

**ABORIGINAL EDUCATION PROGRAMS IN BRITISH  
COLUMBIA'S PUBLIC SCHOOL SYSTEM AND THEIR  
RELATION TO ABORIGINAL STUDENT SCHOOL  
COMPLETION**

by

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## **Abstract**

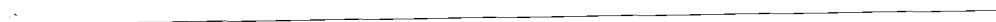
In British Columbia (B.C.), Canada, 90% of Aboriginal students attend provincial public schools but they are more likely to drop out of school than their non-Aboriginal peers. Recent trends suggest that the number of Aboriginal graduates is increasing, and that Aboriginal student graduation rates vary considerably across B.C.'s public school districts. The variability in Aboriginal student school completion rates across school districts may be explained in part by the variation in Aboriginal education programs across districts. Within a developmental-systems and cultural framework for studying risk and resilience among Aboriginal youth, the primary goal of the present research project was to assess whether, and to what extent, B.C. public school district Aboriginal education programs were related to Aboriginal student school completion. A telephone interview was developed, and Aboriginal education representatives in fifty school districts in B.C. were interviewed to evaluate which Aboriginal education programs had been implemented in the districts between the 1995/1996 and 2000/2001 academic years. Responses to these interviews were quantified, and scores were compared to the district graduation and drop-out rates in June, 2001 of Aboriginal students who entered grade 8 in September, 1995. Results indicated that certain Aboriginal education programs, including collaborations with organizations outside the district and specialized services for Aboriginal students, were related to Aboriginal student school retention, although the impact of these programs on school completion was weak. Results also showed that other individual and community factors, including the student's age and enrolment in

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special education and the unemployment rate in the community, had an impact on Aboriginal student school completion. These findings have important implications for current and upcoming negotiations of Aboriginal Education Enhancement Agreements between districts, Aboriginal communities and the provincial government.

## **Dedication**

To Benjamin, who provided the greatest motivation of all.



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## INTRODUCTION

### **Risk and Resilience: Developmental-Systems and Cultural Perspectives**

Throughout their lifespan, individuals are confronted with important developmental tasks, such as maintaining physical and psychological health, developing stable and meaningful social relationships, and attaining academic and career success. Some children and adolescents, however, face adversities that make negotiating these developmental challenges extremely difficult. For example, studies have shown that chronic poverty, prenatal substance exposure, care giving deficits including abusive or neglectful parenting, parental psychopathology, parental death, natural disasters, and exposure to violence and prejudice are often predictive of negative outcomes for children and adolescents facing these hardships (Mash & Dozois, 2003; Seidman & Pederson, 2003). Not all individuals, however, are defeated by these challenges. Many children experience positive outcomes in the face of adversity, show continued competence under stressful conditions, and are able to recover from trauma (Mash & Dozois, 2003; Masten, Best & Garmezy, 1991). An important and relatively recent area of study, referred to as risk and resilience, has the primary goal of discovering and explaining what factors, processes and mechanisms influence how and why some children overcome adversity and others do not.

## Defining Risk and Resilience

Risk refers to the increased likelihood that a given individual will face a negative outcome (Compas, 2004; Mash & Dozois, 2003; Masten et al., 1991). A risk factor<sup>1</sup> is “an agent or characteristic of the individual or the environment that is related to the increased probability of a negative outcome” (Compas, 2004, p. 264). For example, chronic poverty can be considered a risk factor for many psychological and physical problems, including depression, delinquency, school drop out, and disease, because children living in poor socioeconomic conditions are more likely to demonstrate these problems (Compas, 2004; Chen, Matthews & Boyce, 2002; Friedman & Chase-Lansdale, 2002; McLoyd, 1998). Such children are considered to be at-risk or described as being a high-risk population with regards to those potential outcomes. Risk factors can include characteristics both within the individual (biology, psychology) as well as outside of the individual (family, peers, school, community, society, culture) (Cicchetti & Cohen, 1995; Compas, 2004). Proximal risk factors include those conditions or events that impinge directly on the child, such as poor nutrition and parental discord (Masten et al., 1991). Distal risk factors are those variables that are not experienced directly by the child, but are mediated by proximal risk factors that are likely to negatively impact the child (Masten et al., 1991). For example, poverty is a distal risk factor associated with proximal risk factors, such as inadequate nutrition and parental psychopathology, which

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<sup>1</sup> Some researchers have indicated a preference for using the terms risk, vulnerability, resilience, and protective “processes” rather than “factors”, to emphasize that risk and protective factors do not directly cause negative or positive outcomes but rather, contribute to a series of events and transformations within and outside the individual that may lead to or halt the development of certain problems (Cicchetti & Cohen, 1995; Mash & Dozois, 2003). Most researchers, however, continue to use the term “factor” when describing risk and resilience and so this is the term used in the present study, with the recognition that it is the process underlying the variable that is responsible for influencing specified outcomes.

can lead to poor developmental outcomes for a given child (Compas, 2004; Masten et al., 1991).

The terms “vulnerability” and “vulnerability factors” are often used interchangeably with the terms “risk” and “risk factors”, although usage of the term vulnerability emphasizes the phenomenon that not all individuals are affected to the same degree by specified risk factors (Compas, 2004). That is, children who experience chronic poverty may be described as being vulnerable to problems of psychopathology, academic difficulties and health problems, implying that each individual child may or may not face these negative outcomes or may develop difficulties in these areas to varying degrees.

According to Luthar and Cicchetti (2000), resilience is defined as the “dynamic process wherein individuals display positive adaptation despite experiences of significant adversity or trauma” (p. 858). Individuals who are exposed to known risk factors and are considered to be in high-risk situations but who are able to overcome those challenges and experience positive outcomes are described as being resilient (Compas, 2004; Garmezy & Masten, 1986; Luthar, 1995).

Protective factors are defined as “characteristics of the individual or the environment that are associated with positive outcomes in the face of risk” (Compas, 2004, p. 266). For example, positive self-esteem, a skill or talent that is respected and valued by others, and a close relationship with a supportive adult have been linked to improved outcomes for many children in high-risk conditions (Mash & Dozois, 2003; Werner, 1995; Werner & Smith, 1992). Unlike promotive factors, which Sameroff (2000) has described as factors that lead to positive outcomes for all individuals



irrespective of risk (e.g., high intelligence), protective factors specifically influence individuals in high-risk situations (Compas, 2004; Rutter, 1987a, 1987b).

