inuit Regional Health Survey in 1997. It is hypothesized that attendance at a residential school will result in negative health outcomes in later life. In addition, a further hypothesis is that there will be familial effects of attendance at the residential school system.

To date, most research into the impact of residential school experiences have been of a qualitative nature that focuses primarily on the inter-generational, psycho-social effects of the system. This project is an attempt to fill in the existing gaps in the literature, specifically in relation to the quantitative perspective. A theoretical framework, which draws upon aspects from the Life Course Theory and Population Health perspective, is used to examine the relationship between residential school attendance and health status in later life.

In order to test the two hypotheses, five main dependent variables are investigated in the analyses. They are "tuberculosis", "high blood pressure", "heart problems", "perceived health", and an additive "illness scale". Four residential school variables were used in the analyses: "did you attend", "years attended", "brother attended" and "sister attended" along with five socio-demographic covariates. A bivariate analysis was conducted with the five dependent variables, the residential school variables and the socio-demographic variables (see page 51 for a summary). Support was not found for hypothesis

one at the bivariate level, however, there was partial support for hypothesis two, which states that there will be familial effects of residential school attendance. The two hypotheses were further tested at the multivariate level using a logistic regression and linear regression analysis. Ten hierarchical models were tested in the multivariate analyses. The multivariate analyses reveal a positive relationship between health status and residential school attendance (see page 55 for summary). "Years attended" residential school was found to be positively associated with "tuberculosis" yet negatively associated with "heart problems". The independent variable "brother attended" residential school was a predictor for "tuberculosis", "high blood pressure and for the additive "illness scale" variable.

In summary, there was partial support for an association between the residential school experience occurring in early life and the health status of First Nation people in later life. Stronger analyses are found for familial effects on health through the attendance of siblings. These findings support a life course – developmental perspective. However, the limitations of this study and preliminary nature of this initial analysis of these residential school data suggest that further work is needed before final conclusions as to the causal relationship between health status and residential school attendance can be ascertained. Gerontological research must include additional research and theoretical development that encompasses all of the unique aspects of First Nation health and aging, including the residential school experience.

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Dedication

This project is dedicated to my parents: Eleanor, for her abundance of love, encouragement and support that have made this work possible and meaningful. And, to my father the late George Douglas Day (1935-1981) who is always loved and always remembered.

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Preface

The author is a member of the Oneida First Nation, and is currently employed with the First Nations Chiefs' Health Committee as the Health Info Structure and Research Co-ordinator. The project herein represents exploratory research that is extremely valuable in the development of OCAP (Ownership, Control, Access and Possession) First Nation program of research. The first wave (1997) of the First Nation Regional Health Survey was used in this project. The second wave of the Regional Health Survey is currently under development and will be launched in 2002. Many of the limitations that have been identified in this project will be incorporated in the second wave of the survey. As such, it will be possible for First Nation people to further develop and promote research that can be used to proactively and effectively manage health care needs in a holistic manner in First Nation communities.

CHAPTER 1: INTRODUCTION

When exploring the health status of First Nation people in Canada, it is imperative to consider the impact of the residential school system. In recent years, the literature examining the effect of the residential school experience on First Nation people has grown. However, the literature has focused primarily on the inter-generational, psycho-social effects of residential school attendance. First Nation scholars, academics, clinicians and a federal government's Royal Commission on Aboriginal Peoples have compiled an extensive documentation of the trauma experienced by First Nation people while attending residential schools across Canada. The negative experience associated with the residential school system is referred to as the "residential school syndrome".

The residential school syndrome can be described as the long-term psychological and social consequences that the residential school's assimilation program has had on First Nation people and communities (Furniss, 1992). The deleterious consequences of having attended a residential school, or being cared for by an individual(s) who attended such a school can be categorized into behavioural effects and psycho-social effects. The behavioural effects include: high rates of addictions, suicide, sexual abuse the breakdown of families and dependency on others. Psycho-social effects are the loss of language and culture, low self-esteem and pride, loss of parenting skills and loss of initiative (Furniss, 1992; Ing, 1991; Ing 2000). Other psycho-social outcomes of the residential school experience include: alienation between generations, severe psychological traumas and the resulting loss of good parenting skills (Ing, 1991).

Many of these negative experiences may have a long-term effect on an individuals' health, especially healthy aging. Chrisjohn, Young and Maraun (1997:1-2) have noted that:

“While these symptoms seem endemic to Aboriginal Peoples in general (and not limited to those who attended Residential School), this is likely to have come about because successive generations of attendees passed along, as it were, their personal psychological problems to their home communities and, through factors such as inadequacy of parenting skills, perpetuated the symptomology, if not the syndrome.”

The result of passing on these behaviours and problems to successive generations is referred to as the inter-generational and familial effects of residential school attendance. A clear understanding of the inter-generational, or familial effects of the residential school system is also central to understanding the etiology of poor health status among First Nation people and communities. That is, an individual's subjective and objective health can be adversely affected by the residential school experience, even if that individual did not attend a residential school.

The relevant importance of establishing an association between residential school attendance and health outcomes in later life is underscored by Reading and Elias (1999:30), who state that a study of the health status of First Nation elders “cannot ignore the pervasive impact of residential schools . . . on many individuals and the ripple effects felt throughout their families and communities . . . and to consider health survey indicators in a holistic context of past residential school experiences as a significant cohort-specific determinant of health.”

Although the long-term effects of residential school attendance are referred to as the residential school syndrome, health care professionals do not yet have a formal diagnostic criteria for the syndrome. However, it has been suggested by Dr. Charles Brasfield (2001) that a diagnostic tool modeled after the DSM-IV may be used for this purpose. Dr. Brasfield, a psychiatrist who works extensively with survivors of the residential school experience, has suggested that there are four main diagnostic criteria for the residential school syndrome. First, that the individual is someone who has either attended a residential school or is closely related to or involved with someone who attended such a school in which the experience was intrusive, alien and frightening. Also, that the individual's response to the school attendance involved fear, hopelessness, passivity, and expressed or unexpressed anger.

The second criteria is that the effects of attendance persisted after the person left the school in one or more of the following ways: distressing or recurrent memories, including images, thoughts or perceptions; recurrent dreams; feeling as though the events were happening again, including flashbacks or hallucinations; intense psychological and physiological distress at internal or external cues that symbolize or resemble an aspect of the attendance.

According to Brasfield, the third main criteria for diagnosing residential school syndrome includes at least three or more of the following: the persistent avoidance of stimuli associated with the residential school and numbing of general responsiveness such as: efforts to avoid thoughts, feelings or conversations reminiscent of the experience; efforts to avoid activities, places, or

people that arouse recollections of the attendance; inability to recall one or more important aspects of attendance; markedly diminished interest or participation in significant cultural activities; feelings of detachment or estrangement from others; and a restricted range of affect. An example of the last behaviour is described as apparent high levels of interpersonal passivity.

The fourth main diagnostic criteria for residential school syndrome are persistent symptoms of increased arousal, as indicated by two or more of the following behaviours: difficulty falling or staying asleep; irritability or outbursts of anger, particularly when intoxicated with alcohol; difficulty concentrating, particularly in a school setting; hyper-vigilance, particularly with regard to non-First Nation social environments; and an exaggerated startle response. Brasfield also notes that other symptoms may include: markedly deficient knowledge of one's own First Nation culture and traditional skills; markedly deficient parenting skills, despite genuine fondness for offspring; persistent tendency to abuse alcohol or sedative medication/drugs which often starts at a very young age (Brasfield, 2001:80). The symptomology of residential school syndrome is remarkably similar to post-traumatic stress disorder (Brasfield, 2001; Duran and Duran, 1995), however, the residential school syndrome differs from post-traumatic stress disorder in that there is a significant cultural impact such as the loss of some First Nation languages, since children were allowed to speak only English and were severely punished for speaking their Native languages. Children were also away from their communities when ceremonies that were integral to their culture occurred, and as a consequence traditional teachings

were not transferred to the children when required by cultural norms. The negative cultural impact of the residential school system is summarized in the Royal Commission on Aboriginal Peoples (1996) as:

“ . . . the loss of language through forced English speaking, the loss of traditional ways of being on the land, the loss of parenting skills through the absence of four or five generations of children from Native communities, and the learned behaviour of despising Native identity.”

The cumulative effects of the residential school system may also be manifested, in part, in low socio-economic status, decreased life expectancy and high rates of chronic disease in the First Nation population (Brasfield, 2001; Chrisjohn et al., 1997; Ing, 1991; Ing, 2001; Reading and Elias, 1999). The consequence of these and other conditions have “resulted in a severe life course for many older Natives” (Wister and Moore, 1998).

Although specific diagnostic criteria for the residential school syndrome have not been developed at this point in time, there is sufficient evidence to support the notion that First Nation people who attended residential school experience health problems, including various chronic disorders, which can last for months or years (Brasfield, 2001). In addition, there is also strong evidence that residential school attendance has profound negative, inter-generational and family effects, such as a loss of parenting skills, an inability to form relationships and the breakdown of First Nation culture (Assembly of First Nations, 1994; Ing, 1991; Ing, 2001; Milloy, 1999). All of these factors may affect subjective and objective health status. Given that there is a high prevalence of chronic disease among First Nation people, it is important to examine the possible connection between residential school attendance and health status in later life.

The social relevance of this research is supported by the fact that it is possible that all First Nation older adults have been affected by the residential school syndrome, either by directly attending such a school, or by being closely related to or involved with a person who has attended such a school (Brasfield, 2001). There is also a cohort effect of residential school attendance, since there are cohorts of children who attended residential schools in the 1950s through to the 1970s that are Elders or are now entering Elderhood. The effect that the residential school system has had on the objective health of these First Nation people in later life may become apparent with future quantitative studies.

The potential long term effect of the residential school experience is an important area to study in order to determine what their possible impacts are, and to develop an effective regime to deal with the consequences of residential school attendance. The assimilationist approach that the residential school system was founded upon is seen as a racist assault on First Nation culture. Should chronic health conditions in later life prove to be one of the negative impacts, research into the long-term impact of residential schools would provide First Nation health planners the necessary tools to address chronic health conditions in a holistic manner. The development of health care protocols that address the apparent root of the problem – such as the residential school syndrome – would aid in effectively managing chronic health conditions. The long-term implications are that as chronic health conditions are managed more effectively with culturally re-inforced protocols developed by First Nation people, the quality of life of First Nation elders would improve significantly.

In sum, to date the majority of research exploring the impact of residential school attendance on First Nation people has focused primarily on the psycho-social aspects, rather than specific physical health outcomes in later life. The Royal Commission on Aboriginal Peoples (1996), Dr. Rosalyn Ing (1991, 2000), Reading and Elias (1999), Milloy (1999) and others have provided, as a first step, an excellent qualitative foundation for understanding the psycho-social aspects of the syndrome. But the effect that residential schools have had on objective health outcomes has not been fully investigated in previous research. Therefore, this project will attempt to fill in some of the existing gaps in the literature, by examining the relationship between residential school attendance and health status in later life, with a focus on chronic illness.

Lack of First Nation Research

There has been a dearth of health research conducted with the First Nation population (MacMillan, MacMillan, Offord, and Dingle, 1996) and with First Nation elderly in particular (Heath, Ornealas and Marquat, 1994; Mercer, 1994; Reading and Elias 1999). Under-representation of First Nation people in aging research is due, in part, to the fact that First Nation communities have the lowest proportion of elderly people aged 65 and over compared to the rest of the population. In 1987, the proportion of First Nation people aged 65 and over was 3.5% (Blanford and Chappell, 1990). Current statistics indicate that this number has not grown significantly, with approximately 4.5% of the First Nation population comprised of people 65 years or older (Indian and Northern Affairs Canada, 2000). According to Blanford and Chappell (1990), the majority of

studies on age and well-being are conducted with the Caucasian population. This is partially due to the fact that the aging of the First Nation population has been relatively small compared to the Caucasian population. But as First Nation population aging is occurring more rapidly there is increased opportunity to study the aging process of this group.

Another contributing factor to the under-representation of the First Nation elderly in research is due in part to the reluctance of First Nation people to become involved with research because of previous negative experiences. Often, First Nation people are reluctant to participate in research initiatives in which they feel they do not have control or ownership of the results of the research. A reoccurring theme regarding research in First Nation communities is that if they do not have control at the outset, "the information could be either suppressed, misinterpreted, or used against Aboriginal communities" (Assembly of First Nations, 1999:A-47). At times, the results of research studies have been sensationalized in the media, which may reinforce negative stereotypes or further stigmatize this population. This analysis will use a data set that has been collected by the First Nation and Inuit Regional Health Survey process, and governed in B.C. by the First Nations Chiefs' Health Committee.

To a great extent, limitations in health research with First Nation people has been successfully addressed by the First Nation and Inuit Regional Health Survey process, which initiated work with a National Steering Committee (NSC) in 1996. The NSC includes representation from First Nation political and health organizations across nine participating regions in Canada. At the outset, the

NSC maintained ownership, control and access (OCA) of the entire research process, and all decisions were made by consensus. To their credit, the NSC developed and implemented the regional health survey process including the development of a national core questionnaire, a detailed code of ethics, financial and community accountability, data security, ownership, control, analysis, interpretation and dissemination of the results (Reading and Elias, 1999).

BACKGROUND

Population Aging in the First Nation Context

In 1990, the First Nation population aged 65 and over was estimated at 21,000 (Indian and Northern Affairs Canada, 1993). It is projected that this figure will nearly triple by the year 2015 when the total population of First Nation people in Canada aged 65 and over is estimated to reach 58,000 (ibid). There are also gender differences, with off-reserve females in the age category 65 and over increasing from 3% in 1998 to 5% in 2008.

In 1996, life expectancy at birth for First Nation men was 68.3 years compared to 75.5 years for Canadian men (Indian and Northern Affairs Canada, 2000:6). It is predicted that this figure will increase to 71.3 years for First Nation men compared to 77.5 years for Canadian men. Life expectancy at birth for First Nation women was 76 years old, in 1996, compared to 81.3 for Canadian females. It is projected that the life expectancy for First Nation females will increase to 79 years old in 2006, compared to 82.5 years old for Canadian females (ibid).

Although population aging in First Nation communities is occurring at a decreased rate compared to other Canadians, statistics indicate that this trend is changing and that the First Nation population will now experience a more rapid pattern of population aging (Wister and Moore, 1998). This is due to several factors, such as a higher fertility rate for First Nation people and a lower life expectancy, when compared to other Canadians (Indian and Northern Affairs Canada, 2000). Although it is predicted that the gap in life expectancy between First Nation people and other Canadians will narrow, Reading and Elias (1999) suggest that caution must be used when reviewing these figures due to the fact that the data presented are based on a theoretical trend for longevity. They state that "the average years of life remaining for those who reach age 60 appears to be decreasing (1985-1990) while longevity appears to have plateaued for the rest of Canadians" (ibid., 36).

The implications of First Nation population aging are significant when considering the fact that the current health status of First Nation people is much lower than that of the rest of other Canadians. This is especially true for the First Nation elder. If the health status of First Nation people is already significantly lower than the rest of Canadians, healthy aging of First Nation people is less likely to occur unless effective programs and policies are put into place now. Thus, it is important not only to address the inequity in the current health status of the First Nation population in general, but also to aggressively address healthy aging in this population.

For example, a comparative analysis of elderly Native and non-Natives living in rural Manitoba found that the Native elderly are more likely to be living in substandard housing, and many complain of inadequate health care services (Bienvenue and Havens, 1986). The study also found that only ten per cent of the Native elderly had bathroom facilities compared to 65 per cent of the non-Native sample. Similarly, it was found that approximately 52 per cent of Natives reported that they had adequate heat, compared to 86 per cent of the comparison group. Even though this study was conducted in 1986, Reading and Elias (1999) discovered that there had not been much improvement in the field of gerontological research and the health status of First Nation people during that thirteen-year period.

Another significant implication of First Nation population aging is that until recently, with the introduction of the Health Canada Home and Community Care program, there has not been a comprehensive, service delivery program for First Nation elders. A lack of adequate programming could potentially mean that communities would not be ready to meet the demand of service delivery and health care needs of their aging population.

In summary, even though First Nation communities are not experiencing population aging at the same rate as the rest of Canada, the fact that the absolute and relative number of older First Nations people is increasing underscores the need for services and programs for the older age group (Indian and Northern Affairs Canada, 2000). Consequently, culturally appropriate,

community-based research needs to address healthy aging and quality of life issues for First Nation elders.

Defining Elders

For the purpose of this research an elder is defined as a First Nation person 45 years of age or over. It is acceptable to include the “aged 45” and over group in the target population partially due to the fact that, for First Nation people, the chronological age marker of old age is culturally irrelevant. For example, Wister and Moore (1998) note an anomaly of First Nation culture and age grading, where a cultural difference is that people as young as 45 years of age may be considered to be elders. They are described as “people who have gained wisdom from life and who uses that wisdom to educate others in their community” (ibid:106).