### **Using a Developmental-Systems Perspective to Explain Risk and Resilience**

A developmental-systems perspective is a useful framework for studying and understanding risk and resilience in children and adolescents. The developmental-systems approach emphasizes that negative and positive developmental outcomes should not be viewed as being caused by one-time, single, linear events but, rather, are due to a complex interaction of several factors across several systems (both within and external to the individual) throughout the lifespan (Cicchetti & Toth, 1997; Mash & Dozois, 2003; Sameroff & Chandler, 1975). Three main premises of the developmental-systems perspective are particularly relevant to the present project: 1) risk and resilience, and to what degree risk and protective factors influence a particular individual, change over time; 2) risk and resilience are related to specific domains of functioning; and 3) risk and resilience are influenced by multiple systems and contexts.

### **Risk and Resilience Change Over Time**

Early successes or failures in meeting developmental milestones can have a significant impact on an individual's ability to overcome later challenges (Cicchetti & Cohen, 1995; Cicchetti & Schneider-Rosen, 1986; Luthar, 1995; Masten & Braswell, 1990; Sroufe & Rutter, 1984). As described by Cicchetti and Cohen (1995), "early incompetence...tends to promote later incompetence because the individual arrives at successive developmental stages with less than optimal resources available for

responding to the challenges of that period” (p. 6). Alternatively, a child who is successful at meeting developmental demands in one period may develop the skills and resources to more effectively adapt to and cope with later challenges (Sroufe & Rutter, 1984). Early adaptation or maladaptation, however, does not always ensure later competence or incompetence (Cicchetti & Cohen, 1995; Luthar, 1995; Sroufe & Rutter, 1984). Whether a child who is resilient in one period will remain resilient in another developmental period depends, in part, on the time at which the risk events occur.

Development is marked by important transition points throughout the lifespan that introduce new challenges and new opportunities which can exacerbate or help to buffer risk (Cicchetti & Cohen, 1995; Mash & Dozois, 2003). For example, adolescence represents a time of major physical, psychological, cognitive, emotional and social changes for individuals (Carter & McGoldrick, 1999; Compas, 2004; Erikson, 1968). A child who was previously considered resilient in the context of a high-risk situation may be unable to cope with those challenges when further taxed by the new additional developmental demands of adolescence. On the other hand, a child whose early development was negatively impacted by parental neglect may demonstrate resilience once they are able to access additional support from teachers and peers when they enter school.

Changes in contexts, resources, and circumstances occur not only during important transition points, but throughout the lifespan. Whereas some risk and protective factors may be relatively stable (e.g., a child’s temperament), many of these factors are likely to vary as a child grows up (Compas, 2004). Changes in individual characteristics, risk conditions, environments, and availability of support will represent

new sources of vulnerability and protection that can worsen or counter the effects of high-risk conditions. For example, unpredictable events such as accidents, chronic illness, unemployment, war, and natural disasters can represent sudden stressors that can create new risk situations or exacerbate previous ones (Carter & McGoldrick, 1999). When studying resilience, therefore, it is important to recognize that it is not a fixed characteristic of the child that occurs at a single point in time but, rather, a dynamic process that changes over the lifespan.

#### Risk and Resilience Are Related To Specific Domains of Functioning

Studies have demonstrated that children who exhibit problems in one area of functioning (e.g., academic and learning difficulties) often show impairments in other domains (e.g., behaviour, social and emotional well-being) (Mash & Dozois, 2003). Low self-esteem and negative consequences resulting from maladaptation in one domain of functioning can further hinder a child's ability to cope in the face of stressors within other settings and domains. Not all instances of risk and resilience, however, are consistent across domains of development. In many cases, although a child may be adapting negatively or positively in one area, the same child may be exhibiting strengths or difficulties in other areas. For example, Luthar and her colleagues (Luthar, 1991, 1995; Luthar, Doernberger & Zigler, 1993) have shown that disadvantaged adolescents from inner-cities who manifest resilience with regards to academic success are often at risk for social and emotional difficulties, as these relatively overachieving students are often criticized and shunned by their peer groups. Thus, risk and resilience defined within one area of functioning may not be related or applicable to other areas.

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### Risk and Resilience Are Affected by Multiple Systems and Contexts

According to developmental-systems theory, an individual exists within a multitude of systems, including family, school, peer, community, societal and cultural systems (Carter & McGoldrick, 1999). Risk and resilience develop as a result of a complex interaction of multiple vulnerability and protective factors across all of these systems, including those within and external to the child (Cicchetti & Cohen, 1995; Mash & Dozois, 2003). Although it is difficult to examine all relevant variables, researchers emphasize the importance of examining influences across various systems and caution against reducing risk and resilience to single causal factors (Cicchetti & Cohen, 1995; Cicchetti & Toth, 1997; Mash & Dozois, 2003; Sameroff & Chandler, 1975).

Bronfenbrenner's (1977, 1979) ecological model of human development has been used to describe the numerous contexts and systems that affect an individual's development (e.g., Cicchetti & Cohen, 1995; Cicchetti & Toth, 1997; Luthar, 1995). According to this model, one's environment is made up of several levels, each nested or contained within the other (Cicchetti & Toth, 1997; Bronfenbrenner, 1977, 1979). These levels include those that have a distal (i.e., indirect) effect and those that have a proximal (i.e., direct) effect on the individual (Cicchetti & Toth, 1997). The most indirect influences come from the macrosystem, which encompasses the patterns, beliefs and values of the culture in which the child exists, and the exosystem, which contains the various formal and informal social structures in the child's environment, including the neighbourhood, communication and transport facilities, and government (Bronfenbrenner, 1977, 1979; Cicchetti & Toth, 1997). Those levels that have a direct impact on the child include the microsystem, which comprises the immediate settings in

which the child lives including the home, school or work setting, and the child's ontogenic development, consisting of the characteristics, predispositions, and traits within the child that are likely to contribute to his or her development and adaptation (Bronfenbrenner, 1977, 1979; Cicchetti & Toth, 1997). Vulnerability and protective factors present within each of these levels will have an impact on other levels, which in turn will lead to a specific developmental outcome for a particular individual (Bronfenbrenner, 1977, 1979; Cicchetti & Toth, 1997). In general, children in high-risk conditions are more likely to develop psychopathology when there are cumulative vulnerability factors that outweigh the influence of the protective factors, whereas they are more likely to remain resilient when buffering effects are stronger than the effects of risk (Cicchetti & Cohen, 1995; Compas, 2004).

### **Risk and Resilience across Cultures: The Case of Aboriginal Youth**

#### Cultural Perspectives on Risk and Resilience

The recognition that cultural issues play an important role in children's development is a relatively new focus of risk and resilience research (Garcia Coll, Akerman & Cicchetti, 2000; Luthar, 1995). Most early studies on culture and development have used a universalist (Kim, 2000) or cross-cultural (Garcia Coll et al., 2000) approach to research. As described by Garcia Coll and colleagues (2000), "cross-cultural psychology usually presupposes that categories and models derived from experimental, social, cognitive and personality psychology are universal and, therefore, can be transported to other cultural contexts" (p. 347). Researchers adopting this viewpoint apply risk and resilience concepts based on studies with mainstream, dominant

cultural groups to studies involving other minority cultural groups with the assumption that those theories are universal.

Recent studies, however, have demonstrated that whereas some risk and protective factors are often associated with similar outcomes across different cultural groups (e.g., chronic poverty), many factors have different impacts depending on the child's culture. For example, peer support may represent an important protective factor for mainstream, middle-class students' academic success but may act as a risk factor for academic problems, including poor scholastic achievement and school drop-out, for certain cultural groups, such as disadvantaged, inner-city teenagers (Cauce, Felner and Primavera, 1982; Luthar, 1991, 1995). Researchers advocating a contextualist (Kim, 2000) or cultural psychology (Garcia Coll et al., 2000) approach argue that risk and protective factors are not necessarily universal and need to be studied from within specific cultural groups.

Contextualists also emphasize the importance of avoiding the tendency to view cultural differences as maladaptation or pathology but, rather, as legitimate and appropriate means of adapting to a particular environment (Garcia Coll et al., 2000). Certain cultural values, traits, and norms can act as important protective factors for minority groups in high-risk conditions (Cohler, Stott & Musick, 1995). For example, Bettelheim (1943) found that resilient inmates of concentration camps during the Second World War relied on their strong cultural beliefs to help cope with the atrocities they faced. However, in some instances, cultural identity can serve as a risk factor. There is evidence that ethnic identity can have a negative impact on school success; studies have shown that minority groups (primarily African-American) whose cultural values differ

markedly from the expectations and assumptions of mainstream educational views and practices often show significant academic difficulties (Chavous et al., 2003; Fordham & Ogbu, 1986; Ogbu, 1990; Oyserman, Harrison & Bybee, 2001; Smith, Atkins & Connell, 2003).

### Risk and Resilience in Aboriginal Youth

Most cultural studies on risk and resilience have focused on American minority groups, particular African-American children and adolescents (e.g., Chavous et al., 2003; Fordham & Ogbu, 1986; Luthar, 1991, 1995; Ogbu, 1990; Oyserman et al., 2001; Smith et al., 2003). Relatively few studies have examined the roles of vulnerability and protection in North American indigenous groups, and of these studies, most have involved American Indian or Native Alaskan populations rather than Canadian Aboriginal groups (e.g., Cummins, Ireland, Resnick & Blum, 1999; Fisher, Storck & Bacon, 1999; Frank & Lester, 2002; Yates, 1987; Zimmerman et al., 1994).

In the United States, indigenous groups are most commonly referred to as American or Native Indians (Yates, 1987). In Canada, First Nations, the Inuit, and the Métis are collectively referred to as Aboriginal peoples (Indian and Northern Affairs Canada [INAC], 2003). First Nation peoples (also referred to as Status Indians if they are registered with the Department of Indian Affairs and Northern Development [DIAND] according to the Indian Act, or referred to as non-Status Indians if they have chosen not to be registered), represent Canada's predominant indigenous group. First Nations make up approximately 70% of the Canadian Aboriginal population and 80% of the British Columbia (B.C.) provincial Aboriginal population. The Inuit include Aboriginal peoples

of the northern regions of Canada and represent approximately 5% of Canadian Aboriginal peoples, and less than 1% of the Aboriginal population in B.C. The Métis include peoples of mixed Aboriginal and European (primarily French-speaking) ancestry, and make up approximately 25% of Canada's Aboriginal population and 20% of the B.C. Aboriginal population (Statistics Canada, 1998).

Research on risk and resilience in Aboriginal youth is especially important in that Aboriginal youth represent a growing and increasingly predominant cultural group in Canada. Aboriginal people represent approximately 3% of the Canadian population, and nearly 4% of the provincial population in B.C. (Statistics Canada, 1998). Aboriginal youth in particular represent a significant proportion of the Aboriginal population in Canada and B.C. According to the 1996 Census, approximately 35% of Aboriginal peoples were under the age of 15 in 1996, in comparison to 20% of the general Canadian population (Statistics Canada, 1998). The average age for Aboriginal peoples in Canada in 1996 was 25.5 years, 10 years younger than the average age in the general Canadian population (Statistics Canada, 1998). The Aboriginal population is increasing at the rate of approximately 2.3% per year, at more than twice the rate of the total Canadian population (Statistics Canada, 1998). It is expected that the population of Aboriginal youth will continue to grow more rapidly than the general population over the next 10 years (Statistics Canada, 1998).

Research studies have shown that Aboriginal people, particularly Aboriginal youth, face risks and challenges that are not always faced by other groups (e.g., Chandler, Lalonde, Sokol & Hallett, 2003; Chandler & Lalonde, 1998; Kirmayer, 1994). According to Yates (1987), American Indians, especially Native adolescents, are “the



most severely disadvantaged population in the United States” (p. 316), in that they face extensive risks due to historical as well as current conditions and events.

Historically, Aboriginal people have faced centuries of oppression. The arrival of Europeans in the New World in the 1500s and 1600s had a devastating impact on First Nation populations. Without natural immunity, European diseases destroyed entire communities (INAC, 2003). First Nation children were removed from their homes to be educated in live-in religious schools by missionaries and government agents. This procedure continued for several centuries, culminating in the forced residential school attendance of all First Nation children beginning in the mid-1800s, and only discontinued in Canada in the 1980s (INAC, 2003). First Nations were relocated to settlements and reserves in northern areas where game was scarce, and climates and conditions were extremely difficult (INAC, 2003). Due to the devastating impact of these historical events on Aboriginal communities, families and individuals, Aboriginal people are currently a minority group in Canada (Iarocci, Root & Burack, in press; Wright, 1992).

The transgenerational effects of these historical events pose a significant risk factor for Aboriginal youth today (Chandler et al., 2003; Chandler & Lalonde, 1998; Kirmayer, Brass, & Tait, 2000). Adolescence is an important period of cultural and ethnic identity development (Carter & McGoldrick, 1999; Compas, 2004; Erikson, 1968). Society and community play an important role in exposing youth to values, beliefs, and traditions which can be adopted or adapted by adolescents as they develop their own cultural identity. Aboriginal youth are at a major disadvantage in that the loss and eradication of Aboriginal culture across many Aboriginal communities has left them without the important cultural and social context on which to base their own identity

(Chandler & Lalonde, 1998; Hallett, 2005; Iarocci et al., in press). In contrast, efforts to actively restore and re-establish a sense of cultural continuity within certain First Nation bands have been associated with lower suicide and secondary school drop-out rates among Aboriginal youth from those bands (Chandler & Lalonde, 1998; Hallett, 2005).