According to Reading and Elias (1999:40), it is necessary to select age 45 as a starting point in analysis, in part, due to the postulation that “First Nations . . . were more functionally dependent at a younger chronological age due to an earlier onset of chronic ‘old age’ health problems when compared to their Canadian counterparts.” This is substantiated by a study conducted by the National Council on American Indians in 1994, which concluded that “study results . . . indicate that American Indians living on reservations at age 45 show the same age characteristics that other Americans do at age 56.” (Kramer, 1994:21).

There are several examples in which younger members of the First Nation population have been found to be “elders”. One such example is a study

conducted with American Indian elders in California. It used a convenience sample and indicated that their youngest person was 35 and the oldest was 75 or over, with the median age being 58 years old. The authors of the study explained the inclusion of the younger participants in this way:

“From the perspective of the age standards usually applied (e.g., eligibility for Medicare or meals at senior centers), some of the elders would not be regarded as old. In keeping with the American Indian community’s perspective, however, we accepted as appropriate respondents for the study adults identified by the interviewers and by self-declaration as an American Indian elder” (Barker and Kramer, 1996:120).

Another example of including younger elders in gerontological research with First Nation people is seen in Narduzzi’s work (1994) which included participants aged 44 and over in a study of the mental health status of Native American elderly. Thus, the literature supports the inclusion of the age category of “45 years and over” in research of the First Nation elders, and as such, this project will include participants age 45 years or older. People who are in this age category also largely consist of the residential school cohort and are therefore of particular importance in this project.

THE RESIDENTIAL SCHOOL EXPERIENCE

Historical Background

The terrible revelations about the psychological, emotional and sexual abuse that First Nation children endured at residential schools across Canada for as many as one hundred and fifty years were only disclosed on a large scale

relatively recently. Although residential and industrial boarding schools were first opened in Canada in 1860 (Ing, 1991), under federal government law attendance at residential schools became mandatory for all First Nation children between the ages of 7-15 (Waldrem, Herring and Young, 1995). Some children managed to elude attendance at the institutions because they were not home when agents dispersed by the Department of Indian Affairs came to communities to forcibly remove them from their homes (Ing, 1991; Ing, 2001; Chrisjohn et al., 1997; Milloy, 1999). Residential school attendance reached a peak in 1931 with eighty schools, and in the postwar 1950s, expanded to include Inuit schools opening in the north; they were maintained across Canada until the mid 1980s (Royal Commission on Aboriginal Peoples, 1996). However, the second peak of residential school attendance occurred between the 1940s and early 1960s when the majority of residential schools were still in operation.

Although one of the premises of residential schools was to provide education for children, it is now questioned whether and to what extent an education was provided. In fact, documentation and studies indicate that the schools were never intended to provide an education for First Nation children in a manner similar to the education of non-First Nation children. Further, it was noted that the schools “were patterned upon industrial schools – institutions for orphaned and delinquent children” (Nuu-chah-nulth Tribal Council, 1996:2).

The concept of industrial boarding schools for First Nation children was modeled after industrial boarding schools in the United States (Royal Commission on Aboriginal Peoples, 1996). In 1879, Sir John A. Macdonald sent

his staff on a fact-finding mission to the United States to meet the U.S.

Commissioner of Indian Affairs, and tour their schools (ibid). These institutions were organized on the same premise, that of assimilating and “civilizing” the Indians.

According to Waldrem et al., (1995), historians have noted that the “post-confederation effects of the ‘residential school syndrome’ can be found in Upper Canada in the 1840s, when the shift from day schools to residential schools was first noted” (ibid:15). Often, the federal government and the church worked together. In British Columbia, in 1892 the Roman Catholic Church set up boarding schools in Mission, North Vancouver, Sechelt and Lejac; and industrial schools at Kuper Island, Tofino, Kamloops, Cranbrook and Williams Lake (Nuu-chah-nulth Tribal Council, 1996). The difference between the two institutions is that education was not considered to be mandatory in the industrial schools.

Some children were as young as two years old when they were separated from their parents and forcibly taken to these government and church run institutions. Often children were not returned home until several years later. When they did return to their home communities after years away, they often did not fit in with their own culture.

Prior to the mid 1980s, residential school survivors largely remained silent about their experience, and there have been few extensive studies of residential schools in British Columbia” (Haig-Brown, 1988:25). It is contended however that adult survivors of the residential school experience have often lived in a “culture of silence”, perhaps due to their shame. There may also be cultural

connotations that may have led to the “culture of silence”, according to Haig-Brown (ibid). For example, a study of the effects of residential school indicates that respondents tended to understate the extent of their negative experiences at the schools, based on cultural beliefs that talking about evil invites it into one’s life (Nuu-chah-nulth Tribal Council, 1996). It was further noted that this is especially true of the older age group, and that “cultural teaching is to emphasize the positive aspects of experience” (ibid:205).

Between 1991 and 1995, the Royal Commission on Aboriginal Peoples conducted over 100 hearings across Canada in which they received reports, submissions and personal testimony about the experiences of residential schools, and the lasting negative impact it has had on the lives of the survivors and their families (Royal Commission on Aboriginal Peoples, 1996). Although First Nation people knew about the residential school legacy, few Canadians were aware of it prior to the release of the federal government’s Royal Commission on Aboriginal Peoples Report.

Even today, many Canadians either do not know about the extent of the abuse, or the long-term effects of the residential school system on individuals and families. Until recently, the connection between the residential school system, poor health status, suicide, addictions and the health related problems have not been fully articulated or comprehended in the health literature. Further, the depth of impact of residential school attendance, such as the inter-generational and familial effects, loss of language and parenting skills is only now being recognized.

If residential school attendance is a determinant of health outcomes in later life, it is important to note that many First Nation people who are age 45 today would have attended a residential school. Although it is difficult to ascertain the exact number of children who went through the residential school system, it is estimated that in 1948 there were approximately 72 schools in operation in Canada with 9,368 children in attendance; in 1969 the number of schools dropped to 52 with 7,704 attendees (ibid). Even if they had not attended, they may still indirectly be influenced due to being “closely related to or involved with a person who attended such a school” (Brasfield, 2001:80) such as a family member or spouse. Due to complexity of this syndrome it may be difficult to establish specific causation between residential school attendance and specific health outcomes in later life at this time. However, as a first step it is important to determine a relationship between the possible long-term impacts of residential school attendance and health status, in order to effectively manage chronic health conditions in this population.

The Residential School Experience and Health Outcomes

In addition to the psychological and sexual abuse afflicted upon First Nation children at these schools, children were also subjected to experiments on their diet and health in the 1940s and 1950s at residential schools in B.C. and Ontario. Detailed documentation of these experiments have only recently come to light, and indicate that the experiments were conducted by what was then known as the federal government Department of Health and Welfare Canada (Napier, 2000).

According to a report in the Anglican Journal, during the 1950s, Health and Welfare Canada deliberately denied children basic dental treatment in order to study the effects of Vitamin C and fluoride on the children. In another dietary experiment, federal health officials supplied flour with added vitamins to the children at residential schools, and then withdrew the supplements in order to study the change on the children. Needless to say, informed consent for these experiments was never received and parents did not know their children were being used in experiments. The results of these experiments have not been released, however, it can be assumed that some of these experiments had a negative influence on subsequent health status.

Current research on the residential school experience consists primarily of historical accounts, exploratory and qualitative analyses based on in-depth interviews with adult survivors of the residential school system. For example, Dr. Rosalyn Ing, a First Nation scholar and former residential school attendee, has written extensively on the reverberating effect that the residential school system has had on First Nation people and their culture. Her significant contribution to the growing literature of qualitative research in this relatively new field of research is widely recognized (Ing, 1991; Ing, 2001).

However, there is also a need to explore residential school attendance and objective health outcomes. As part of the final report for the National First Nations and Inuit Regional Health Survey, Reading and Elias (1999) contributed a chapter that included a literature review of the residential school system, and a descriptive analysis of the statistics for elder health. Although they did not

provide a explanatory analysis, Reading and Elias reviewed the findings from the national core questions, which support the notion that First Nation elders are more functionally limited at a younger chronological age. They also concluded that it is important to undertake a much more detailed research in order to obtain a comprehensive understanding of the health concerns for the elder population of today and the future (ibid).

In summary, successive generations of First Nation children were subjected to psychological, emotional and sexual abuse at residential schools in Canada for approximately 150 years (Haig-Brown, 1988; Milloy, 1999; Napier, 2000). The cumulative and inter-generational effects of the trauma experienced at residential schools across Canada are referred to as the residential school syndrome. This condition has affected generations of First Nation people, and it may be manifested in poor health status and other socio-economic determinants of health (Brasfield, 2001; Milloy, 1999). This project will examine the long-term effect of residential school attendance on health outcomes, with a focus on major chronic illnesses.

THEORETICAL RATIONALE FOR LONG -TERM HEALTH IMPACT

At present, the literature on First Nation specific gerontological research is sparse (Wister and Moore, 1998). Combined with a lack of quantitative research specific to this population, and the unique historical factors associated with the residential school experience, a theoretical framework that incorporates all aspects of the phenomenon of First Nation aging does not exist as yet. As a consequence, a singular gerontology theory may not fully grasp the “complex

multiple causative factors in the etiology of ill health” in this population (Reading and Elias, 1999:31). Therefore, it may be useful to synthesize two approaches.

The elements of the Life Course theory may provide a useful framework for explaining the relationship between residential school attendance and health outcomes in later life. According to McPherson (1990:125),

“the major goals of this perspective are to determine how and why earlier and later events in the life cycle are inter-related; how these processes and characteristics change or remain stable over the life cycle; and how specific events (such as an economic depression) at a specific stage of the life cycle have an impact on different age cohorts within different cultures.”

Although there are many aspects of the Life Course perspective of aging, perhaps the one that is most significant to this discussion is the assumption that “aging is a lifelong process which, if to be explained, involves understanding antecedent and consequent events” (Riley, 1979:4-5). Thus, in the context of the residential school experience and health status in later life, the antecedent event is the residential school experience, and the consequent event(s) is subsequent health status in later life.

A second related approach to understanding the impact of residential school attendance on health status in later life is a population health perspective, which views healthy child development as a determinant of health. This theory describes what experiential attributes are important for optimal early childhood environments, according to Ramey and Ramey (1998). In essence, it states that in order for healthy child development to occur, it is important that the following six attributes are present in the child’s environment. These include: the encouragement of exploration; mentoring in basic skills; celebration of

developmental advances; guided rehearsal and extension of new skills; protection from inappropriate disapproval, teasing or punishment; and a rich and responsive language environment (Hertzman, 2000:17).

Healthy child development as a determinant of health is an important aspect to consider when discussing the residential school syndrome. This is especially true when studying the relationship between the life course and the effects of social/economic-psychosocial conditions in a given society and their “powerful determining effect on human health” (Hertzman, 1998:14). In essence, the early childhood experiences are of significance when considering that if a child’s early years are spent in unstimulating emotionally and physically unsupportive environments this will adversely affect brain development and could lead to cognitive and socioemotional delays (ibid:16). There is evidence to support the fact that many children who attended residential schools spent their days in emotionally and physically unstimulating and unsupportive environments (Chrisjohn et al., 1997; Furniss 1992; Haig-Brown, 1988; Ing, 1999; Ing, 2000; Royal Commission on Aboriginal Peoples, 1996; Nuu-chah-Nulth Tribal Council, 1996) which in turn may lead to ill health in later life.

Based on the population health perspective, Hertzman has developed three models to explain how early childhood experience will affect health outcomes in later life. The three processes are referred to as pathway effects, latency effects and cumulative effects. The premise of the Pathways Model states that with less than optimal development, over time there are negative

consequences that include chronic stress and its physiologic impacts, as well as a sense of powerlessness and alienation. According to Hertzman a

“dysfunctional social support network will create a vicious cycle with short term implications for educational attainment, criminality, drug use, and teen pregnancy; and long term implications for the quality of working life, social support, chronic disease in mid life, and accelerated aging in late life” (Hertzman, 1998:17).

An example of a pathways effect is status differences at birth, which are associated, “on average, with different levels of stability, security and stimulation in early childhood that, in turn affect the child’s readiness for school.”

Consequently, if a child is not emotionally or cognitively ready for school, he or she may experience an inability to co-operate with others and an inability to effectively manage their emotions. This in turn could lead to poor academic achievement, not graduating, social and behavioural difficulties in school, becoming involved in criminal behaviour, teenage pregnancies, and addictions (Hertzman, 2000). The long-term result of school failure and leaving school before completion is lower socio-economic status, poor jobs, increased disability and premature death from all causes (ibid). In this theoretical framework, there are both biological and developmental factors that occur at sensitive times in one’s early life that have a lasting impact, regardless of subsequent events. It is suggested that the processes, which link early life environment and adult health, do not necessarily act alone.

Another example of a link between child development and health outcomes in later life, is referred to by Hertzman as the latent effect. The attachment phase in early childhood is a latent affect, which is summarized as

being central for optimal child development. It is described as a “secure attachment to a trusted caregiver, with consistent caring, support and affection in early life” (ibid:12). This type of nurturing is important in developing a healthy self-confidence and self-esteem.

The third process linking early life environment and adult health is referred to as the “cumulative effects” in this model. The “cumulative effects” link is described as the accumulation of advantage or disadvantage over time, based on the duration and intensity of exposure to a variety of risk factors (ibid). The six attributes of an optimal environment for healthy child development (Ramey and Ramey, 1998) have been summarized in this section and each of these essential attributes can be applied to the experiences of children who attended residential school.

Early Child Development Among Residential School Attendees

Many children who attended residential school did not have the advantageous environment that nurtured healthy child development. They were denied the six essential attributes of healthy child development as outlined by Ramey and Ramey (1998). As evidenced by the literature, the residential school environment was the antipathy of optimal healthy, experiential environments for children. Children were not mentored, encouraged, celebrated in their development, protected from inappropriate disapproval, teasing or punishment, nor were they in a rich and responsive language environment. As such, it can be argued that the children who attended residential schools experienced negative latency, pathways and cumulative effects in their early

development, which in turn may have an adverse effect on their health status in later life.

Furthermore, the National Archives in Ottawa revealed that residential schools were “incubators for disease” (Napier, 2000:5). Malnutrition was a major concern as First Nation children were either fed food that was not fit for human consumption (ibid), or were not fed at all. One example is a letter dated September 1953 from a concerned citizen to the federal government, which outlined the concerns of the writer that the children at the Brandon Indian Industrial School in Manitoba were not being fed properly. It detailed the extent to which the children were mistreated and malnourished (ibid). On recounting their days at residential school, many children consistently repeated the same complaint: the food that was served to them was rotten (Waldrem et al., 1995) and if they would not eat it, they were beaten (Chrisjohn et al., 1997; Haig-Brown, 1988; Furniss, 1992; Napier, 2000).

In other documentation it is noted that at some residential schools the children were fed unpasteurized milk, which was not only highly dangerous due to potential contamination, but was also illegal. Over a seven year period from 1951 – 1958, health officials regularly corresponded with the Mohawk Institute Residential School insisting that the school stop feeding the children unpasteurized milk, which “authorities feared could carry tuberculosis – a disease that struck students and teachers at many schools (ibid:4). Much of the documentation about the state of conditions at residential schools also reveals that in some cases the schools were regarded as disease inducing much earlier

than the 1950s. Waldrem et al., (1995) states that in 1907 Canada's first medical officer for the Department of Indian Affairs wrote a report that exposed the unsanitary conditions at residential schools. Tuberculosis was the main disease that affected students in residential schools at that time and more than forty years later, the records show that children were still threatened by tuberculosis at these schools (Royal Commission on Aboriginal Peoples, 1996).

Photographs from residential schools, which are substantiated by testimony from former residents, reveal cramped sleeping quarters in which children slept in cots, dormitory style. The spread of tuberculosis was linked to overcrowding, lack of care and cleanliness and poor sanitation (ibid:357). Children attending these institutions also experienced an inordinate amount of stress in their lives which may have contributed to the spread of tuberculosis. Cassel (1974; 1976) explores this phenomenon in his work whereby the "health consequences of a changed social environment has been the wide range of diseases that followed such changes" (Cassel, 1976:110). As such, the prevalence of tuberculosis in the residential school setting may be attributed, in part, to the stress that the children underwent during their stay. The cumulative stress may have weakened their immune systems and made them more susceptible to the disease.

Regarding the importance of attachment as an integral part of healthy childhood development, it is clear that the residential school experience limited attachment in the lives of First Nation children. In the first place, children were forcibly removed from their parents and communities and were thrust into an

alien environment in which they were stripped of their clothing, made to wear raggedy uniforms, had their heads shaved, could not have contact with their siblings, and were left on their own without a caregiver. This separation from family could have a negative influence on the development and long-term health of this population.