North American Aboriginal adolescents, particularly those living on Indian reserves or settlements, are also more likely to live in geographically isolated communities and in single-parent families, risk factors that have been shown to be associated with negative developmental outcomes. Approximately 30% of Aboriginal people in Canada and B.C. live on-reserve (BC Stats, 1998; Statistics Canada, 2004) and approximately half (51%) of Aboriginal people in Canada live in rural areas, in comparison to approximately 22% of the general population (Statistics Canada, 2004). According to the 1996 Census, almost one-third (32%) of Aboriginal children under the age of 15 lived in a lone-parent family in 1996, twice the rate of the general Canadian population (Statistics Canada, 1998). Aboriginal youth are more likely to face poverty, violence, and limited access to educational and occupational opportunities, in comparison to other dominant and minority groups (Fisher et al., 1999; Frank & Lester, 2002; Iarocci et al., in press; Kirmayer, 1994; U.S. Office of Technology Assessment, 1990). As with many other minority groups, Aboriginal peoples are also more likely than individuals from dominant cultural groups to face racism and prejudice. Experiences of discrimination have been shown to be related to poor developmental outcomes such as emotional problems, suicide, and school drop-out (Applied Research Branch of HRC, 2000; First Nations Education Council for District 73, n.d.; Janosz, LeBlanc, Boulerice & Tremblay, 1997; van der Woerd & Iarocci, 2002).

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From a developmental perspective, these challenging circumstances place Aboriginal children and adolescents at greater risk for a host of negative outcomes. One such outcome is high-school drop-out. Annual reports over the last five years have demonstrated that fewer than half of all Aboriginal students in B.C.'s public school system complete their secondary education with a Dogwood Certificate<sup>2</sup> within six years of entering grade 8, in comparison to over three-quarters of the non-Aboriginal provincial public school student population (B.C. Ministry of Education, 2001a, 2004b). School drop-out is a major concern in that students who do not graduate are at risk for further problems including depression, drug use, teenage pregnancy, incarceration, and unemployment (Applied Research Branch of HRC, 2002; Cummins et al., 1999; First Nations Education Council for District 73, n.d.; Jessor, Turbin, & Costa, 1998; Tonkin et al., 1999; van der Woerd & Iarocci, 2002). Understanding why Aboriginal students are more likely to drop-out of school, and what risk and protective factors are associated with Aboriginal student school completion, has been an important focus of the B.C. provincial Ministry of Education in the last decade. Several education programs have been implemented in public schools and school districts across the province in order to address Aboriginal student educational success. One of the primary purposes of the present study was to assess whether the presence of Aboriginal education programs in BC's public school districts represents an important protective factor that helps to reduce risk and increase resilience among Aboriginal youth, and increase the likelihood of Aboriginal students completing high school.

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<sup>2</sup> The Dogwood Certificate is a certificate indicating that all provincial requirements for graduation have been completed.

## **The Influence of Risk and Resilience on B.C. Aboriginal Students' School Completion**

### **The Aboriginal Student Population of British Columbia**

In the B.C. public school system, students are identified as Aboriginal on a form, known as the “Student Level Data Collection” form, which is completed every September and then submitted to the B.C. Ministry of Education. Parents or legal guardians of students under the age of 19 years are asked to identify whether their children are Aboriginal when they register them at school entry (Kindergarten) and when they move and register in a new school within B.C. This information is relayed to the school district, which is responsible for the completion of the “Student Level Data Collection” form (Dr. Maureen Hoskyn, Assistant Professor, Faculty of Education, Simon Fraser University, personal communication, August 4, 2005). However, the form completion instructions indicate that “Aboriginal identity must be made on a voluntary basis” (B.C. Ministry of Education, 2004c) and students identified by their parents or guardians as Aboriginal are often (but not always) consulted to confirm whether they choose to be identified as being Aboriginal or not (Andrea Hartstone, Edudata Canada, personal communication, July 28, 2003). Therefore, although student Aboriginal identity is considered by the B.C. Ministry of Education to be a self-declaration of Aboriginal identity (e.g., B.C. Ministry of Education, 2001a, 2004b, 2004c), the “Student Level Data Collection” forms do not consistently reflect the student’s self-declaration of Aboriginal identity.

In the 2003/2004 school year, there were over 51,000 students in the B.C. public school system who identified themselves or were identified by their parents as being

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Aboriginal, making up 8.4% of the provincial public school student population (B.C. Ministry of Education, 2004b). Approximately one-quarter of Aboriginal students in 2000 were registered as Status Indians living on-reserve; the remainder of Aboriginal students were First Nations, Inuit or Métis students living off-reserve (B.C. Ministry of Education, 2001a). Nearly 90% of Aboriginal students in B.C. in 2000 attended public school, whereas approximately 10% attended local band schools under the jurisdiction of First Nation communities and the federal government, and less than 0.5% attended privately funded independent schools (B.C. Ministry of Education, 2001a).

The Aboriginal student population in B.C. has been steadily increasing, from 4.5% of the provincial student population in the 1990/1991 school year to 8.4% in the 2003/2004 school year (B.C. Ministry of Education, 2001a, 2004b). Although Aboriginal student populations have decreased slightly in band and independent schools in the last decade, Aboriginal student populations in public schools have increased by nearly 50% between 1995 and 2001 (B.C. Ministry of Education, 2001a). This increase in Aboriginal student populations is due to a two-fold increase in the number of Aboriginal children being born in comparison to non-Aboriginal children, an increase in the number of children identifying themselves as Aboriginal, and a greater proportion of Aboriginal youth attending school (B.C. Ministry of Education, 2001a; B.C. Vital Statistics Agency, 2001; Statistics Canada, 1998).

### **School Graduation and Drop-Out Rates of Aboriginal Students in B.C.**

Although the number of Aboriginal students in the provincial public school system is increasing, there continues to be a greater proportion of Aboriginal students, as

compared to non-Aboriginal students, who do not complete high school (B.C. Ministry of Education, 2004b). Of those B.C. secondary school students enrolled in grade 8 in September, 1997, only 46% of the Aboriginal students graduated with a Dogwood Certificate by June 2003<sup>3</sup>, compared to 82% of the non-Aboriginal students (B.C. Ministry of Education, 2004b). For non-Aboriginal students, drop-out rates<sup>4</sup> were highest and occurred primarily in the higher grade levels, whereas for Aboriginal students, attrition occurred at earlier grade levels and increased as grade levels increased (see Table 1).

### **Consequences of Aboriginal Student Drop-Out**

Aboriginal adolescents who drop out of school experience higher rates of depression, suicide, and emotional difficulties, are more likely to be involved in risky behaviour such as substance abuse, violence, and early sexual activity, and are more likely to be incarcerated as a result of their increased delinquent activity (Applied Research Branch of HRC, 2002; Cummins et al., 1999; First Nations Education Council for District 73, n.d.; Jessor et al., 1998; Tonkin et al., 1999; van der Woerd & Iarocci, 2002). Drop-out also has an important impact on later adult employment. Students who drop out of high school, particularly if they drop out early, are less likely to have the

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<sup>3</sup> Graduation is defined by the B.C. Ministry of Education as having received a Dogwood Certificate within six years of entering grade 8.

<sup>4</sup> Transition to subsequent grade levels, that is, whether a student is present in one grade (e.g. grade 8) and whether or not they are enrolled in the next grade level (e.g. grade 9) in the following year, is used as an indicator of drop-out by the B.C. Ministry of Education (2001a, 2004b). This definition, however, may overestimate the actual drop-out rate. Students who repeat grades and are still in school but have not yet reached the next grade level, who are temporarily absent one year but return the next, or who have moved out of province, are counted as having dropped out (Applied Research Branch of HRC, 2002). Students who completed grade 12 with a School Leaving Certificate (a certificate which indicates completion of Individual Education Plan goals but does not typically meet eligibility requirements for post-secondary education), would also be counted as having dropped-out under this definition.

Table 1: Secondary School Progress of Aboriginal and Non-Aboriginal Students in B.C. Public Schools Who Were Enrolled in Grade 8 in September, 1997.

	Enrolled in grade 9 in September 1998	Enrolled in grade 10 in September 1999	Enrolled in grade 11 in September 2000	Enrolled in grade 12 in September 2001	Completed grade 12 and received a Dogwood Certificate by June 2003
Percent of Aboriginal students from the 1997 grade 8 cohort	96%	92%	83%	64%	46%
Percent of non- Aboriginal students from the 1997 grade 8 cohort	100%	100%	98%	91%	82%

necessary skills, training, and knowledge required by an increasingly demanding labour market, and are therefore at greater risk for unemployment (Applied Research Branch of HRC, 2000). The impact of dropping out of high school is worse for Aboriginal students, who in addition to not completing high school may live in rural or remote areas where unemployment rates are already higher than in urban areas. In 1996, the unemployment rate for Aboriginal people without high school completion was 40%, 23% for those with high school completion, 20% for those with college degrees, and 9% for those with university degrees, in contrast to 20%, 13%, 9% and 5% respectively for non-Aboriginal adults (Tait, 1999). Furthermore, adults who have not completed high school with a diploma or certificate earn on average 25% to 30% less than high school graduates, 45%

to 80% less than university graduates, and are less able to maintain stable, long-term full-time employment (Applied Research Branch of HRC, 2000).

There are great provincial and federal societal costs to school drop-out as well, including higher crime rates, a lower national Gross Domestic Product, and lost salaries and tax revenues to cover the costs of welfare and other social problems. It is estimated that these societal costs total \$30,000 to \$200,000 per drop-out (Applied Research Branch of HRC, 2000).

### **Positive Trends Regarding Aboriginal Student School Completion**

Although the provincial average for Aboriginal student graduation is low, school drop-out is not a definitive, homogenous outcome for all Aboriginal students (B.C. Ministry of Education, 2001a; B.C. Human Rights Commission, 2001a). Almost half of Aboriginal students in B.C. complete school with a Dogwood Certificate within six years of entry to grade 8 (B.C. Ministry of Education, 2004b). Aboriginal student attrition and graduation rates also vary considerably across public school districts in B.C. (B.C. Ministry of Education, 2001a; B.C. Human Rights Commission, 2001a). In 1999, Aboriginal graduation rates were as low as 5% in some districts, but up to 66% in other school districts (B.C. Human Rights Commission, 2001a). The difference in graduation rates between Aboriginal and non-Aboriginal students also ranged across school districts, with some districts showing a discrepancy of less than 20% between Aboriginal and non-Aboriginal graduation rates, and others showing a discrepancy of over 50% (B.C. Ministry of Education, 2001a). These results show that in certain public school districts,



Aboriginal youth are graduating at rates similar to non-Aboriginal students and closer to provincial averages.

Furthermore, proportionally more Aboriginal students are graduating from schools in B.C. than before, increases that are not solely accounted for by the overall increase in the Aboriginal student population. The number of Aboriginal graduates tripled between 1992 and 2001, growing at increasingly greater rates every year (B.C. Ministry of Education, 2001a). Between the 1998/1999 and 1999/2000 school years, there was an 18% increase in the number of Aboriginal students completing high school with Dogwood Certificates, as compared to 7.5% between the 1997/1998 and 1998/1999 school years. According to a recent survey conducted in B.C., almost two-thirds (61%) of the 1700 Aboriginal youth surveyed indicated wanting to graduate and continue to do post-secondary education (Tonkin et al., 2000). These findings highlight that some Aboriginal youth may show resilience in the educational achievement domain. The goal of this study was to identify some factors that may be associated with the rate of school completion among Aboriginal public school students in B.C.

### **Factors Associated with Aboriginal Student School Drop-Out**

Aboriginal students are particularly at risk for school drop-out in that they often face challenges at multiple levels, both individually and within family, school, and community systems (Applied Research Branch of HRC, 2000; Cummins et al., 1999; Fisher et al., 1999; Frank & Lester, 2002; Kirmayer, 1994; Yates, 1987; Zimmerman et al., 1994). Cumulative risks make it increasingly difficult for Aboriginal youth to attend and complete secondary school (Applied Research Branch of HRC, 2000). Schools and

school districts, however, have the potential to offer important protective influences that can help to buffer some of the effects of risk (B.C. Ministry of Education, 2001b, 2001c; Bell, 2004; Coggins, Williams, & Radin, 1996; Lofthouse, 1999; Walton, 1999). In particular, school districts are responsible for implementing specialized programs for Aboriginal students in schools within the district (B.C. Ministry of Education, 2003; Lofthouse, 1999). These programs aim to address many of the risks faced by Aboriginal youth, and may be helpful in reducing the likelihood of Aboriginal student drop-out. The following discussion includes a summary of those risk factors relevant to the present study, and how school programs may play a protective role in addressing those risks.