In summary, First Nation children who attended residential schools experienced negative cumulative effects associated with the depraved treatment they received at these institutions. The long term effects of this treatment is referred to as the residential school syndrome and are manifested, in part, by poor health status and diminished quality of life in later years. There are also long-term effects of residential school attendance that may be passed through the generations, and are referred to as inter-generational or familial effects.

Research Question and Hypothesis

This exploratory research will examine the hypothesis that residential school attendance has long term negative effects on the subjective and objective health status of First Nation people in later life. A primary focus is on chronic health, given its prevalence in later life and connection to lifestyle and social advantage.

A second hypothesis is that there will be familial effects of the residential school experience by testing whether there is an association between having a sibling who attended a residential school and health status. In order to reduce possible confounding effects, several demographic and socio-economic variables

will be incorporated into the analysis such as age, gender, education and marital status.

CHAPTER II: METHODS

This section describes the procedure used to investigate the relationship between residential school attendance and health status in later life, and in particular, test the research hypotheses introduced in chapter one. This chapter will provide a description of the data source and the variables that will be used in the subsequent univariate, bivariate and multivariate analysis.

Data Collection

The data for this research is derived from the First Nation and Inuit Regional Health Survey process (1997), which was funded by Health Canada and governed and administered by the Assembly of First Nations. The data collected during this process is unique in that it represents the beginning of a national and regional First Nation health research initiative. This is significant because the research protocols for this survey were community-based and protocols were developed on the Ownership, Control and Access (OCA) based research principles.

Data was collected on an individual interview basis throughout nine regions in Canada, and rolled into a national study: the First Nation Regional Health Survey. One of the nine regions is British Columbia and data collected in B.C. consists of 1,984 interviews in 16 First Nation communities. Because B.C. is a large province with vast and diverse territories, and 197 communities, it was further divided into three geo-cultural regions for the purpose of this study. The three geo-cultural regions in this project consist of the Coastal, the Northern Interior and the Southern Interior regions.

The Sample

The target population of the B.C. sample is defined as follows: "All First Nation's individuals, sixteen years of age or older, who at the beginning date of the survey, (nominally, December 31, 1996) were officially enumerated as on-reserve, registered band members resident in any reserve communities that lies within the British Columbia region." (Gilakasla Research Group, 1997:2). All Band members' names are on Band lists, which are governed and maintained by their local government (Chief and Council). For this study individuals were randomly selected from Band lists in each of their communities. Each of the randomly selected individuals participated in a face-to-face interview with a trained interviewer. The sample used in the present study includes persons aged 45 and over. This represents 539 of the 1,984 individuals comprising the B.C. region.

The Questionnaire

The questionnaire (Appendix 1) focused primarily on the subjective and objective health status of the individual respondent, subjective and objective health status of the respondent's child, and the health related characteristics of the community in which the respondent currently lives. In addition, there were questions about tobacco use and residential school attendance. The questionnaire was divided into 11 main sections including: Demographics; Children's Health; Health Services; Tobacco; Environmental Tobacco Smoke; Medical Conditions including Diabetes; Disability and Activity Limitation; Residential Schools and Dental Health.

MEASUREMENT

This section describes the measurement of variables chosen for descriptive purposes and those included in the bivariate and multivariate analysis, as demonstrated in frequency table one.

Dependent Variables

For this project five illness variables will be examined. These include three selected chronic health condition variables, perceived health and an illness scale comprised of all seven available chronic health conditions. The three selected chronic conditions include tuberculosis, heart problems and high blood pressure. Tuberculosis was selected as it is considered to be one of the serious health concerns for the co-hort of First Nation people in this study, and the latter two were selected because they are the leading illnesses amongst the majority of older Canadians. These dependent variables were dichotomous and coded as 0 = No and 1 = Yes (reporting for the illness). The two other dependent variables used in this project are the ordinal variable “perceived health” and the additive interval “illness scale” variable that is comprised of the number of chronic illnesses reported by the individual.

Independent Variables

There are four independent variables that measure the residential school context, two of which relate to the individual respondent. These include: 1) “Did you attend residential school?” and 2) “Number of years” attended residential school. In order to test the familial effects of residential school attendance, the following two independent variable were also investigated: 3) “Did your brother

attend residential school?" and 4) "Did your sister attend residential school?"

These residential school variables will be referred to in the remaining of the project as: "Did you attend", "Number of years", "Did your brother attend" and "did your sister attend" residential school. The four socio-demographic variables chosen as covariates for this analysis are: age, marital status, sex and education level covariates. These were included because they have been shown to be associated with health status and may confound the primary relationships. The residential school attendance of mothers and fathers was also included on the survey, however, these variables were excluded from this project because of age-period-cohort problems that make interpretation problematic.

Table 1
Frequency Distributions for Dependent Variables and Independent Variables (n = 539)

Variables	Coding	Frequency	%
Dependent Variables			
Tuberculosis	0 = No	424	78.7
	1 = Yes	71	13.2
	Missing Cases	44	8.1
High Blood Pressure	0 =No	315	58.4
	1 =Yes	193	35.8
	Missing Cases	31	5.8
Heart Problems	0 =No	371	68.8
	1 =Yes	134	24.9
	Missing Cases	34	6.3
Perceived Health	1 = Poor	66	12.2
	2 = Fair	254	47.1
	3 = Very Good	162	30.1
	4 = Excellent	39	7.2
	Missing Cases	18	3.3
Illness Scale	0 =None	145	30.1
	1 = 1	108	22.5
	2 = 2	102	21.2
	3 = 3	64	13.3
	4 = 4	34	7.1
	5 = 5	17	3.5
	6 = 6	5	1.0
	7 = 7	6	1.2
Missing Cases	58	10.7	

Variables	Coding	Frequency	%
Independent Variables			
<i>Residential School Variables</i>			
Attended Residential School	0 = No	294	54.5
	1 = Yes	245	45.5
Years at Residential School	0 = Did Not Attend	295	54.7
	1 = 1 – 5 years	124	23.0
	2 = 6 – 10 years	99	18.4
	3 = 11 years or more	21	3.9
Brother Attended Residential School	0 = No	253	46.9
	1 = Yes	258	46.7
	Missing Cases	28	5.1
Sister Attended Residential School	0 = No	263	48.8
	1 = Yes	252	46.8
	Missing Cases	24	4.4
<i>Socio-Demographic Variables</i>			
Sex	1 = Female	290	53.8
	2 = Male	249	46.2
Education	0 = Gr. 8 or less	247	45.8
	1 = Gr. 9 – 11	150	27.8
	2 = Gr. 12 – 13	78	14.5
	3 = Some post-sec	64	11.9
Marital Status	1 = Non-married	445	82.6
	2 = Married	94	17.4
Age, at time of survey	1 = 45 - 50	269	49.9
	2 = 55 - 64	150	27.8
	3 = 65 - 74	82	15.2
	4 = 75 +	38	7.1

DESCRIPTIVE STATISTICS

The dependent and independent variables used in the bivariate and multivariate analysis are described in table 1.

Illness Variables

There were eight illness variables included in the survey. Individuals reported whether or not they had been told by a health professional that they had one of the following diseases: tuberculosis, high blood pressure, heart problems, arthritis/rheumatism, breathing problems, asthma, cancer or diabetes. Seven of

these illness variables are formed into an additive illness scale; and three of the illness variables are used in this project as health outcomes.

The three chronic conditions that are analyzed in this project for health status in later life are: tuberculosis, high blood pressure and heart problems.

Tuberculosis: A total of 71 (13.2%) of the sample reported that they had been diagnosed with tuberculosis, whereas 424 (78.7%) had not. There were 44 (8.2%) missing cases.

High Blood Pressure: A total of 193 (35.8%) of the sample reported that they had been diagnosed with high blood pressure, whereas 315 (58.4%) had not. There were 31 (5.8%) missing cases.

Heart Problems: A total of 134 (24.9%) of the sample reported that they had been diagnosed with heart problems, whereas 371, (68.8%) had not. There were 34 (6.3%) missing cases.

A statistical description of the other chronic conditions that were asked about on the regional health survey are:

Arthritis/Rheumatism: A total of 250 (46.4%) of the sample reported that they had been diagnosed with arthritis/rheumatism, whereas 264 (49%) had not. There were 25 (4.6%) missing cases.

Breathing Problems: A total of 116 (21.5%) of the sample reported that they had been diagnosed with breathing problems, whereas 384 (71.2%) had not. There were 39 missing cases (7.2%).

Asthma: A total of 71 (13.2%) of the sample reported that they had been diagnosed with asthma, whereas 432 (80.1%) had not. There were 36 (6.7%) missing cases.

Cancer: A total of 30 (5.6%) of the sample reported that they had been diagnosed with cancer whereas 461 (85.5%) had not. There were 48 (8.9%) missing cases.

Diabetes: A total of 66 (12.2%) of the sample reported that they had been diagnosed with diabetes whereas 433 (80.3%) had not. There were 40 (7.4%) missing cases.

Perceived Health: The original question on the survey regarding perceived health status had four ordinal response categories. For this analysis, these were recoded into a dichotomous variable with two categories of “poor/fair” and “very good/excellent”. A total of 201 (37.3%) respondents indicated that they perceived their health to be “poor/fair”, whereas 320 (59.4%) respondents indicated that their health was “very good/excellent.” There were 18 (3.3%) missing cases.

Illness Scale: An additive illness scale was created from seven of the eight chronic illness variables: tuberculosis, high blood pressure, heart problems, arthritis/rheumatism, breathing problems, asthma and diabetes. Although it was desirable to have a coefficient of .7 for this scale, the reliability coefficient (cronbach's alpha) for the illness scale is 6.3, which is acceptable for this project. The “cancer” variable was not used in the scale due to the small number of cases (n = 40) reported. The illnesses that were combined to form the illness additive

scale are: "tuberculosis", "high blood pressure", "heart problems", "arthritis/rheumatism", "asthma", "diabetes" and "breathing problems". The illness scale is from 0 –7 with 0 being "no reported illness".

A total of 145 (26.9%) respondents indicated that they did not have a chronic illness; 108 (20.0%) reported that they had one chronic illness; 102 (18.9%) reported that they had two chronic illnesses; 64 (11.9%) reported that they had three chronic illnesses; 34 (6.3%) reported that they had four chronic illnesses; 17 (3.2%) reported that they had five chronic illnesses; 5 (.9%) indicated that they had six chronic illnesses; and 6 (1.1%) of the respondents reported that they had a total of seven chronic illnesses. There were 58 (10.8%) missing cases. All missing cases were recoded into the modal category for that variable.

Residential School Variables

The residential school context consists of five independent variables and includes the following:

Attended residential school: Of the 539 in the sample, 245 (45.5%) reported that they did attend residential school and 294 (54.5%) reported that they did not attend residential school. "Did Attend" = 0; "Did Not Attend" = 1.

Years attended residential school:

The original question was worded "Were you away from family while at residential school and "number of years away". For the purpose of analyses, this interval variable was recoded in the following way. A total of 295 (54.7%) were either "not away from family or did not attend", while a total of 124 (23%) were

away from family from “1 – 5 years”; a total of 99 (18.4%) responded that they were away from family from “6 – 10 years” and 21 (3.9%) reported they were away from family for “11-12-13 and 16 years”. The rationale for the recoding of this variable is based on the fact that there may be curvilinear association with health status based on preliminary analyses.

Brother Attended Residential School:

A total of 258 (47.8%) reported that their brother had attended residential school whereas 253 (47.1%) had not. There were 28 (5.1%) missing cases.

Sister Attended Residential School:

Of the 539 respondents, 263 (48.8%) indicated that their sisters had not attended residential school, and 252 (46.8%) indicated that their sisters had attended residential school. There were 24 (4.4%) missing cases.

Covariates

The following four socio-demographic independent variables used in this analysis are:

Sex:

Of the 539 individuals in the sample, a total of 249 (53.8%) reported being “male”, and 290 (46.2%) reported being “female”. Female is coded as 1 and Male is coded as 2.

Education:

The education variable used in this project is comprised of two original education variables that were combined into one with four categories. The original two variables are: “highest school grade completed” (range = 0 – 13 years) and

“number of years of post-secondary education” (range = 0 – 5 years). These two education variables were recoded into the following four response categories: “Grade 8 or less”; “Grade 9 – 11”; “Grade 12 – 13”; and “some post secondary” education. A total of 247 (45.8% reported that they had an education of grade 8 or less; a total of 150 (27.8%) reported that they had an education of grade 9 – 11; a total of 78 (14.5%) reported that they had an education of grade 12 – 13 and 64 (11.9%) reported that they had received some post-secondary education. There were no missing cases.

Marital Status:

The original “marital status” variable had six categories including single, married, common-law, separated, divorced and widowed. This variable was recoded into a dichotomous variable of either “non-married” or “married”. A total of 445 (82.6%) are coded as “non-married” and 94 (17.4%) are “married”.

Age Group:

As shown in table one, the “age at the time of the survey” was recoded into age categories as follows for the bivariate analysis and logistic regression. In this sample, a total of 539 respondents ranged in age from 45 to 97 years old at the time of the survey. Of these, a total of 269 (49.9%) reported that they were between “45 – 54” years old, a total of 150 (27.8%) reported that they were between “55 – 64” years old, a total of 82 reported that they were between “65 – 74” years old and 38 (7.1%) reported that they were “75 years old or over”.

Limitations of Data and Measures:

There are a number of limitations to this data set. First, there are some measures that would have been useful for analysis but were not included as questions on the survey. These include measures of income, levels of employment, exercise level, number doctor visits and other determinants of health. The omission of these covariates of health status in the multivariate analysis raises the possibility of specification error. A specification error can occur when an important variable is left out of the causal model, or if an irrelevant variable is included in the model (Vogt, 1993). In this case, specification error may have occurred if important variables were omitted from the models. Another limitation (which is in fact, usually viewed as a strength in most situations) is the face-to-face interview. It has been documented that many First Nation people do not feel comfortable disclosing or discussing their ill health status to others due to cultural taboos associated with discussing illnesses (Alberni Indian Residential School Study, 2000). This may lead to some under-reporting of illness or disability.

It would also have been useful to include additional questions that measure subjective health status. Another possible limitation is that respondents may not be as forthcoming with disclosing certain information due to the fact that, in small communities, the respondent usually knows the interviewer. Although confidentiality is ensured, there is a possibility that a relationship of any kind will impede disclosure. Limitations of this study and suggestions on how to

improve future research in First Nation health and aging will be further addressed in the final chapter.

Overall, while there may be some measurement error in these data, it is believed that they meet minimum standards of validity and reliability. Most questions have been used successfully in other studies and are relatively straightforward, such as chronic illness, perceived health status and levels of education. The most likely bias is the under reporting or misreporting of health conditions.

CHAPTER III: STATISTICAL ANALYSIS AND RESULTS

The results of the statistical analysis and an interpretation of the results as they relate to the hypotheses stated in chapter one will be presented in this section. First, a review of the bivariate analyses conducted to test the hypotheses will be presented, followed by a multivariate analysis to control for the effects of covariates of subjective and objective health outcomes. Three types of statistical analyses were conducted in order to test the hypotheses of a relationship between residential school attendance and health outcomes in later life. They are a bivariate analysis, logistic regression and linear regression. The Statistical Package for the Social Sciences (SPSS) version 10.0 for Windows was used for the analyses conducted in this project.

BIVARIATE ANALYSIS

Bivariate analyses are used to investigate the magnitude and direction of an association between each dependent variable and an independent variable, as well as the level of statistical significance. In these analyses, correlations ranging from zero to .20 are considered a weak association, correlations between .20 and .40 are considered to be a moderate association, and those over .40 are considered to be a strong association. When there is a negative association between the two variables, it is an indication of an inverse relationship. This means that higher scores on the independent variable are associated with lower scores on the dependent variable. Conversely, positive scores indicate a positive relationship between the dependent and independent variables.

OVERVIEW

Five main dependent variables are being investigated in the analyses for this project. They are "tuberculosis", "high blood pressure", "heart problems", "perceived health " and an additive "illness scale". It was decided to treat all dichotomous variables as interval. Although this is somewhat controversial, there is support for doing this in the literature (DeMaris, 1995). The dependent variables "tuberculosis", "high blood pressure" and "heart problems" are dichotomous. For the logistic regression analysis, the dependent variable "perceived health" was recoded into a dichotomous variable. The additive "illness scale" dependent variable is an interval variable and a linear regression analysis was conducted to test support of the hypotheses.

The magnitude of the stated relationships involving an ordinal variable as the lowest order will be determined by using the measurement of Kendall's tau correlation coefficients (tau b and tau c). Tau c will be used for measures when the number of cells in the analysis is unequal, and tau b will be used when the number of cells in the analysis is equal. Pearson's co-efficient r will be used as a measure of association for all interval-by-interval cross-tabulations. To test the hypothesis developed in chapter one, the dependent variables were cross-tabulated with the independent residential school and socio-demographic variables. A summary of the bivariate analysis results is provided in table fifteen, at the end of the bivariate analysis section.

The independent residential school variables in this analysis are: "Did you attend" residential school, "years attended" residential school", "brother attended" residential school" and "sister attended" residential school. The socio-demographic variables include: "sex", "education", "marital status" and "age".

Bivariate analyses were conducted between the five dependent variables and the eight independent variables to determine if there was a statistically significant association to support the hypotheses, and to examine associations for the co-variates. The results of the bivariate analyses will be reported in the next section. Each set of cross-tabulations will be examined in order. Given the large number of cross-tabulations (40), only ones that are statistically significant will be shown in tabular form. Significance levels between .1 and .05 are deemed borderline because of the study's small sample size.

Dependent Variable "Tuberculosis" Analysis

Cross-tabulations were conducted for tuberculosis and the nine independent variables, beginning with the residential school variables. Table 2 shows the cross-tabulation between the dependent variable "tuberculosis" and independent variable "brother attended" residential school. Support was found for a statistically significant association between these two variables.

Table 2

Cross-tabulation: Tuberculosis by Did Your Brother Attend Residential School

Tuberculosis	Brother Attended			
	No		Yes	
	(N)	%	(N)	%
No	206	90.4	195	80.9
Yes	22	9.6	46	19.1
Total	228	100	241	100

$r = .134, p < .01$

Table 2 illustrates that a moderate, positive association was supported, with those who have brothers who attended residential school being more likely to report "tuberculosis", than those with brothers who did not attend residential school, $r = .134, p < .01$. Among those who reported "tuberculosis", 19.1% also

reported that a “brother attended” residential school, compared with only 9.6% who did not.

In addition, it was found that there was a statistically significant relationship between “tuberculosis” and the independent variable “sister attended” residential school, as demonstrated by the following table. Table 3 illustrates that who reported that a “sister attended” residential school were more likely to report “tuberculosis”, 18.1%, compared with only 10.6% for those with sisters who did not attend residential school, $r = .106$, $p < .05$.

Table 3

Cross-tabulation: Tuberculosis by Did Your Sister Attend Residential School

Tuberculosis	Sister Attended			
	No		Yes	
	(N)	%	(N)	%
No	210	89.4	195	81.9
Yes	25	10.6	43	18.1
Total	235	100	238	100

$r = .106$, $p < .05$

There was a borderline statistically significant relationship between the dependent variable “tuberculosis” and the independent variable of “education”, $\tau c = .077$, $p = .074$. There was also a borderline statistical significance between the dependent variable “tuberculosis” and the independent variable “marital status”, $r = .079$, $p = .081$. Additional analyses at the bivariate level did not result in a statistically significant relationship between the dependent variable “tuberculosis” and independent variables “age” or “sex”.

Dependent Variable “Heart Problems” Analysis

Cross-tabulations between the dependent variable “heart problems” and the nine independent variables resulted in statistically significant results for the

variables “age” and “education” as shown in tables four and five respectively. A bivariate analysis was conducted with the “heart problems” dependent variable and the independent “age” variable, as illustrated in table 4. It was found that those who are older are more likely to have heart problems than those who are younger, tau c = .304, p <.001.

Table 4

Heart Problems	Heart Problems by Age Group							
	45 - 54 yrs. old		55 - 64 yrs. old		65 -74 yrs. old		75 and Over	
	(N)	%	(N)	%	(N)	%	(N)	%
No	221	86.7	89	65.0	48	61.5	13	37.1
Yes	34	13.3	48	35.0	30	38.5	22	62.9
Total	255	100	137	100	78	100	35	100

tau c = .304, p<.001

In addition, there was support for a relationship between the variables “heart problems” and “education” at the bivariate level. Of those who reported that they had “heart problems”, 62.7% had a “grade 8 or less education”, compared to only 8.2% of those who reported that they had “some post secondary education”, as demonstrated by the following table.

Table 5

Heart Problems	Heart Problems by Education							
	Grade 8 or less		Grade 9 To Grade 11		Grade 12 To Grade 13		Some Post Secondary	
	(N)	%	(N)	%	(N)	%	(N)	%
No	149	63.9	106	78.5	65	86.7	51	82.3
Yes	84	36.1	29	21.5	10	13.3	11	17.7
Total	233	100	135	100	75	100	62	100

tau c = -.190, p<.001

There was also a borderline statistically significant association when a bivariate analysis was conducted between the dependent variable "heart problems" and "sex", $r = .073$, $p = .099$. However, the dependent variable "heart problems" did not have a statistically significant association when cross-tabulated with the four residential school context variables: "Did you attend" residential school, "years attended" residential school, "brother attended" residential school or "sister attended" residential school. In addition, "heart problems" and independent variable "marital status" were not statistically significant at the bivariate level.

Dependent Variable "High Blood Pressure" Analysis

A bivariate analysis was conducted with the dependent variable "high blood pressure" and the nine independent variables, and a statistically significant relationship was supported for three of the independent variables as outlined in the following tables. Table 6 demonstrates that there is a positive, moderate association between "high blood pressure" and "age"; those who are older have a higher incidence of "high blood pressure" than those who are younger, $\tau c = .226$, $p < .001$.

Table 6

Cross-tabulation:	High Blood Pressure by Age Group							
	45 - 54 yrs. old		55 - 64 yrs. old		65 -74 yrs. old		75 and Over	
High Blood Pressure	(N)	%	(N)	%	(N)	%	(N)	%
No	184	71.3	80	58.4	37	48.7	14	37.8
Yes	74	28.7	57	41.6	39	51.3	23	62.2
Total	258	100	137	100	76	100	37	100

$\tau c = .226$, $p < .001$

There was also a moderate, inverse relationship between “high blood pressure” and “sex”, as illustrated by table 7. Those who are “female” are more likely to report that they have “high blood pressure” than “males”, $r = -.116, p < .05$.

Table 7

Cross-tabulation: High Blood Pressure	High Blood Pressure by Sex			
	Female		Male	
	(N)	%	(N)	%
No	159	57.8	156	67.0
Yes	116	42.2	77	33.0
Total	275	100	233	100

$r = -.116, p < .05$

Table 8 demonstrates that there is a statistically significant, inverse relationship between “high blood pressure” and “education”. The results indicate that there is a curvilinear relationship between “high blood pressure” and “education”, with those in the “education” category of “grade 12-13” having the least incidence of reporting for “high blood pressure” with 26.3%; compared to those in the “education” category of “some post-secondary” who report a 36.5% incidence of “high blood pressure”.

Table 8

Cross-tabulation: High Blood Pressure	High Blood Pressure by Education							
	Grade 8 or less		Grade 9 To Grade 11		Grade 12 To Grade 13		Some Post Secondary	
	(N)	%	(N)	%	(N)	%	(N)	%
No	129	55.8	90	65.2	56	73.7	40	63.5
Yes	102	44.2	48	34.8	20	26.3	23	36.5
Total	231	100	138	100	76	100	63	100

$\tau c = -.116, p < .05$

An association was not found between the dependent variable “high blood pressure” and the residential school context variables: “Did you attend” residential school, “years attended” residential school”, “brother attended” residential school and “sister attended” residential school. The relationship between the dependent variable “high blood pressure” and the independent variable “marital status” was not statistically significant at the bivariate level.

Dependent Variable “Perceived Health” Analysis

A bivariate analysis conducted with the dependent variable “perceived health” and the nine independent variables resulted in two statistically significant associations with the independent variables “age” and “education”. Table 9 illustrates a statistically significant, moderate, positive association between “perceived health” and “age”, where it is demonstrated that “perceived health” status is higher among those who are younger, tau b = .210, p <.001.

Table 9

Cross-tabulation: Perceived Health	Perceived Health by Age Group							
	Age							
	45 - 54 yrs. old		55 - 64 yrs. old		65 -74 yrs. old		75 and Over	
	(N)	%	(N)	%	(N)	%	(N)	%
Poor	19	7.3	21	14.5	16	20.0	10	27.8
Fair	112	43.1	82	56.6	41	51.3	19	52.8
Very Good	102	39.2	35	24.1	19	23.8	6	16.7
Excellent	27	10.4	7	4.8	4	5.0	1	2.8
Total	260	100	145	100	80	100	36	100

tau b = .210, p <.001

In addition, table 10 illustrates that “perceived health” status is lower among those with less education than among those with a higher level of education.

Over half of the respondents stated that their health was “fair”, 48.9%, compared

to those who said it was “very good” or “excellent”. Of those who reported that their health status was “fair”, over half of the respondents, 54.6%, had a “less than grade 8 education”, tau b = .233, p < .001.

Table 10

Perceived Health	Perceived Health by Education							
	Grade 8 or less		Grade 9 To Grade 11		Grade 12 To Grade 13		Some Post Secondary	
	(N)	%	(N)	%	(N)	%	(N)	%
Poor	47	19.7	10	6.9	7	9.1	2	3.2
Fair	130	54.6	65	45.1	35	45.5	24	38.7
Very Good	52	21.8	51	35.4	30	39.0	29	46.8
Excellent	9	3.8	18	12.5	5	6.5	7	11.3
Total	238	100	144	100	77	100	62	100

tau b = .233, p<.001

A statistically significant relationship was not found between the dependent “perceived health” status variable and the independent variables “sex” or “marital status”.

Dependent Variable “Illness Scale” Analysis

A bivariate analysis was conducted with the additive “illness scale” dependent variable and the nine independent variables outlined in the previous section. There was a statistically significant association for the dependent variable “illness scale” when cross-tabulated with the independent variable “brother attended” residential school, $r = .108$, $p < .05$, as shown in table 11. There was a weak, borderline positive relationship found between the dependent “illness scale” variable and the independent “sister attended” residential school variable, where $r = .080$, $p = .087$. The relationship between the dependent variable “illness scale” and the two independent residential school variables:

“Did you attend” residential school, and “years attended” residential school were not statistically significant at the bivariate level.

Table 11

Cross-tabulation: Illness Scale by Did your Brother Attend Residential School

Illness Scale	Brother Attended			
	No		Yes	
	(N)	%	(N)	%
0	74	33.2	66	28.2
1	52	23.3	49	22.1
2	46	20.6	48	20.5
3	31	13.9	31	13.2
4	11	4.9	21	9.0
5	6	2.7	11	4.7
6	1	.4	4	1.7
7	2	.9	4	1.7
Total	223	100	234	100

$r = .108, p < .05$

Table 12

Cross-tabulation: Illness Scale by Age Group

Illness Scale	Age							
	45 – 54 yrs. old		55 – 64 yrs. old		65 – 74 yrs. old		75 and Over	
	(N)	%	(N)	%	(N)	%	(N)	%
0	98	39.2	29	23.0	14	19.7	4	11.8
1	59	23.6	32	25.4	16	22.5	1	2.9
2	56	22.4	22	17.5	13	18.3	11	32.4
3	23	9.2	19	15.1	12	16.9	10	29.4
4	7	2.8	13	10.3	9	12.7	5	14.7
5	1	.4	8	6.3	6	8.5	2	5.9
6	3	1.2	--	--	1	1.4	1	2.9
7	3	1.2	3	2.4	--	--	--	--
Total	250	100	126	100	71	100	34	100

$\tau c = .233, p < .001$

However, there was a moderate, positive statistically significant relationship between the “illness scale” dependent variable and the “age”

variable, where more illnesses are associated with people who are older, tau c = .233, p < .001, as shown in table 12.

There was also a moderate, inverse relationship between the dependent “illness scale” variable and the independent variable “sex”, as demonstrated in table 13. This finding suggests that there are more illnesses among “females” than among “males”, tau c = -.208, p < .001.

Table 13

Cross-tabulation: Illness Scale	Illness Scale by Sex			
	Female		Male	
	(N)	%	(N)	%
0	60	23.5	85	37.6
1	51	20.0	57	25.2
2	63	24.7	39	17.3
3	37	14.5	27	11.9
4	22	8.6	12	5.3
5	13	5.1	4	1.8
6	3	1.2	2	.9
7	6	2.4	--	--
Total	255	100	226	100

tau c = -.208, p < .001.

In addition, there was a statistically significant moderate, inverse relationship at the bivariate level between the dependent variable “illness scale” and the independent variable “education”. Table 14 illustrates that there is more chronic illness among persons with less education, tau c = -.113, p < .001. Support for a statistically significant relationship was not found at the bivariate level between the dependent “illness scale” variable and the independent variable “marital status”.

Table 14

Illness Scale	Cross-tabulation: Illness Scale by Education							
	Grade 8 or less		Grade 9 To Grade 11		Grade 12 To Grade 13		Some Post Secondary	
	(N)	%	(N)	%	(N)	%	(N)	%
0	57	25.9	45	35.2	24	32.4	19	32.2
1	43	19.5	31	24.2	19	25.7	15	25.4
2	43	24	24	18.8	17	23.0	18	30.5
3	42	19.1	14	10.9	4	5.4	4	6.8
4	19	8.6	5	3.9	9	12.2	1	1.7
5	12	5.5	5	3.9	--	--	--	--
6	3	1.4	1	.8	1	1.4	--	--
7	1	.5	3	2.3	--	--	2	3.4
Total	220	100	128	100	74	100	59	100

tau c = -.113, p <.001

SUMMARY OF BIVARIATE RESULTS

A summary of the bivariate analyses, which lists the dependent variable and independent variable, is illustrated in table 15. In summary, there was no support at the bivariate level for hypothesis one, specifically, for a relationship between residential school attendance and objective health outcomes in later life among First Nation people. However, there is partial support for hypothesis two, which suggests that there are familial effects of residential school attendance. The bivariate analyses result in an association between the dependent variable "tuberculosis" and both the "brother attended" and "sister attended" residential school variables. A relationship at the bivariate level was also found for the dependent variable "illness scale" and independent variable "brother attended" residential school. Borderline support for the dependent "illness scale" variable and independent "sister attended" residential school was also found at the bivariate level.

Table 15
SUMMARY OF BIVARIATE RESULTS:
DEPENDENT VARIABLE by INDEPENDENT VARIABLE

	Pearson's r	tau b	tau c
<u>Tuberculosis</u>			
X Did You Attend	n.s.	--	--
X # Years Attended	--	--	n.s.
X Brother Attended	.134***	--	--
X Sister Attended	.106*	--	--
X Sex	n.s.	--	--
X Education	--	--	.077 ⁺
X Marital Status	.079 ⁺	--	--
X Age	--	--	n.s.
<u>Heart Problems</u>			
X Did You Attend	n.s.	--	--
X # Years Attended	--	--	n.s.
X Brother Attended	n.s.	--	--
X Sister Attended	n.s.	--	--
X Sex	.073 ⁺	--	--
X Education	--	-.190***	--
X Marital Status	n.s.	--	--
X Age	--	--	.304***
<u>High Blood Pressure</u>			
X Did You Attend	n.s.	--	--
X # Years Attended	--	--	n.s.
X Brother Attended	n.s.	--	--
X Sister Attended	n.s.	--	--
X Sex	-.116***	--	--
X Education	--	--	-.116***
X Marital Status	n.s.	--	--
X Age	--	--	.226***
<u>Perceived Health</u>			
X Did You Attend	n.s.	--	--
X # Years Attended	--	--	n.s.
X Brother Attended	n.s.	--	--
X Sister Attended	n.s.	--	--
X Sex	n.s.	--	--
X Education	--	.233***	--
X Marital Status	n.s.	--	--
X Age	--	.210***	--

Illness Scale			
X Did You Attend	n.s.	--	--
X # Years Attended	n.s.	--	--
X Brother Attended	.108*	--	--
X Sister Attended	.080 ⁺	--	--
X Sex	--	--	-.208***
X Education	--	-113	--
X Marital Status	n.s.	--	--
X Age	--	--	.233***

Note: ⁺ p < .10, *p < .05, **p < .01, ***p < .001.

In sum, support for was not found for hypothesis one at the bivariate level, which stated that there will be a relationship between objective and subjective health outcomes in later life and residential school attendance. However, there was partial support for hypothesis two, which stated that there will be familial effects of residential school attendance.

Other results in these analyses include a statistically significant relationship between the dependent variable “heart problems” and the covariates “age” and “education”. However, the dependent variable “heart problems” was not statistically significant when cross-tabulated with the residential school experience variables. There was also a statistically significant relationship between the dependent variable “high blood pressure” and “age”, “sex” and “education”, but “high blood pressure” and the residential school context variables were not statistically significant at the bivariate level. There was also associations found for the dependent variable “illness scale” and the covariates “age”, “sex” and “education”. Additional associations were found at the bivariate level between the “perceived health” dependent variable and the covariates “age” and “education”. However, relationships were not found at the bivariate level

between the dependent variable “perceived health” and the residential school context variables “did you attend” residential school, “years attended” residential school, “brother attended” residential school or “sister attended” residential school.