### Individual Risk Factors

Studies have shown that Aboriginal students are more likely to experience problems of illiteracy and academic failures, individual risk factors that increase the likelihood of students dropping out of school (Applied Research Branch of HRC, 2000; B.C. Human Rights Commission, 2001a; First Nations Education Council for District 73, n.d.; Lofthouse, 1999; Rampaul, Singh & Didyk, 1984; Snell, 2004; Walton, 1999). Illiteracy has been shown to be one of the strongest risk factors for school drop-out, for Aboriginal as well as non-Aboriginal populations (e.g., B.C. Human Rights Commission, 2001a). As students progress through school, their inability to read becomes an increasing problem, affecting their academic success and their ability to meet the requirements to graduate. Past and early academic difficulties, particularly if they go unaddressed, also become an increasing liability as students enter higher grade levels, affecting both their ability to master more difficult tasks and their self-esteem (Applied

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Research Branch of HRC, 2000; B.C. Human Rights Commission, 2001a; First Nations Education Council for District 73, n.d.; Lofthouse, 1999; Rampaul et al., 1984).

Furthermore, teachers are more likely to have low expectations of students with academic difficulties (First Nations Education Council for District 73, n.d.; Lofthouse, 1999).

These consequences make it increasingly likely that such students will drop out of school.

School districts, however, have the potential to address some of these risk factors by implementing literacy and academic programs in their schools. For example, Aboriginal student school success is greater in schools that offer early literacy programs, that emphasize academic learning, that frequently monitor and address the academic progress of their students, and whose teachers have high expectations for all of their students (Bell, 2004; Lofthouse, 1999).

Enrolment in special education is associated with increased school drop-out and poor academic achievement (Snell, 2004). Aboriginal students are overrepresented in special education, with recent estimates indicating that nearly 15% of Aboriginal students per year are identified by schools for special education programming, in contrast to 4% of non-Aboriginal students (B.C. Human Rights Commission, 2001a, 2001b; B.C. Ministry of Education, 2004b). Those who are identified as students in need of special education support are more likely to have learning difficulties and behavioural problems that affect their ability to complete secondary school. For example, Aboriginal students are more likely than their non-Aboriginal peers to be diagnosed with disorders such as fetal alcohol syndrome and attention-deficit disorders (Smylie, 2001), disorders which greatly impact students' cognitive and academic abilities (B.C. Ministry of Education, Special Programs Branch, 1996, n.d.).

### Family Risk Factors

From a developmental-systems perspective, family plays a crucial role in an individual's development in that parents and caregivers provide important resources, guidance, role modelling, and support (Carter & McGoldrick, 1999). Findings from cross-cultural and Aboriginal research suggest that parental involvement and parental positive attitudes about school are among the most significant factors related to Aboriginal student academic success including decreased dropouts, improved achievement, less delinquency, and lower teen pregnancy rates ((B.C. Human Rights Commission, 2001a; Kavanagh, 1998; Lofthouse, 1999; Walton, 1999). Even in poor families, school success improves when parents have positive attitudes and high expectations about school (Walton, 1999). However, Aboriginal parents and communities often feel alienated from the public education system (B.C. Human Rights Commission, 2001a, 2001b; Janosz et al., 1997; Malatest, Barry & Krebs, 2002; Walton, 1999). The legacy of residential schooling in the late 1800s to mid 1900s has left many Aboriginal parents and grandparents feeling mistrustful about the education system, making them less likely to value, encourage or support their children's attendance in school (B.C. Human Rights Commission, 2001a, 2001b; Kavanagh, 1997). Many Aboriginal parents feel that schools do not understand Aboriginal parents' experiences or the challenges faced by Aboriginal families, and that schools lack knowledge and awareness of Aboriginal cultural values, making it difficult for Aboriginal parents to feel accepted and respected in the school environment (Malatest et al., 2002). Aboriginal parents also report feeling intimidated by school staff due to racism, language barriers,

unfamiliarity with the school system, and unclear expectations about their role in their children's education (Malatest et al., 2002).

Economic hardships also hinder Aboriginal parents' involvement in their children's schools. Reports have indicated that Aboriginal families are more likely to live in poverty than non-Aboriginal families (Malatest et al., 2002; McLoyd, 1998). Thus, Aboriginal parents may find transportation, childcare, and time away from work to attend school meetings and functions particularly difficult, especially in rural settings (Malatest et al., 2002). Aboriginal youth are also more likely than their peers to be living with a single parent (Statistics Canada, 1998). Due to the extensive financial and care giving responsibilities faced by single parents, they may be less able to provide their children with the time, resources, or support they need to meet the challenges of staying in school (Cummins et al., 1999).

### School Risk Factors

In public school, Aboriginal students face several barriers (B.C. Human Rights Commission, 2001a, 2001b). They are particularly disadvantaged because many of the values of mainstream education (e.g., competition) are counter to those of specific Aboriginal groups (Fisher et al., 1999; Janosz et al., 1997). Furthermore, Aboriginal values are not adequately represented within the conventional school system. Aboriginal teachers<sup>5</sup> and role models, Aboriginal issues and topics, and Aboriginal teaching and evaluation methods are scarce in many North American schools (B.C. Human Rights Commission, 2001a, 2001b; Faith, 1997; Yates, 1987). Studies have shown that low

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<sup>5</sup> Currently, Aboriginal teachers represent only 2% of school teachers in B.C., whereas Aboriginal students represent over 8% of the student population (Standard, 2005).

school connectedness, racism, feeling alienated, and difficulty finding interest, meaning, and relevance in the curriculum due to cultural dissonance are related to increased Aboriginal student school drop-out (Applied Research Branch of HRC, 2000; B.C. Human Rights Commission, 2001a; Cummins et al., 1999; Faith, 1997; First Nations Education Council for District 73, n.d.; Janosz et al., 1997; van der Woerd & Iarocci, 2002). Students who do not feel welcomed, safe, or included in their school environment, who find little meaning or value in attending school, and who are not adequately supported by their school are not likely to remain in school (B.C. Human Rights Commission, 2001a, 2001b; Faith, 1997; Iarocci et al., in press).

In contrast, schools that respect, value, and incorporate Aboriginal students' cultural backgrounds into the school curriculum and environment have significantly lower Aboriginal student drop-out rates (Bell, 2004; Faith, 1997; Lofthouse, 1999). Reflections of Aboriginal culture in the academic and non-academic aspects of the school appear to be associated with Aboriginal students feeling a sense of belonging and inclusiveness, pride and confidence about themselves, connectedness to their school, acceptance by their teachers and school community, and safety, all of which contribute to improved school attendance (Janosz et al., 1997; Lofthouse, 1999; Rampaul et al., 1984; Tonkin et al., 2000). In addition, Aboriginal students who feel connected to and are actively involved in their school are less likely to feel suicidal, to experience psychological distress or boredom, or to engage in drug and alcohol use, delinquent behaviour, or early sexual activity (Cummins et al., 1999; Tonkin et al., 2000; van der Woerd & Iarocci, 2002), reducing their risk for school drop-out. In fact, school experience has been shown to be one of the best screening variables for Aboriginal

student drop-out when taking into account school, family, behavioural, social and personality variables (Janosz et al., 1997). Although individual teachers and schools can and do make efforts to ensure that Aboriginal culture is reflected in the curriculum and school environment, the decision to include Aboriginal content is typically made at the school district level. These efforts can include the hiring of more Aboriginal teachers, staff and support workers, the incorporation of Aboriginal language and culture into the curriculum, activities, teaching styles, environment, and standards of achievement of the school, and the implementation of cultural competency training for teachers, staff and students (Bell, 2004; Lofthouse, 1999). However, many school districts in B.C., and therefore many schools across the province, do not have an official policy about incorporating Aboriginal culture in their schools (B.C. Human Rights Commission, 2001b; First Nations Education Council for District 73, n.d.).

#### Identification of Students' Aboriginal Status by Students and Parents

Recent studies at the University of British Columbia (Hallett, 2005; Want et al., 2004) have identified another factor – the identification of students' Aboriginal status – as being related to Aboriginal student drop-out, a factor which can be considered to be an individual or a family-based risk factor. Students in B.C. either self-identify or are identified by their parents as Aboriginal on a B.C. Ministry of Education form known as the “Student Level Data Collection” form. A surprising finding in the University of British Columbia research was that Aboriginal students in B.C. did not consistently identify themselves or were not consistently identified by their parents as being Aboriginal throughout the time period they were enrolled in school. Some students were

always reported as Aboriginal, and other students were reported as Aboriginal during some years, but not others. Hallett and colleagues (Hallett, 2005; Want et al., 2004) found that students who were always identified as Aboriginal on the “Student Level Data Collection” forms were more likely to drop out than students who were inconsistently identified as Aboriginal.

It is not clear why students inconsistently self-declared or were inconsistently identified by their parents as being Aboriginal. With regard to self-identification, although young children initially show some confusion about ethnicity (Aboud, 1981, 1984, 1988; Aboud & Ruble, 1987; Correnblum, 1996), adolescents and adults are able to accurately apply ethnic labels to themselves and others and tend to view ethnicity as an unchanging, fixed characteristic of the self (Aboud & Ruble, 1987; Correnblum, 1996; Quintana et al., 2000). Therefore, one would not expect high-school students to report being Aboriginal in some years, but not others. However, ethnic identification may not be considered a stable and permanent attribute of the self by some youth (Stephan & Stephan, 2000; Hallett, 2005). More people in North America (e.g., Eschbach, 1993; Guimond, 2004) and more students in B.C. (B.C. Ministry of Education, 2001a; 2004b) are identifying themselves as Aboriginal than previously, and these trends are not solely attributable to increased birth rate or migration. Hallett and colleagues (Hallett, 2005; Want et al., 2004) have proposed that changes in Aboriginal cultural identification may reflect changes in First Nation band efforts to restore culture (Chandler & Lalonde, 1998) and increased pride in being Aboriginal.

Adolescents who change their ethnic and cultural identities over time often are exposed to different conditions and environments than those whose cultural identities



remain the same. For example, Eschbach and Gómez (1998) found that those students who identified themselves as Hispanic at one point in time but did not identify themselves as Hispanic two years later were more likely to live in urban communities and in higher socioeconomic conditions, and were less likely to speak Spanish or to be immersed in the Hispanic culture. Results from studies conducted by Hallett and colleagues (Hallett et al., 2005; Want et al., 2004) indicate that Aboriginal youth who always self-declare or are always identified as Aboriginal are more likely to live on Indian reserves or settlements than Aboriginal students who inconsistently self-declare or are inconsistently identified as being Aboriginal. It may be that those students who live on-reserve are more likely to perceive themselves as clearly being Aboriginal and always identify themselves as being Aboriginal. Studies have shown that Aboriginal students who live on-reserve are more likely to face challenges such as poverty and violence, and are less likely to complete high school than students who live off-reserve (Kirmayer, 1994; Brunnen, 2004). Thus, students who were consistently identified as Aboriginal in Hallett and colleagues' studies (Hallett, 2005; Want et al., 2004) may have been more likely to drop out than students who were inconsistently identified as Aboriginal because they were more likely to live on-reserve and therefore face more associated risks.

### Community Risk Factors

Several risk factors within communities have also been linked to school drop-out, including living in a remote or rural location, poverty, and a decrease in the unemployment rate such that there are more minimum-wage jobs available for those that do not complete high school (Applied Research Branch of HRC, 2000; Compas, 2004;

McLoyd, 1998). School programs that provide support for students experiencing these hardships, such as lunch programs, funded transportation, and financial aid, have been shown to be effective in improving Aboriginal student attendance and academic achievement (Bell, 2004; Lofthouse, 1999).

Aboriginal communities and organizations also have a significant impact on Aboriginal student school completion. Hallett and colleagues (Hallett, 2005; Hallett et al., 2004) examined the relationship between efforts by some First Nation bands in B.C. to actively restore their culture and the graduation rates of First Nation students from those bands. Results from these studies demonstrated that Aboriginal students from First Nation bands that have self-government, are involved in land claims, have control over education, health services or police and fire services, and have cultural facilities on-reserve are less likely to drop out of public school than Aboriginal students from bands with none of these “cultural restoration” factors. Other studies have shown that collaborations between schools, school districts, and local Aboriginal communities are also related to improved Aboriginal student success (e.g., Bell, 2004; Lofthouse, 1999). For example, First Nation graduation rates are higher when band Chiefs and councils rank education as a top priority (Kavanagh, 1998). Therefore, these results suggest that efforts within Aboriginal communities have a significant impact on whether Aboriginal students will remain in school.

## **Aboriginal Education Programs: A Possible Protective Influence on Aboriginal Student School Completion?**

Because youth spend the majority of their time in school, schools have the potential to strongly influence their development. The school context provides students with important resources and various opportunities for learning, developing peer and mentor relationships, and developing the skills, knowledge, and self-confidence to achieve future milestones. These experiences can help to buffer the effects of risk faced by many Aboriginal students. In B.C., many schools and school districts have designed and implemented specific Aboriginal education programs to address the risks faced by Aboriginal youth. For example, improved literacy programs for Aboriginal children, strong partnerships between schools and Aboriginal communities, increased Aboriginal parental involvement, teachers' enhanced cultural understanding of Aboriginal students, and inclusion of learning activities relevant to students' cultural backgrounds have been linked to increased Aboriginal student school attendance (B.C. Ministry of Education, 2001b, 2001c; Bell, 2004; Coggins et al., 1996; Lofthouse, 1999; Walton, 1999). However, not all school districts offer Aboriginal education programs. Furthermore, Aboriginal education programs vary extensively across the districts that do offer these programs. Thus, it is possible that variations in Aboriginal school completion across provincial school districts may be explained by differences in Aboriginal education programs across districts.