In sum, the bivariate analyses did not provide support for the main hypothesis, which suggests that residential school attendance will impact health status in later life. Partial support however was found for the second hypothesis, which suggests that there will be familial effects of residential school attendance. A multivariate analysis will be conducted in order to further investigate the relationship between the dependent and independent variables, and determine support for the hypotheses.

MULTIVARIATE ANALYSIS

A multivariate analysis is used to examine the independent effects of each explanatory variable that is being studied, while controlling for the effects of other variables. The multivariate analysis will permit the covariates to be controlled, in order to test the two hypotheses outlined in chapter one. There will be two types of multivariate analyses conducted, a logistic regression of four dichotomous dependent variables, and a linear regression analysis of the interval illness scale. Statistical results will be measured by the logistic regression beta coefficient, the standard error, odds ratio, and the level of significance for each of the four logistic regression models presented with the findings. The logistic regression beta coefficient (b) represents the log change in a dependent variable associated with an increase (or a decrease) of one unit in an independent variable, while controlling for the effects of other independent variables (DeMaris, 1995).

For this project, the odds ratio is the factor change in a health outcome for one category of an explanatory variable compared to the reference category. A positive value for an odds ratio ranges between one and infinity, while a negative value ranges between singularity and zero, but will never reach zero. As an example in this instance, an odds ratio of 1.5 for an explanatory variable would indicate that the likelihood of a health outcome is one and a half times larger for the specified category of that independent variable compared to the reference category, while statistically controlling for all other explanatory variables. The overall model is evaluated using the Log Likelihood Chi Square and its level of statistical significance. All statistically significant results at the $p < .05$ level will be reported. Table 16 lists the ten models that are presented in the analysis.

There are five main dependent variables in this study: “tuberculosis”, “heart problems”, “high blood pressure”, “perceived health” and an additive “illness scale”. The dependent variable “perceived health” was recoded into two response categories of “poor/fair” = 0 and “very good/excellent” = 1, for the multivariate analysis. In addition, a total of seven independent variables will be examined in this analysis, which included three residential school context variables and four socio-demographic context variables as follows: 1) “Did you attend” residential school, 2) “Number of years” attended residential school 3) “Did your brother” attend residential school. There are also four socio-demographic independent variables as follows: 4) Sex, 5) Education, 6) Marital Status, and 7) Age. In order to reduce the potential for confounding effects, these socio-demographic variables are incorporated into the analysis.

Table 16: Hierarchical Models for Multivariate Analyses

Logistic Regression Analyses				
Dependent Variable:				
Tuberculosis				
Block:	Model 1	Model 2	Model 1	Model 2
Block 1 Independent Variables	Residential School Context Variables: Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Number of years attended. Did your brother attend residential school.	Residential School Context Variables Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Number of years attended. Did your brother attend residential school.
Block 2 Covariates	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age
Dependent Variable:				
High Blood Pressure				
Block:	Model 1	Model 2	Model 1	Model 2
Block 1 Independent Variables	Residential School Context Variables Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Did your brother attend residential school. Number of years attended.	Residential School Context Variables Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Did your brother attend residential school. Number of years attended.
Block 2 Covariates	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age
Dependent Variable:				
Perceived Health				
Block:	Model 1	Model 2	Model 1	Model 2
Block 1 Independent Variables	Residential School Context Variables Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Did your brother attend residential school. Number of years attended.	Residential School Context Variables Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Did your brother attend residential school. Number of years attended.
Block 2 Covariates	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age

Linear Regression Analyses		
Dependent Variable:		
Illness Scale		
Block:	Model 1	Model 2
Block 1 Independent Variables	Residential School Context Variables Did you attend residential school. Did your brother attend residential school.	Residential School Context Variables Did your brother attend residential school. Number of years attended.
Block 2 Covariates	Socio-Demographic Variables Sex Education Marital Status Age	Socio-Demographic Variables Sex Education Marital Status Age

Since the two residential school variables, "Did you attend residential school" and "Number of years attended residential school", overlap considerably, it was necessary to include each in separate analyses. Also, since the "brother attended" residential school and "sister attended" variables are collinear, the latter variable was removed from all analyses. Therefore, ten analyses were conducted using five dependent variables and two sets of residential school variables. The first set included "Did you attend" residential school and "Did your brother attend" residential school. The second set included "Number of years attended residential school" and "Did your brother attend" residential school. For each analysis, there are two hierarchical blocks of variables. Block one contains the residential school variables and block two contains the socio-demographic covariates. In order to observe possible effects of residential school attendance and reduce potential multicollinearity, two separate hierarchical blocks were conducted for each dependent variable. Each of the two blocks contained the independent variable "did you attend" residential school with either "years attended" and "brother attended" residential school separately; the demographic covariates were controlled for in the second block of each of the models.

The first statistical analysis as shown in table 17 is a logistic regression with the dependent variable, "tuberculosis", and the key independent variables "Did you attend" residential school and "Did your brother attend" residential school. These two variables were included in the first block. The second block has the socio-demographic variables "sex", "education", "marital status" and "age".

Tuberculosis – Model 1

TABLE 17						
LOGISTIC REGRESSION FOR DEPENDENT VARIABLE TUBERCULOSIS – Model 1						
Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
DID YOU ATTEND						
Yes (No = Reference)	-.007	.297	--	-.069	.934	--
BROTHER ATTENDED						
Yes (No = Reference)	.796*	.311	2.21	.794*	.317	2.21
SEX						
Female (Male = Reference)	--	--	--	.353	.277	--
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	-.782*	.427	.457
Grade 12 – 13	--	--	--	-.416	.423	--
Some post-secondary	--	--	--	-.118	.451	--
MARITAL STATUS						
Single (Married = Reference)	--	--	--	.616	.333	--
AGE						
Constant	--	--	--	.015	.014	--
Constant	-2.23			-2.82		
Model Chi Square	8.59*			17.15*		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = Tuberculosis (no = 0 and yes = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

Table 17 illustrates the logistic regression analysis hierarchical block for Tuberculosis – Model 1. The first block in this model was statistically significant

with a block chi-square of 8.59, $p < .05$. The results indicate that there is a strong, positive association between the dependent variable “tuberculosis” and the independent variable “brother attended” residential school. This finding suggests that the odds of having “tuberculosis” are higher (odds ratio = 2.2) among those who reported that a “brother attended” residential school, compared to those with brothers who did not attend residential school. Block two of the model was statistically significant with a chi-square of 17.15, $p < .05$. When the second block of covariates was added to the model, the relationship for “brother attended” residential school remained statistically significant (odds ratio = 2.2), indicating that those who reported that a “brother attended” residential school are twice as likely to report that they have “tuberculosis”, than those with brothers who did not attend residential school.

In addition, the education category of “grade 9 – 11” was statistically significant in the second block of this model, $b = -.782$, $p < .05$, odds ratio = .45. This indicates that “tuberculosis” was less frequent among those who completed “grade 9 – 11” compared to those with “grade 8 or less”, or those who had “some post secondary” education. However, statistical support was not found for an association between the dependent variable “tuberculosis” and the independent variables “did you attend” residential school, “sex”, “marital status” or “age”.

Tuberculosis - Model 2

Table 18 illustrates the hierarchical model for the second logistic regression in this analysis with the dependent variable “tuberculosis” and the two residential school context variables “years attended” residential school and “brother attended” residential school.

TABLE 18
LOGISTIC REGRESSION FOR DEPENDENT VARIABLE TUBERCULOSIS – MODEL 2

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
YEARS ATTENDED						
Did Not Attend (ref)	--	--	--	--	--	--
1 – 5 years	1.27	1.06	--	1.74	1.09	--
6 – 10 years	--	--	--	2.20*	1.07	9.10
11 – 16 years	1.25	1.06	--	1.60	1.08	--
BROTHER ATTENDED						
Yes (No = Reference)	.762*	.317	2.14	.787*	.326	2.2
SEX						
Female (Male = Reference)	--	--	--	-.338	.280	--
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	-.874*	.437	.417
Grade 12 – 13	--	--	--	-.461	.432	--
Some post-secondary	--	--	--	.035	.464	--
MARITAL STATUS						
Single (Married = Reference)	--	--	--	.638	.339	--
AGE						
Constant	-3.59			-4.85		
Model Chi Square	14.60**			25.18**		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = Tuberculosis (no = 0 and yes = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

The first block in this model resulted in a statistically significant association between the dependent variable “tuberculosis” and the independent variable “brother attended” residential school. Model chi-square for block one = 14.60, $p < .01$. The two independent variables representing the residential school experience in block one were statistically significant. The first residential school variable “years attended” refers to the number of years the individual attended residential school. The second variable “brother attended” residential school refers to whether or not the individual respondent’s “brother attended” residential school. Results of the multivariate analysis support an association between the dependent variable “tuberculosis” and independent variable “years attended” residential school, indicating that those who attended residential school for between “6 – 10 years” are nine times more likely to have “tuberculosis”, compared to those who did not attend, $b = 2.20$, $p < .05$.

As in the first model, there is a strong, positive association between the dependent variable “tuberculosis” and “brother attended” residential school, compared to those with brothers who did not attend residential school. The results indicate that the likelihood of having tuberculosis is 2.1 times higher for those with a brother who attended residential school compared to those who did not. When statistically controlling for the socio-demographic variables in block two, the relationship stayed the same.

Block two of this model was statistically significant with a chi-square of 25.18, $p < .05$. In the second block of model one, the variable “years attended” residential school was statistically significant for those who attended residential school between “6 – 10 years” compared to those who did not attend residential

school. As in the first block of this model, those who attended residential school for “6 – 10 years” were nine times more likely to have “tuberculosis” than those who “did not attend” residential school, $b = 2.20$, $p < .05$. In addition, there was a moderate, inverse relationship in block two for an association between the dependent variable “tuberculosis” and the covariate education category “grade 9 – 11”, $b = -.874$, $p < .05$. The results indicate that “tuberculosis” is reported less frequently for those who completed “grade 9 – 11” compared to those who completed “grade 8 or less”. The covariates “sex”, “marital status” and “age” were not statistically significant in this model of the logistic regression.

Heart Problems - Model 1

Table 19 illustrates the hierarchical model of the third logistic regression which has “heart problems” as the dependent variable, and the independent residential school variables of “did you attend” residential school and “brother attended” residential school”. Block one of this model, was not statistically significant. Block two had a chi-square of 41.05, $p < .001$. The independent variables that were statistically significant in this block are “sex” and “age”.

The likelihood of reporting “heart problems” is higher among “females” than among “males” (odds ratio = .61, $p < .05$). There was also a weak positive association between “heart problems” and “age”, (odds ratio = 1.06, $p < .001$), which indicates that those who are older are more likely to have heart problems than those who are younger.

Heart Problems - Model 2

Table 20 in this analysis illustrates the results for the hierarchical model for the logistic regression analysis with the dependent variable "heart problems" and the residential school context variables "brother attended" residential

TABLE 19
LOGISTIC REGRESSION FOR HEART PROBLEMS – MODEL 1

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
DID YOU ATTEND						
Yes (Did not attend = reference)	.050	.235	--	-.007	.253	--
BROTHER ATTENDED						
Yes (Did not attend = reference)	.110	.235	--	.247	.252	--
SEX						
Female (Male = reference)	--	--	--	-.487*	.228	.614
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	.447	.390	--
Grade 12 – 13	--	--	--	-.093	.410	--
Some post-secondary	--	--	--	-.642	.506	--
MARITAL STATUS						
Single (Married = reference)	--	--	--	.334	.295	--
AGE						
Constant	-1.11			.058***	.011	1.06
Model Chi Square	2.93			41.05***		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = Heart Problems (no = 0 and yes = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

school and “number of years attended” residential school in the first block. The analysis indicates that the first block of this model was not statistically significant. Block two of this model was statistically significant with a block chi-square of 66.48, $p < .001$. In the second block, there was a statistically significant relationship between the dependent variable “heart problems” and the “years attended” residential school variable. There was a weak, inverse relationship between the two variables which suggest that those who attended residential school for “11-16 years” were less likely to experience “heart problems” than those who did not attend residential school ($b = -1.40$, $p < .05$, odds ratio = .245). This finding is contrary to the main hypothesis. It may have occurred with these data because of a spurious relationship between the dependent variable “heart problems” and “years attended” residential school, where it appears that those who attended residential school for longer periods of time had fewer incidences of “heart problems”. This finding will be discussed in more detail in the discussion chapter.

In the second block of table 20, the socio-demographic variables “sex” and “age” were also statistically significant. The likelihood of reporting “heart problems” is higher for “females” than for “males” ($b = -.520$, $p < .05$, odds ratio = .595). In addition, the “age” variable was statistically significant ($b = .059$, $p < .001$, odds ratio = 1.06) which indicates that the likelihood of reporting “heart problems” is higher for older people than it is for younger people. The independent variable “brother attended” residential school was not statistically significant in this block, nor were the covariates “education” and “marital status”.

TABLE 20
LOGISTIC REGRESSION FOR HEART PROBLEMS -- MODEL 2

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
YEARS ATTENDED						
Did Not Attend (ref)	--	--	--	--	--	--
1 – 5 years	.238	.567	--	-.632	.650	--
6 – 10 years	.340	.564	--	-.441	.638	--
11 – 16 YEARS	-.417	.587	--	-1.40*	.667	.245
BROTHER ATTENDED						
Yes (No = reference)	.292	.245	--	.386	.266	--
SEX						
Female (Male = reference)	--	--	--	-.520*	.230	.595
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	.598	.403	--
Grade 12 – 13	--	--	--	.255	.421	--
Some post-secondary	--	--	--	-.683	.525	--
MARITAL STATUS						
Single (Married = reference)	--	--	--	.390	.299	--
AGE						
	--	--	--	.059***	.012	1.06
Constant	-1.32			-4.01		
Model Chi Square	6.10			66.48***		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = Heart Problems (no = 0, yes = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

High Blood Pressure – Model 1

Table 21 illustrates the hierarchical model of the variables for the logistic regression for dependent variable “high blood pressure” and the residential school context variables “did you attend” residential school and “brother attended” residential school. Block one in the model was not statistically significant, however, block two was statistically significant with a chi square of 41.05, $p < .001$. In block two there was a moderate, positive association between the dependent variable “high blood pressure” and the independent “brother attended” residential school variable.

The results indicate that those who reported a “brother attended” residential school were one and half times more likely to report that they had “high blood pressure”, ($b = .462$, $p < .05$, odds ratio = 1.5). In addition, there was a moderate, inverse association between “high blood pressure” and “sex”. This finding suggests that “females” are more likely to report that they have “high blood pressure” than “males” ($b = -.448$, $p < .05$, odds ratio = 1.58).

The independent variable “age” was also statistically significant in the second block. There was a weak, positive association between “high blood pressure” and “age” which suggests that those who are older are more likely to have “high blood pressure” than those who are younger ($b = .046$, $p < .001$, odds ratio = 1.04).

High Blood Pressure – Model 2

Table 22 illustrates the hierarchical model of the variables in the logistic regression analysis with the dependent variable “high blood pressure” and the residential school context variables “years attended” residential school and

TABLE 21
LOGISTIC REGRESSION FOR HIGH BLOOD PRESSURE – MODEL 1

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
DID YOU ATTEND						
Yes (No = reference)	-.188	.213	--	-.236	.224	--
BROTHER ATTENDED						
Yes (No = reference)	.362	.212	--	.462*	.222	1.58
SEX						
Female (Male = reference)	--	--	--	-.448*	.201	.639
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	.044	.328	--
Grade 12 – 13	--	--	--	-.047	.333	--
Some post-secondary	--	--	--	-.647	.393	--
MARITAL STATUS						
Single (Married = reference)	--	--	--	.310	.261	--
AGE						
	--	--	--	.046***	.011	1.04
Constant	-.585			-2.88		
Model Chi Square	2.93			41.05***		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = High Blood Pressure (no = 0 and yes = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

“brother attended” residential school. Block one of this model was not statistically significant, however, block two had a chi-square of 42.49, $p < .001$. Statistical results in this model indicate that there was a moderate, positive association between the dependent variable “high blood pressure” and the

independent residential school context variable “brother attended” residential school, ($b = .455$, $p < .05$, odds ratio = 1.5). This indicates that those who report with “high blood pressure” are one and a half times more likely to also report that a “brother attended” residential school, than those with brothers who did not attend residential school.

In addition, in the second block the independent variables “sex” and “age” were statistically significant. The results suggest that “high blood pressure” is more common among “females”, than among “males”, ($b = -.448$, $p < .05$, odds ratio = .639). The independent variable “age” was also statistically significant in this model, which indicates that those who have “high blood pressure” are more likely to be older ($b = .045$, $p < .001$, odds ratio).

Perceived Health – Model 1

The hierarchical modeling of variables in the logistic regression analysis with the dependent variable “perceived health” and the independent variables “did you attend” residential school and “brother attended” residential school are illustrated in table 23. Block one in model one was not statistically significant. Block two was statistically significant with a chi-square of 46.46, $p < .001$. There was a weak, positive association between the dependent variable and the “education” category variable of “grade 9 – 11”. The results indicate that those with an education of “grade 9 – 11” reported that their “perceived health” was “very good/excellent” compared to those with a “grade 8 or less”, $b = 1.15$, $p < .001$, odds ratio = 3.18. In addition, there was a statistically significant relationship between the dependent variable “perceived

TABLE 22
LOGISTIC REGRESSION FOR HIGH BLOOD PRESSURE – MODEL 2

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
YEARS ATTENDED						
Did Not Attend (ref)	--	--	--	--	--	--
1 – 5 years	.199	.500	--	-.299	.555	--
6 – 10 years	.142	.499	--	-.350	.548	--
11 – 16 years	-.124	.507	--	-.683	.558	--
BROTHER ATTENDED						
Yes (No = Reference)	.385	.223	--	.455*	.233	1.57
SEX						
Female (Male = Reference)	--	--	--	-.465*	.201	.628
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	.114	.333	--
Grade 12 – 13	--	--	--	.031	.337	--
Some post-secondary	--	--	--	-.694	.403	--
MARITAL STATUS						
Single (Married = Reference)	--	--	--	.638	.339	--
AGE						
Constant	-.790			.045***	.011	1.04
Model Chi Square	3.53			42.49***		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = High Blood Pressure (no = 0, yes = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

health” and the “age” variable. Those who are older are more likely to report that their “perceived health” status is poor/fair compared with those who are younger, $b = .032$, $p < .05$. However, the residential school context variables “did you attend” residential school and “brother attended” residential school were not statistically significant in this model.

Perceived Health – Model 2

Table 24 illustrates the hierarchical model of the dependent variable “perceived health” and the independent variables “years attended” residential school and “brother attended” residential school in the first block. The first block of this model was not statistically significant, however, block two was statistically significant with a chi square of 46.02, $p < .001$. As in the model there was a weak, positive association between the dependent variable “perceived health” and the independent “education category variable of “grade 9 – 11”. The results indicate that those with an education of “grade 9 – 11” reported that their health was “very good/excellent” compared to those with a “grade 8 or less” education, $b = 1.10$, $p < .001$, odds ratio = .301.

In addition, there was a statistically significant relationship between the dependent variable “perceived health” and the independent variable “age”. This finding suggests that those who are older are more likely to report that they have a “perceived health” status that is “poor/fair” compared to those who are younger, $b = .033$, $p < .01$.

TABLE 23
LOGISTIC REGRESSION FOR PERCEIVED HEALTH -- MODEL 1

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
DID YOU ATTEND						
Yes (No = Reference)	.299	.211	--	.341	.223	--
BROTHER ATTENDED						
Yes (No = Reference)	-.160	.211	-	.110	.225	--
SEX						
Female (Male = Reference)	--	--	--	-.094	.198	--
EDUCATION						
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	1.15***	.325	3.18
Grade 12 – 13	--	--	--	.311	.321	--
Some post-secondary	--	--	--	.324	.357	--
MARITAL STATUS						
Single (Married = Reference)	--	--	--	.061	.258	--
AGE						
	--	--	--	.032*	.011	1.03
Constant	.353			.586		
Model Chi Square	2.02			46.46***		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = Perceived Health (Poor/Fair = 0, Very Good/Excellent = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

TABLE 24
LOGISTIC REGRESSION FOR PERCEIVED HEALTH -- MODEL 2

Independent Variables	Block 1			Block 2		
	B	S.E.	Odds Ratio	B	S.E.	Odds Ratio
YEARS ATTENDED (Did Not Attend = Ref.)	--	--	--	--	--	--
1 – 5 years	-.346	.249	--	-.275	.263	--
6 – 10 years	-.017	.280	--	-.051	.293	--
11 – 16 years	-.220	.509	--	-.166	.546	--
BROTHER ATTENDED Yes (No = Reference)	.076	.222	--	.133	.233	--
SEX Female (Male = Reference)	--	--	--	-.096	.197	--
EDUCATION	--	--	--	--	--	--
Grade 8 or less (ref)	--	--	--	--	--	--
Grade 9 – 11	--	--	--	1.10***	.329	.301
Grade 12 – 13	--	--	--	.322	.322	--
Some post-secondary	--	--	--	.309	.360	--
MARITAL STATUS Single (Married = Reference)	--	--	--	.134	.257	--
AGE	--	--	--	.033**	.011	1.03
Constant	.463			-.207		
Model Chi Square	2.31			46.02***		
Cases in Analysis	539			539		

Notes:

1. Dependent Variable = Perceived Health (Poor/Fair = 0, Very Good/Excellent = 1)
2. B = parameter estimate, S.E. = standard error of estimate
3. *p < .05, **p < .01, ***p < .001

In order to further test the hypothesis of residential school attendance and objective health status in later life, the statistical analysis for the ninth and tenth

hierarchical models in this project was conducted with a linear regression analysis of the “illness scale” dependent variable. The statistical method of ordinary least square (OLS) regression analysis is used with the dependent variable “illness scale” in order to obtain the maximum accuracy for predicting an outcome. In this instance, OLS is used to predict an outcome between the dependent variable “illness scale” and the independent residential school experience variables to test the hypotheses. The dependent variable “illness scale” is an additive illness scale comprised of the seven of the eight chronic illness variables: “tuberculosis”, “high blood pressure”, “heart problems”, “arthritis/rheumatism”, “breathing problems”, “asthma” and “diabetes”. Although it was desirable to have a coefficient of .7 for this scale, the reliability coefficient (cronbach’s alpha) for the illness scale is 6.3, which is acceptable for this project. The illness scale is from 0 –7 with 0 being “no reported illness”.

Illness Scale-- Model 1

Table 25 illustrates the hierarchical model for the linear regression analysis of the dependent variable “illness scale” and independent variables in order to test the stated hypothesis. Block one of the model was not statistically significant. Block two of the model had a chi-square of .144, $p < .001$. The results indicate that there is an association between the dependent variable “illness scale” and the independent variables “brother attended” residential school, “sex” and “age”. There is a weak positive association between the dependent variable “illness scale and “brother attended” residential school ($b = .127, p < .01$), indicating that there are more chronic illnesses among those with

brothers who attended residential school, compared to those with brothers who did not attend.

In addition, there was an inverse, weak relationship in block two between the dependent variable, and the independent variable of "sex" ($b = -.212$, $p = .001$), which indicates that there are more chronic illnesses amongst "females", than among "males". The covariate "marital status" was also statistically significant, with those who are not married reporting more chronic illnesses than those who are married ($b = .094$, $p < .05$). There was a moderate, positive relationship between the dependent variable "illness scale" and "age", with those who are older reporting more chronic illnesses ($b = .272$, $p < .001$). Block two was statistically significant, ($R^2 = .144$, $p < .001$) with support shown for a relationship between the dependent variable and independent variables "brother attended", "sex", "marital status" and "age".

Illness Scale – Model 2

In the first block of this model, as illustrated in table 26, there is a weak, positive association between the dependent variable "illness scale" and independent variable "brother attended" residential school, ($b = .133$, $p < .05$). In the second block, the relationship between the two variables remained the same, ($b = .139$, $p < .01$). In the second block there was a moderate, inverse relationship between the dependent variable "illness scale" and the independent variable "sex", ($b = -.213$, $p < .001$), which indicates that males have fewer chronic illnesses than females. There was also a moderate, positive association between the "illness scale" variable and "age", with those who are older reporting more

TABLE 25
LINEAR REGRESSION FOR ILLNESS SCALE – MODEL 1

Independent Variables	Block 1		Block 2	
	B	S.E.	B	S.E.
DID YOU ATTEND				
Yes (No = Reference)	-.018	.169	-.037	.159
BROTHER ATTENDED				
Yes (No = Reference)	.117*	.169	.127**	.158
SEX				
Female (Male = Reference)	--	--	-.213***	.142
EDUCATION	--	--	-.058	.073
MARITAL STATUS				
Single (Married = Reference)	--	--	.095*	.186
AGE	--	--	.272***	.007
Constant	--	.114	--	.582
R ²	.012		.144***	
Cases in Analysis	539		539	

Notes:

1. Dependent Variable = Illness Scale
2. R² = Multiple R²
3. B = standardized beta co-efficient; S.E. = standard error of estimate
4. *p < .05, **p < .01, ***p < .001

chronic illnesses, (b = .273, b < .001). A weak positive association was found between “marital status” and the dependent variable “illness scale” (b = .098, p < .05). Block two was statistically significant, (R² = .131, p < .001) which supports an association between the dependent variable “illness scale” and the

independent variables “brother attended” residential school, “sex”, “marital status” and “age”.

TABLE 26
LINEAR REGRESSION FOR ILLNESS SCALE – MODEL 2

Independent Variables	Block 1		Block 2	
	B	S.E.	B	S.E.
YEARS ATTENDED				
Did Not Attend (ref)	--	--	--	--
1 – 5 years	-.002	.201	.001	.189
6 – 10 years	-.047	.224	-.069	.210
11 – 16 years	-.038	.412	-.023	.398
BROTHER ATTENDED (0 = no, 1 = yes)	.133*	.177	.139**	.166
SEX (Female = 1, Male = 2)	--	--	-.213***	.142
EDUCATION	--	--	-.055	.053
MARITAL STATUS (Single = 1, Married = 2)	--	--	.098*	.187
AGE	--	--	.273***	.007
Constant		.113		.585
R ²	.014		.131***	
Cases in Analysis	539		539	

Notes:

1. Dependent Variable = Illness Scale
2. R² = Multiple R²
3. B = standardized beta co-efficient; S.E. = standard error of estimate
4. *p < .05, **p < .01, ***p < .001

SUMMARY OF MULTIVARIATE RESULTS

A summary of the multivariate results are found in tables 27 and 28. The two tables show only the statistically significant variables in each block and for each model.

Table 27				
SUMMARY OF STATISTICALLY SIGNIFICANT MULTIVARIATE RESULTS: MODEL AND BLOCK Logistic Regression Analysis				
Model – Block and Variable Name	Beta Co-efficient	Standard Error	Odds Ratio	Model Chi square Value and Significance Level
<u>Tuberculosis – Model 1</u>				
<u>Block 1</u>				
Brother Attended				8.59*
	.796*	.311	2.21	
<u>Block 2</u>				
Brother Attended	.794*	.317	2.21	17.15*
Education (Grade 9 – 11)	-.782*	.427	.457	
<u>Tuberculosis – Model 2</u>				
<u>Block 1</u>				
Brother Attended	.762*	.317	2.14	14.60**
# Years Attended (6-10 years)	--	--	--	
<u>Block 2</u>				
Brother Attended	.787*	.326	2.2	25.18**
# Years Attended (6-10 years)	2.20*	1.07	9.10	
Education (Grade 9 – 11)	-8.74*	.437	.417	
<u>Heart Problems – Model 1</u>				
<u>Block 1</u>				
	--	--	--	n.s.
<u>Block 2</u>				
Sex	-.487*	.228	.614	41.05***
Age	.058***	.011	1.06	
<u>Heart Problems – Model 2</u>				
<u>Block 1</u>				
	--	--	--	n.s.
<u>Block 2</u>				
# Years attended (11-16 years)	-1.40*	.667	.245	66.48***
Sex	-.520*	.230	.595	
Age	.059***	.012	1.06	
<u>High Blood Pressure – Model 1</u>				
<u>Block 1</u>				
	--	--	--	n.s.
<u>Block 2</u>				
Brother Attended	.462*	.222	1.58	41.05***
Sex	-.448*	.201	.639	
Age	.046***	.011	1.04	

Table 27 continued
SUMMARY OF STATISTICALLY SIGNIFICANT MULTIVARIATE RESULTS: MODEL AND BLOCK
Logistic Regression Analysis

Model - Block and Variable Name	Beta Co- efficient	Standard Error	Odds Ratio	Model Chi square Value and Significance Level
High Blood Pressure - Model 2				
<u>Block 1</u>	--	--	--	n.s.
<u>Block 2</u>				42.49***
Brother Attended	.455*	.233	1.57	
Sex	-.465*	.201	.628	
Age	.045***	.011	1.04	
Perceived Health - Model 1				
<u>Block 1</u>	--	--	--	n.s.
<u>Block 2</u>				46.46***
Education (Grade 9-11)	1.15***	.325	3.18	
Age	.032*	.011	1.03	
Perceived Health - Model 2				
<u>Block 1</u>	--	--	--	n.s.
<u>Block 2</u>				46.02***
Education (Grade 9-11)	1.10***	.329	.301	
Age	.033**	.011	1.03	

*p< .05, **p<.01, ***p<.001

Table: 28
SUMMARY OF STATISTICALLY SIGNIFICANT MULTIVARIATE RESULTS:
Model and Block
Linear Regression Analysis

Model - Block and Variable Name	Beta Co-efficient	Standard Error	R ²
Illness Scale - Model 1			
<u>Block 1</u>			
Brother Attended	.117*	.169	.012
<u>Block 2</u>			.14***
Brother Attended	.127**	.158	
Sex	-.212***	.142	
Marital Status	.094*	.186	
Age	.272***	.007	
Illness Scale - Model 2			
<u>Block 1</u>			.014
Brother Attended	.133*	.177	
<u>Block 2</u>			.131***
Brother Attended	.139**	.166	
Sex	-.213***	.142	
Marital Status	.098*	.187	
Age	.273***	.007	

*p< .05, **p<.01, ***p<.001

CHAPTER IV: DISCUSSION

In recent years, a growing body of qualitative research has been conducted on the effects of the residential school experience on subjective health, but quantitative research in this area is rare. This is especially true concerning residential school attendance and objective health outcomes in later life. This project investigated the relationship between residential school attendance and objective and subjective health status in later life among First Nation elders. In order to determine if a causal relationship exists between residential school attendance and health status, two hypotheses were proposed.

Hypothesis 1: *Residential school attendance has long-term negative effects on the subjective and objective health status of First Nation peoples.*

Hypothesis 2: *There are familial effects of the residential school experience.*

This project may be considered a first attempt to utilize a quantitative method to establish a relationship between residential school attendance and objective health status in later life. As such, it is anticipated that this work is considered exploratory and will fill in some current gaps in the research literature regarding First Nation aging and the effects of residential school attendance.

In order to describe the significance of the statistical analysis contained in chapter three, a summary of the major findings will be presented in the first section of this discussion. Secondly, an overview of the project findings will be presented with a conceptual theory that links the findings, followed by a summary of the limitations of this research. Suggestions for future research in First Nation

specific health in this growing field of gerontology will also be included in the conclusion.

Major Findings

The two major research questions investigated in this project are conceptualized in the following two hypotheses. First, is the hypothesis that residential school attendance has long term negative effects on the subjective and objective health status of First Nation people in later life. In this case, the main health focus is on chronic health conditions, given their prevalence in later life, connection to lifestyle, and the relationship to social advantage. The second hypothesis is that there will be familial effects of the residential school experience by testing if there is an association between having a sibling who attended a residential school, and health status in later life.

The five main dependent variables that were analyzed in this project are: “tuberculosis”, “heart problems”, “high blood pressure”, “perceived health” and an additive “illness scale”. Each of the five dependent variables was used in a hierarchical model in order to test the hypotheses; the first four were logistic regression analyses. The fifth dependent variable is the “illness scale”, which was analyzed using a linear regression analysis. Summary results for the logistic regression analysis is contained in table 27, and the linear regression analysis is summarized in table 28. The first block in each of the five models contained the following two independent residential school variables: “Did you attend” residential school and “Did your brother” attend residential school. The second block in each of the five models contained the following two residential school

context variables: “Number of years attended” residential school, and “Did your brother” attend residential school. In addition, each of the hierarchical blocks contained the following four socio-demographic covariates: “sex”, “education”, “marital status” and “age”. The rationale for the ordering of the variables is that the residential school experience is comprised of antecedent events that must be included in the first block of each model, and the socio-demographic variables are consequent events that are ordered in the second block of the model.

Summary of Results

Results that are related to the main hypothesis will be summarized in this section. The statistical analysis indicates that the following dependent variables support the hypotheses as shown in the hierarchical models that were used to investigate the relationships in this project. The dependent variable “tuberculosis” had a statistically significant association with two of the residential school experience variables, “number of years” attended residential school and “brother attended” residential school. These two associations lend support to both of the hypotheses, that is, that the residential school experience has a negative impact on the objective health status of attendees, and that there are familial effects of residential school attendance.

The dependent variable “heart problems” and residential school experience variable “number of years” attended residential school was also statistically significant, however, the association was in the opposite direction from the stated hypothesis. But there was additional support for the hypothesis regarding familial effects of residential schools, with a statistically significant

association between the dependent variable “high blood pressure” and “brother attended” residential school. Both of the models in the high blood pressure analysis provided support for the second hypothesis. Lastly, the additive dependent “illness scale” variable had a statistically significant association when tested with the “brother attended” residential school variable. Both of the models and blocks in the “illness scale” analysis provided support for the familial effects of residential school hypothesis.

In summary, of the five hierarchical models used to test the hypothesis, three resulted in statistically significant associations that lent support for the main hypothesis. However, support was not established for the portion of the main hypothesis that addresses subjective health status using the dependent variable “perceived health”. As previously mentioned, there were three residential school context variables used in this project to test the hypotheses. These included “did you attend” residential school, “number of years” attended and “brother attended” residential school. The first residential school context variable “did you attend” residential school was not statistically significant in any of the hierarchical models. However, the residential school variable “number of years” attended residential school was statistically significant in the hierarchical model containing the dependent variables “tuberculosis” and “heart problems”.

It is interesting to note that the finding with the dependent variable “heart problems” and “years attended” residential school variable was contrary to the main hypothesis, as it was in the opposite direction to the main hypothesis. There may be a few explanations for this contradictory finding. One explanation

may be that the etiology for heart problems are often multi-faceted with several predictors, and as a result there could be confounding variables in this instance. This project could not control for all variables such as the community size, the location of the residential school or level of exercise for the individual. Further, it is possible that certain residential schools may have provided a better diet for those in attendance, which resulted in fewer heart problems in later life. On the other hand, people in more isolated communities may experience higher rates of heart disease due to diets that could be high in fat and a lifestyle that may be conducive to heart problems, such as a lack of regular exercise. This potential factor must be made with caution and not as a judgment toward the lifestyle of First Nation people, as a traditional diet is preferable to most First Nation people. However, it is not available due to legislative restrictions on lifestyle such as living on reservations and inability to hunt or fish for traditional foods due to federal government regulations prohibiting the traditional gathering of food.

Another consideration is the methodology and possible limitations of this data set, including validity and potential under-reporting of heart problems among those who actually do have heart disease. There is also the possibility that this finding was due to the relatively small sample size which may not have been large enough to detect true, smaller effects such as heart problems among those who did attend residential school. Finally, although qualitative research provides evidence that there are severe psych-social effects of the experience, this finding may indicate that there are some positive objective health outcomes for some of the individuals who attended residential school. For example, students who

attended residential schools in some areas may have received a healthier diet than those at other schools; however, more research is needed to determine if this is the case.

Therefore, the first hypothesis, which tested for outcomes of objective and subjective health status, was only partially supported by the “tuberculosis” and “illness scale” hierarchical models. The second hypothesis which tested for familial effects of residential school attendance was more completely supported in that those with brothers who attended residential school were more likely to report that they have tuberculosis, high blood pressure and more illnesses, compared to those with brothers who did not attend residential school.

Other Findings

In addition to the positive associations between the dependent variables and the residential school context variables, there was also support for positive associations between health status and the co-variables “sex”, “education” and “age”. These results are consistent with the literature whereby those who are female, less educated and older have more illnesses than do males, those with higher education and who are younger. An interesting finding was that the independent variable “marital status” was not statistically significant in any of the hierarchical models, as would have been theorized given that marital status is a predictor for higher health status amongst the general population. The literature suggests that married people have fewer illnesses than do those that are not married, however, this was not the case with this data set. Perhaps it may be

explained by the fact that the study size was not large enough to detect true, small effects.

However, the findings that are consistent with the literature are for the two independent variables “sex” and “age”. Both were statistically significant for an association with the dependent variables “heart problems” and “high blood pressure” in the hierarchical models. The literature does suggest that females and older people have higher incidences of heart problems and high blood pressure, than do males or younger people.

As mentioned, support was not found for the main hypothesis that addressed subjective health status and residential school attendance. In this project, subjective health status is measured by the dependent variable “perceived health”. The co-variables “education” and “age” were the only two variables that were statistically significant in the “perceived health” multivariate analyses. The subjective health outcome variable “perceived health” was statistically significant for both of the co-variables, education “grade 9 – 11” and “age”. That is, those who had an education of “grade 9 – 11” indicated that their health was “very good/excellent” compared to those with a “grade 8 or less” education, compared to the reference category of “poor/fair”. Also, as expected those who are younger perceived their health to be “very good/excellent” compared to those who are older.

Although the two findings with “perceived health”, “education” and “age” are consistent with the literature, it is possible that full support for the main hypothesis that addressed subjective health status was not found due to the fact

that self-reported health status are often under-reported on survey data (Reading and Elias, 1997). This under-reporting may make it difficult to determine the actual measurement and prevalence.

Theoretical Linkages

As noted, to date there is a paucity of research pertaining specifically to First Nation health and in particular to First Nation aging and health. The significance and importance of First Nation driven research is largely recognized and according to one indigenous scholar more First Nations “ought to be conducting the research and writing about it” (Swisher, 1998:190). Since increasing numbers of First Nation scholars are now making significant contributions to research, theory that is grounded on the First Nation experience will also be developed (Smith, 1999). It has been suggested that a holistic and comprehensive discussion of First Nation population aging must include an analysis of the residential school experience, since literature suggests that those institutions had a profound impact on many cohorts of elders. While one specific theory which encompasses First Nation aging does not exist at present, a synthesis of two approaches may be useful in a discussion of the findings in this project.

First, elements of the life course theory provide an effective framework for explaining the relationship between residential school attendance and health outcomes in later life. Life course theory as it relates to aging is based on the assumption that since aging is a lifelong process, an explanation of the process must involve an understanding of antecedent and consequent events. Within the

perspective of the residential school experience and health status in later life, the antecedent variable is the residential school experience and the consequent (or intervening variable) event is health status in later life.

The main findings in support of the hypothesis suggesting a relationship between objective health status and residential school attendance, is best described within the contextual basis of the life course theory. It has been established that many First Nation children who attended residential school were exposed to a host of infectious diseases, especially tuberculosis. The major finding in this project is that tuberculosis is nine times more prevalent among those who attended residential school for between "6-10 years" compared to those who did not attend residential school. In addition, it was found that those with "brothers who attended" residential school were twice as likely to report that they had tuberculosis than those with brothers who did not attend. These two findings lend partial support for the main hypothesis and full support for the second hypothesis of a familial effect of residential school attendance.

Second, an association between residential school attendance and health outcomes in later life can also be conceptualized within the population and human development perspective. According to some social scientists, the literature indicates that "population health is influenced by social/economic relations within society, by the psychosocial impact of these relations, and by experiences during sensitive periods in human development (Hertzman, 1999:21). The population health perspective is similar to the traditional holistic view of health and wellness that many First Nation people embrace, where the

meaning of the word “health” refers to the person’s whole being, capturing “aspects of physical, mental, emotional, and especially spiritual being” (Read, 1995:300). The antecedent, sensitive period in question in this analysis is the individual’s childhood and the impact of the residential school experience on their health outcomes in later life. However, a distinguishing factor between the life course theory and population health perspective is that former suggests that earlier life experiences affect later ones, and the latter emphasizes the determinants of health. In the First Nation life experience, both of these perspectives encompass the element of disadvantage.

Given that the literature indicates that the majority of children who attended these institutions had diets that consistently lacked the necessary nutritional requirements for a healthy lifestyle, that overcrowding and drafty sleeping quarters were a concern, it is not surprising that many children in those institutions succumbed to tuberculosis. Those that did not perish from this disease then, grew to become adults who may have an inactive form of tuberculosis. Also, the support for familial effect of residential school attendance that was manifested by the “brother attended” residential school variable may have occurred due to the brother returning to the family home and unknowingly exposing others to tuberculosis. A recent study conducted in isolated First Nation communities indicates that there is a significant association between housing density, isolation, income levels and rates of tuberculosis (Clark and Riben, 2001), with overcrowding being the main risk factor in exposure to infectious tuberculosis. It has been documented that several generations of First

Nation children were exposed to tuberculosis at residential school, and there is evidence that the risk to continued exposure exists today (ibid). As mentioned in the first chapter, an additional factor to consider in the incidence of tuberculosis is the fact that the residential school children were living in extremely stressful situations, which may also have weakened their immune systems and made them susceptible to this type of disease (see Cassel, 1974; 1976).

Limitations of Research

First, although the sample size of 539 respondents is considered adequate for this particular project, a larger sample size would have had greater statistical power in detecting true small effects of the residential school experience. It is recommended that future research in this field encompass a larger sample size.

Second, while it is difficult to ascertain the specific reason why the residential school context variable "did you attend" residential school was not statistically significant in any of the analyses, it is possible that measurement error occurred in the survey design or data collection phase. Perhaps the residential school variables were not operationalized to capture reliable results. Although residential school attendance questions were asked, the survey was not designed specifically to measure residential school effects.

Third, the quality of the data may have been comprised due to the fact that data collection occurred in sixteen diverse communities and with different interviewers, which may have affected reliability. Although trained interviewers

conducted the surveys in these cases, future regional health surveys will ensure that more rigorous training is conducted prior to data collection.

In some instances it is also difficult to establish sequence between health outcomes and residential school attendance because several generations of First Nation children attended residential schools over a long period of time, making it difficult to determine causation between the independent and dependent variables used in this analysis. As such, it is not possible to determine when the individual was diagnosed with tuberculosis and if it occurred before or after attending at residential school. It would be beneficial to this type of research to have this type of information in order to more effectively determine sequence and causation. It would have also been useful to determine specific years of attendance for each individual in order to establish sequence. Another possible limitation is that more specific questions that sufficiently address the wide range of health outcomes and residential school attendance were not addressed.

Questions that address employment, isolation, living conditions, social-economic status, exercise, number of doctor visits and other determinants of health will be addressed in follow-up regional health surveys. As mentioned previously, the omission of these covariates of health status in the multivariate analysis raises the possibility of specification error. Additional questions that measure subjective health status would also be useful in follow-up regional health surveys. Measurement error may have occurred with this data set which suggests that the overall quality of the data may be in question, however, there is

sufficient evidence that the data meets minimum standards of reliability and validity and the results reported in the statistical analysis are fully supported.

Future Research

Future research in this field could involve the development of a theoretical framework in gerontology that encompasses the unique aspects of First Nation health and aging. Such a framework would necessarily consider the potential impact that the residential school system has had on the healthy aging of this population. One possibility is a blending of some aspects of the life course theory with the population health theory, to develop a model that complements trends in First Nation population aging. In order to more effectively determine causation between residential school attendance and health outcomes in later life, it would be useful to conduct a prospective study that has a control group of those who attended residential school with those who did not. It would also be useful to conduct a comparative analysis on the health status of people who attended boarding schools with the outcomes with First Nation people who attended residential schools. The boarding school experience of American Indian people in the United States would also be important to study in this type of analysis as there are a great deal of similarities between the two systems (Milloy 1999).

Summary and Conclusion

The results of the statistical analyses in this project as they relate to First Nation aging can be described in elements of both the life course theory and the population health perspective. However, these findings are presented with

caution as it is not possible with this data set to determine the specific timing that tuberculosis was diagnosed. This is the first body of work that employs a quantitative approach to determining the impact that the residential school experience has on health outcomes in later life. A much more detailed analysis is required, and due to the complex etiology of health problems in the First Nation population, it can be difficult to establish causation. For that reason it is recommended that future research that addresses these issues in greater scope be conducted in order to fully investigate a relationship between residential school attendance and objective health status in later life.

Additional longitudinal health research will address theoretical perspectives as they relate to First Nation aging and health. Improved survey designs will address other outstanding issues such as establishing sequence and causation in relation to residential school attendance and health outcomes. With active First Nation participation, the field of gerontology may become much more inclusive of First Nation specific research, policy and attending theory. Today more than ever, the need to address the poor health status and the population aging of this group is receiving more attention from First Nation researchers, academics and other health professionals. This is due to the fact that community based people are becoming involved in participatory research over which they have ownership, control and access. Given the unique historical background of the First Nation people, it is imperative that discussions of First Nation health and aging include a comprehensive and holistic view of both their individual and population health, which includes the residential school experience.

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First Nations and Inuit National Health Survey:

B.C. First Nations Regional Health Survey

January, 1997

INTERVIEWER'S NOTES: KEY POINTS TO EXPLAIN TO PEOPLE BEING INTERVIEWED

PURPOSE OF SURVEY:

1. Information gathered will be used to identify needs of the community.
2. The needs identified will be used for planning health services and programs, making up the Community Health Plan.
3. The primary goal for the Community Health Plan will be to improve the quality of Health Services and Programs.

WHAT INFORMATION WILL BE COLLECTED BY SURVEY:

1. To find out what people think and feel about current health services and programs currently provided in the community.
2. What additional health services and programs, people would like to see provided in the community.
3. What people think and feel about their own health condition.
4. To find out what people think and feel about certain health issues in the community.
5. To find out how people would change or improve upon the current situation.
6. To find out what is working in the community.

CONFIDENTIALITY:

Please assure people being interviewed, that anything they say will be held in strictest confidence. That the results of the survey will be rolled up in one report and people will not be identified.

PARTICIPATION IS VOLUNTARY:

Assure people that participation is voluntary, that you would like their input very much, but that they may choose not to participate at all, or may refuse to answer any questions that you will ask and that you will honour and respect their decision.

SUPPORT FOR THE RESPONDENT:

Should the person who is being interviewed, decide to cut interview short, or is visibly upset at the end of the interview, please offer a referral, should they wish it, to any of the mental health workers, identified to provide such a service.

1 Confidential Information

1.1 Name: _____

Enter first name, middle initial, and last name (e.g. John E. Smith).

1.2 Present place of residence: _____

Enter complete mailing address, including postal code, where the respondent is presently living (where the respondent has been living for at least three months).

e.g. 1111 Sky Street, Truenorth First Nations, B.C., A1A 2B2

1.3 Study Identifier number (to ensure confidentiality) _____

Each survey has a specific number, please enter the survey identifier number here.

2 Respondent Information

2.1 Study Identifier number (to ensure confidentiality) _____

Each survey has a specific number, please enter the survey identifier number here.

2.2 Birthdate: (dd/mm/yy) _____

Enter date, month, and year of birth of the respondent.

2.3 Birthplace: _____

Enter the community where the respondents mother was living at the time of the respondents birth.

2.4 Sex: _____

- 1 female
- 2 male

2.5 Name of First Nation or Inuit home community: _____

Enter the legal name of the respondents First Nation or Inuit home community.

- 2.6 Select one of the following that best describes your residency in this community: _____
- a. Other than short trips or visits away, I have lived here all my life.
 - b. I have lived in another community or communities for a period of approximately _____ years.
 - c. I have been away from this community in order to take short term jobs or to attend school, receive therapy for longer than brief trips for approximately _____ years (use fraction if less than one year).
- 2.7 Are you currently giving any serious thought to the possibility of moving away to some other community? _____
- 1 Yes
 - 2 No
- 2.7.1 If yes, would you please rank the following factors in terms of their likely influence on any future decision to establish your principal residence in some other community. (2=strong influence, 1=some influence, 0=no influence)
- a. To pursue an extended educational program. _____
 - b. To be with family or partner living elsewhere. _____
 - c. To gain better access to work. _____
 - d. To get away from a bad social situation here. _____
 - e. To access wider life style opportunities. _____
 - f. To gain better access to social supports. _____
 - g. To gain better access to medical services. _____
 - h. Other, please specify _____
- 2.8 Current Marital Status: _____ (select one from following):
- 1 single
 - 2 married
 - 3 common law
 - 4 separated
 - 5 divorced
 - 6 widow

Enter all the selections that apply to the respondent.

2.9 Number of children: _____

Enter the total number of children that the respondent has ever had, include all biological, adopted, fostered, and extended family.

2.10 How many of your children (under 18 years old) are currently living in your household? _____

Enter the total number of children, include all biological, adopted, fostered, and extended family, currently living in the respondents household.

2.11 Languages spoken: _____

Enter all languages spoken by the respondent, including aboriginal languages and dialects.

2.12 Languages written: _____

Enter all languages written by the respondent, including aboriginal languages and dialects.

2.13 Language most often used in daily life: _____

Enter the one language most often used in daily life by the respondent, including aboriginal languages and dialects.

2.14 What is the highest grade that you completed in elementary and secondary school? _____
(enter grade number: primary 1 2 3 4 5 6 7 8 9 10 11 12 13)

2.15 How many years of full-time study (or its equivalent if part-time) have you completed in a vocational or technical school? _____ (1 2 3 4 5 6 none)

(please include upgrading by full year or equivalent by adding courses)

2.16 How many years of full-time study (or its equivalent if part-time) have you completed in college or university? _____ (1 2 3 4 5 6 7 8 9 10 none)

3 Children's Health

The following questions are for the mother or person most responsible for the children to respond on behalf of the child. If you have no children or are not responsible for a child's health, please skip to section 4: Health Services.

Instructions: Only one child should be randomly selected from each adult respondent. (It would be better if we could complete the survey for all the children, however this would significantly increase the time needed to complete the national

survey.) For the purpose of the survey, a child is anyone under the age of 18 years. Please use the simple two-step method to randomly select one child:

- I. make a list of all the adult respondent's children (under age 18) and number them starting with the oldest. For example: if the family has 7 children under age 18 each child would be assigned a number; the oldest is 1, the youngest 7.
- II. to randomly select one child, select a number of cards that correspond to the number of children in the family, e.g. 7 numbered cards for 7 children. Shuffle the cards and select one. Compare the number on the selected card to the number assigned to the child. Report only for that child selected.

3.1 What is your child's date of birth? (dd/mm/yy) _____

Enter date, month, and year of birth of the respondent's child.

3.2 What is the sex of your child? _____

- 1 Male
- 2 Female

CHILDREN - PHYSICAL

3.3 What was the birth weight of your child?

- 1 _____ pounds _____ ounces , or _____ grams
- 2 don't know

3.4 Was your child breast-fed?

- 1 Yes, _____ If Yes, for how many months? _____
- 2 No
- 3 don't know

3.5 In general , how would you rate your child's health? _____

- 1 excellent
- 2 very good
- 3 fair
- 4 poor
- 5 don't know

Enter the caregivers opinion as to the current general well-being of their child.

3.6 In the next question, a long-term condition means a condition that has lasted at least 6 months.

Which, if any, of the following long-term conditions or health problems does your child have?

	YES	NO
(a) allergies.....	1	2
(b) bronchitis.....	1	2
(c) asthma.....	1	2
(d) tuberculosis or TB.....	1	2
(e) heart condition or problem.....	1	2
(f) kidney problem.....	1	2
(g) epilepsy.....	1	2
(h) diabetes.....	1	2
(i) overweight or obese.....	1	2
(j) psychological or nervous difficulties.....	1	2
(k) ear infection and ear problems.....	1	2
(l) other long-term problems? If Yes, Please list.		

3.7 Has your child ever had:

	YES	NO
(a) a serious head injury?.....	1	2
(b) a serious burn?.....	1	2
(c) an accident/injury causing broken bones or fractures?	1	2
(d) an accident where he/she almost drowned or needed to be rescued?.....	1	2
(e) a serious cold weather injury such as frostbite, hypothermia?.....	1	2
(f) an accident/injury causing loss of limb(s), vision or hearing?.....	1	2

CHILDREN - EMOTIONAL

3.8 During the past 6 months, do you think that your child has had more emotional or behavioral problems than other boys/girls of his/her age?

-
- 1 Yes
 - 2 No
 - 3 Don't know

CHILDREN - SOCIAL

- 3.9 During the past 6 months, how well has he/she gotten along with the family? _____
- 1 Very well, no problems
 - 2 Quite well, hardly any problems
 - 3 Pretty well, occasional problems
 - 4 Not too well, frequent problems
 - 5 Not well at all, constant problems

CHILDREN - CULTURE

- 3.10 How satisfied are you with your child's knowledge of Native culture?
- _____
- 1 Very satisfied
 - 2 Satisfied
 - 3 Unsatisfied
 - 4 Very unsatisfied

4 Health Services

- 4.1 Do you believe that First Nations/Inuit people have the same level of health services as the rest of Canada? _____
- 1 Yes
 - 2 No
 - 3 Don't know
- 4.2 What aspect of health services is in need of improvement?
- | | YES | NO |
|---|-----|----|
| a) kidney dialysis..... | 1 | 2 |
| b) translation services..... | 1 | 2 |
| c) pediatricians, medical specialists for children | 1 | 2 |
| d) dental services | 1 | 2 |
| e) more staff at clinics and local hospitals..... | 1 | 2 |
| f) chronic care facilities..... | 1 | 2 |
| g) elderly homes | 1 | 2 |
| h) home care | 1 | 2 |
| i) awareness sessions for patients on medications..... | 1 | 2 |
| j) awareness sessions for patients on diseases, prevention | 1 | 2 |
| k) diabetes education/awareness programs..... | 1 | 2 |
| l) eye specialists | 1 | 2 |
| m) mental health services | 1 | 2 |
| n) other, please list: _____ | | |

5 Tobacco

5.1 Have you ever used tobacco in *non-traditional* ways including smoking cigarettes, cigars, a pipe, or used smokeless tobacco (such as snuff or chewing tobacco)? _____

- 1 Yes
- 2 No

If you answered yes please continue, If no please skip to section 6: Environmental Tobacco Smoke

5.2 At the present time do you use tobacco in the following ways:

a) smoke cigarettes _____

- 1 Yes if Yes, how many cigarettes per day _____
- 2 No

b) smokeless tobacco _____

- 1 Yes
- 2 No if Yes, what type of smokeless tobacco? _____
- 3 snuff, how much per day _____
- 4 chewing tobacco, how much per day _____

5.3 Are there any controls or restrictions on smoking in your community? _____

- 1 Yes
- 2 No
- 3 Don't know

5.4 Have any controls or restrictions on smoking affected how much you smoke each day? _____

- 1 Yes
- 2 No

5.5 At what age did you begin to smoke cigarettes daily? _____ (years old)

5.6 If you presently do not smoke at what age did you quit smoking cigarettes daily? _____ (years old)

6 Environmental Tobacco Smoke

- 6.1 Does anyone in your household smoke regularly inside the house? _____
1 Yes
2 No
- 6.2 How many people in your household, excluding yourself, smoke daily?
_____ (number of people)
- 6.3 Do you ever feel unpleasant effects from the cigarette smoke of others? _____
1 Yes
2 No

7 Medical Conditions including Diabetes

- 7.1 Have you been told by a health care professional that you have:
- | | YES | NO | If Yes, at what age? |
|--|---------|---------|----------------------|
| a) high blood pressure..... | 1 | 2 | _____ |
| b) arthritis or rheumatism | 1 | 2 | _____ |
| c) heart problems | 1 | 2 | _____ |
| d) breathing problems..... | 1 | 2 | _____ |
| e) asthma..... | 1 | 2 | _____ |
| f) tuberculosis (that is TB) | 1 | 2 | _____ |
| g) cancer..... | 1 | 2 | _____ |
| h) diabetes..... | 1 | 2 | _____ |
| i) other conditions, please list _____ | | | _____ |
| j) _____ | | | _____ |
| k) _____ | | | _____ |

If you answered No to diabetes, skip to question 7.4 - If Yes please continue:

- 7.2 Are you currently attending a diabetes clinic or seeing someone for diabetes education? _____
1 Yes
2 No
- 7.3 If FEMALE: were you diagnosed with diabetes during pregnancy?
1 Yes
2 No

7.4 Please indicate whether you consider the following conditions to be a particularly important health concern for your community.

	YES	NO
a) high blood pressure.....	1	2
b) arthritis or rheumatism	1	2
c) heart problems	1	2
d) breathing problems.....	1	2
e) asthma.....	1	2
f) tuberculosis (that is TB)	1	2
g) cancer.....	1	2
h) diabetes.....	1	2
i) other conditions, please list	_____	
j)	_____	
k)	_____	

7.5 Please indicate if satisfactory medical services are available for each of these conditions in your community.

	YES	NO
a) high blood pressure.....	1	2
b) arthritis or rheumatism	1	2
c) heart problems	1	2
d) breathing problems.....	1	2
e) asthma.....	1	2
f) tuberculosis (that is TB)	1	2
g) cancer.....	1	2
h) diabetes.....	1	2
i) other conditions, please list	_____	
j)	_____	
k)	_____	

8 Disability and Activity Limitation

8.1 At your home: are you limited in the kinds or amount of activity you can do because of a long-term physical condition or health problem—one that has lasted or is expected to last 6 months or more? _____

- 1 Yes
- 2 No

8.2 Do you have any difficulty hearing what is said when you are having a conversation with one other person? _____

- 1 Yes, have difficulty
- 2 No

8.3 Because of your condition or health problem, do you need help with your personal care, such as washing, grooming, dressing and feeding yourself? _____

- 1 Yes
- 2 No

8.4 Are you getting the help you need with your personal care, such as washing, grooming, dressing and feeding yourself? _____

- 1 Yes, get all the help needed
- 2 Yes, sometime, but need more help
- 3 No

Because of your condition or health problem, do you:

8.5 Have difficulty leaving your residence to take short trips, that is trips to work, shopping, or any other local trips under 80 km or 50 miles? _____

- 1 Yes
- 2 No

8.6 Consider yourself house-bound, that is unable to leave your home? _____

- 1 Yes
- 2 No

8.7 Require an attendant or companion to accompany you on short trips? _____

- 1 Yes
- 2 No

9 Residential Schools

9.1 Did anyone in your immediate or extended family attend residential school? (please answer Yes, No or Don't know for all that apply to the person being interviewed)

9.1.1 Mother _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.2 Father _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.3 Spouse _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.4 Sister(s) _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.5 if yes, how many sisters attended? _____

9.1.6 Brother(s) _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.7 if yes, how many brothers attended? _____

9.1.8 Mother's mother _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.9 Mother's father _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.10 Father's mother _____

- 1 Yes
- 2 No
- 3 Don't know

9.1.11 Father's father _____

- 1 Yes
- 2 No
- 3 Don't know

9.2 Did you attend residential school? _____

- 1 Yes
- 2 No

If answer is No, go to section 10: Wellness: If answer is Yes, please continue:

9.3 At what age did you start to attend residential school _____ (years)

- 9.4 At what age did you leave residential school _____ (years)
- 9.5 Where was the school located _____
- 9.6 What religious denomination or organization operated the school?

- 9.7 How many years did you attend _____
- 9.8 Did you move away from your family to attend residential school?
1 Yes
2 No
- 9.8.1 If the answer is Yes, was the move to attend residential school voluntary?
1 Yes
2 No
3 Don't know

9.8.2 Please indicate where the school was located from the following list:

	YES	NO
a) day school on reserve.....	1.....	2.....
b) day school off reserve	1.....	2.....
c) residential.....	1.....	2.....
d) boarding school	1.....	2.....
e) private school.....	1.....	2.....

9.9 How did your experience at residential school impact on the following:
(please indicate either positive, negative or no effect for each category)

9.9.1	Present level of health	Positive	Negative	No Effect
9.9.2	Present employment	Positive	Negative	No Effect
9.9.3	Educational preparation:	Positive	Negative	No Effect
9.9.4	Language:	Positive	Negative	No Effect
9.9.5	Culture:	Positive	Negative	No Effect

10 Wellness

- 10.1 Do you think a return to traditional ways is a good idea for promoting community wellness? _____
1 Yes
2 No

10.2 If yes, thinking about the past two years, in which of the following areas has there been progress in your community?

	no progress	some progress	good progress
a) Traditional approaches to healing	1	2	3
b) Renewal of native spirituality	1	2	3
c) Revival of traditional roles of women	1	2	3
d) Revival of traditional roles of men	1	2	3
e) Traditional ceremonial activity	1	2	3

10.3 Other factors have been identified by First Nations and Inuit people as important for community wellness. Thinking about the past two years, do you feel that there has been any progress in any of the following areas in your community?

	no progress	some progress	good progress
a) First Nations and Inuit controlled programs	1	2	3
b) Return to traditional ways	1	2	3
c) Use of Elders	1	2	3
d) Personal commitment to healing	1	2	3
e) Renewed relationship with the land	1	2	3
f) Networking among communities	1	2	3
g) Use of First Nations or Inuit language	1	2	3
h) Training in the health field	1	2	3
i) Reduction in alcohol and drug abuse	1	2	3
j) Availability of First Nations and Inuit health professionals	1	2	3
k) Cultural awareness programs in schools	1	2	3
l) Education and training opportunities	1	2	3
m) Employment opportunities	1	2	3
n) Housing quality	1	2	3
o) Water and Sewage facilities	1	2	3
p) Other, please list _____			

10.4 In general, how would you rate your health? _____

- 1 excellent
- 2 very good
- 3 fair
- 4 poor
- 5 don't know

- 10.5 If we define a healthy community as one that promotes physical, emotional and cultural wellness, how would you rank the following community health issues on a scale from 0 to 2 (0=no problem, 1=some problem, 2=serious problem).
- a-1 Lack of adequate information or "know how" on how to maintain good health; please circle: 0 1 2
(0=no problem, 1=some problem, 2=serious problem).
- a-2 If the answer was 1 or 2 then please Indicate the source of failure from the following list, _____
- i. People don't care.
 - ii. People feel powerless.
 - iii. Not a priority of the Band leadership.
 - iv. Little or no availability of professional help.
 - v. Lack of support funding.
 - vi. Past or present poor relations with outside agencies.
 - vii. Other, please specify _____
- b-1 Failure to promote healthy life styles;
please circle: 0 1 2
- b-2 If the answer was 2 then please Indicate the source of failure from the following list, _____
- i. People don't care.
 - ii. People feel powerless.
 - iii. Not a priority of the Band leadership.
 - iv. Little or no availability of professional help.
 - v. Lack of support funding.
 - vi. Past or present poor relations with outside agencies.
 - vii. Other, please specify _____
- c-1 Failure to deal with sources of substance abuse and/or other forms of dependency behavior (e.g. compulsive eating, gambling, etc.).
please circle: 0 1 2
- c-2 If the answer was 2 then please Indicate the source of failure from the following list, _____
- i. People don't care.
 - ii. People feel powerless.
 - iii. Not a priority of the Band leadership.
 - iv. Little or no availability of professional help.
 - v. Lack of support funding.
 - vi. Past or present poor relations with outside agencies.
 - vii. Other, please specify _____

d-1 Failure to deal with the source and consequences of family dysfunctionality, please circle: 0 1 2

d-2 If the answer was 2 then please Indicate the source of failure from the following list, _____

- i. People don't care.
- ii. People feel powerless.
- iii. Not a priority of the Band leadership.
- iv. Little or no availability of trained family specialists.
- v. Lack of support funding.
- vi. Past or present poor relations with outside agencies.
- vii. Skill development.
- viii. Other, please specify _____

e-1 Failure to seek remedies for widespread emotional stress within the community. please circle: 0 1 2

e-2 If the answer was 2 then please Indicate the source of failure from the following list, _____

- i. People don't care.
- ii. People feel powerless.
- iii. Not a priority of the Band leadership.
- iv. Little or no availability of professional help.
- v. Lack of support funding.
- vi. Past or present poor relations with outside agencies.
- vii. Other, please specify _____

f-1 Failure to provide adequate local health services. please circle: 0 1 2

f-2 If the answer was 2 then please Indicate the source of failure from the following list, _____

- i. People don't care.
- ii. People feel powerless.
- iii. Not a priority of the Band leadership.
- iv. Little or no availability of professional help.
- v. Lack of support funding.
- vi. Past or present poor relations with outside agencies.
- vii. Other, please specify _____

10.6 With respect to community health issues in general, in your opinion identify the statement that offers the best solution.

please circle a b c d e

- a. Greater availability of professional services to the community.
- b. A return to more reliance on traditional spirituality, social support and curative approaches to good health.
- c. Make a priority out of including a much higher emphasis on good health education in the community's school curriculum.
- d. Creation of "talking circles" where community members of all ages and experiences can educate each other about and develop solutions to health problems.
- e. Other, please specify _____

11 Dental Health

11.1 When was the last time you had any dental care? _____

- 1 less than 1 year
- 2 more than 1 year
- 3 can't remember

11.2 Do you need dental treatment at this time? _____

- 1 Yes
- 2 No
- 3 Don't know

11.3 If Yes, what type of treatment do you need?

please explain:

11.4 Have you experienced problems with your teeth or experienced any dental pain in the last month? _____

- 1 Yes
- 2 No
- 3 Don't know

12 Interviewer Section: (to be completed by interviewer only)

COMMUNITY REFERENCE

12.1 Legal Name of First Nation or Inuit Community: _____

12.2 Province/Territory: _____

INTERVIEWER REFERENCE

12.3 Interviewers Name: _____

Record of Contacts

12.4 Date of Call (dd/mm/yy) _____ Comment _____

12.5 Date of Call (dd/mm/yy) _____ Comment _____

12.6 Date of Call (dd/mm/yy) _____ Comment _____

12.7 Final interview status _____

C completed

R refused

M moved

U unable to locate

D deceased

12.8 Other cause for non-complete interview: _____

Appendix B		Location of Residential Schools in B.C.	
Location of Residential School	Residence	Years of Operation	
Ahousaht	Ahousaht "Day"	1904-1939	
Alert Bay	St. Michaels	1929-1975	
Chilliwack	Coqualeetza	1890-1941	
Kamloops	Kamloops	1890-1978	
Mission	St. Mary's	1861 -1984	
Port Alberni	Alberni	1920-1973	
Tofino	Christie/ New Christie	1900-1973 1974-1983	
Chemainus	Kuper Island	1890-1970	
Cranbrook	St. Eugene	1890-1970	
Fraser Lake	Lejac	1910-1976	
Lower Post	Lower Post	1951-1975	
Lytton	St. George's	1901-1979	
N. Vancouver	Squamish	1900-1959	
Sechelt	Sechelt	1922-1975	
Williams Lake	St. Joseph	1891-1981	