## History of Aboriginal Education

First Nation control over Aboriginal education became a significant issue in 1972 with the release of the National Indian Brotherhood's (now the Assembly of First Nations) report entitled "Indian Control of Indian Education". This report argued for the transfer of control of Aboriginal education to First Nations (Morgan, 1998). Before the arrival of European settlers, education was the responsibility of Elders and community members who provided traditional Aboriginal teachings. Control over Aboriginal education then shifted to missionaries, churches, and the Canadian federal government who required that all Aboriginal children attend segregated residential schools. Since 1946, Aboriginal students have been integrated into public school systems, although the federal government continues to hold financial responsibility for First Nation students living on-reserve, as outlined in the Constitution Act and treaty agreements<sup>6</sup> (Burns, 2000; Morgan, 1998).

In 1988, the Assembly of First Nations released a follow-up report entitled "Tradition and Education: Towards a Vision of Our Future", calling for changes which the Department of Indian Affairs and Northern Development (DIAND) had not yet implemented, despite their pledge to do so following the 1972 report (Kavanagh, 1997).

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<sup>6</sup> In B.C., the province is responsible for the curriculum, graduation requirements, evaluation and assessment use and other responsibilities outlined in the School Act and the Independent School Act (Kavanagh, 1997). The provincial government submits a bill to the federal government for each Status Indian on-reserve student enrolled (approximately \$1000 per student), which is then paid by the federal government. This money is to be used specifically for Status Indian on-reserve students. Local First Nation bands may have some input with regards to how this money is spent through a Local Education Agreement with the district. The province provides additional "targeted funding" to districts for every Aboriginal (First Nations, Métis or Inuit, living on- or off-reserve) student enrolled (approximately \$950). This money must be used for Aboriginal education, but specifically which programs are funded is up to the discretion of the district, although input can also be provided by established Aboriginal Advisory Councils in the district (Trish Rosborough, B.C. Ministry of Education Aboriginal Education Enhancements Branch, personal communication, January 29, 2003).

The Assembly of First Nations argued that self-government, including control over education, was essential to restoring Aboriginal identity (Kavanagh, 1997). In response, the Royal Commission on Education (also known as the Sullivan Commission) released a report entitled “A Legacy for Learners” in 1988. In this report they recommended “that the federal and provincial governments accord to Native bands and councils the appropriate authority and attendant resources to enable them to engage effectively in the self-determination of, or shared responsibility for, the education of their children” (as cited in Kavanagh, 1997, p. 13). These suggestions were echoed in a 1996 report by the Royal Commission on Aboriginal People which also emphasized “Aboriginal involvement in governance of education whether on reserve or in cities and towns, the development of inclusive and balanced curriculum, expansion of Aboriginal teacher training, and recognition of the importance of revitalizing Aboriginal languages” (Castellano, 2000, p.269, as cited in B.C. Human Rights Commission, 2001a).

As a result of the numerous reports advocating for First Nation control over Aboriginal education, many First Nation bands were granted the right to develop and operate their own schools on band reserves by DIAND (Standing Committee on Aboriginal Affairs and Northern Development, 1996). Several concerns, however, were documented regarding band-operated schools, including the lack of legislation recognizing First Nation bands as legal authorities, the inadequacy of federal funding provided for band-operated schools given the locations and incidences of special needs of Aboriginal students in band schools, and the lack of quality control and monitoring of educational programming and achievement in these schools (B. Anderson, Director of B.C. Ministry of Education Research Development and Data Analysis Department,

personal communication, September 16, 2002; Morgan, 1998; Standing Committee on Aboriginal Affairs and Northern Development, 1996).

In the early 1990s, Aboriginal education programs began to be more formally recognized and implemented in the public school system, in order to address the barriers faced by Aboriginal students in public school. An important step in the development of Aboriginal education in the public school system occurred in 1989 with the Minister of Education's announcement that First Nation bands could enter into Local Education Agreements (LEAs) with public school districts, to improve delivery of services to Status Indian on-reserve students in public schools (Kavanagh, 1997). According to the B.C. Ministry of Education Aboriginal Education Enhancements Branch, "an LEA is a mechanism through which administration of federal funding (restricted to identified First Nations status-on-reserve students only) is distributed to school districts...through First Nations Band Councils" (2003, p. 9). These LEAs outline how funding will be used, the services or programs that will be made available to First Nation on-reserve students, and plans and objectives to improve First Nation student school retention.

Although LEAs have been negotiated and implemented across several school districts in B.C. since the early 1990s, many First Nation communities have voiced concerns regarding these agreements (Morgan, 1998). According to Morgan (1998), First Nation authorities have criticized the role of DIAND and the federal government in LEA negotiations. DIAND is responsible for deciding when First Nations bands and communities are ready to enter into agreements with the district, establishes the program guidelines necessary for control over the education of Status Indian on-reserve students, and continues to retain financial control. LEAs must also adhere to provincial curricula,

which opponents argue may not be appropriate for all Aboriginal students, including Status Indian students living on-reserve, and makes the inclusion of additional culturally-relevant courses more difficult. LEAs also exclude off-reserve First Nation or non-Status Indian children, as well as Métis and Inuit students. First Nation communities have emphasized that despite the negotiation of LEAs, the hiring of Aboriginal teachers is often difficult, in part because of provincial certification requirements. Furthermore, many public school districts are not willing to enter into LEAs. Funding aimed for Aboriginal education programs such as Aboriginal language and culture programs and Aboriginal support service programs are often inadequate and misdirected, and LEAs are not automatically protected under section 35 of the Constitution Act; that is, these negotiations can be modified or withdrawn at the discretion of the provincial and federal governments (Morgan, 1998).

In addition to LEAs, Aboriginal Education Enhancement Agreements (EAs) have been recently created and established in B.C. school districts to address goals outlined in a “Memorandum of Understanding on Aboriginal Education” (B.C. Ministry of Education, 2003). This memorandum was signed in 1999 by the Minister of Education, the Minister of Indian and Northern Affairs, the President of the B.C. Teachers Federation, and the First Nations leader of the Chiefs Action Committee, and stated:

We, the undersigned, acknowledge that Aboriginal learners are not experiencing school success in B.C. We state our intention to work together within the mandates of our respective organizations to improve school success for Aboriginal learners in B.C. (B.C. Ministry of Education, 2003, p.7).

According to the B.C. Ministry of Education Aboriginal Education Enhancements Branch

an [Enhancement Agreement (EA)] is a working agreement between a school district, all local Aboriginal communities, and the Ministry of Education. EAs are designed to enhance the educational achievement of Aboriginal students. The EA establishes a collaborative partnership between Aboriginal communities and school districts that involves shared decision-making and specific goal setting to meet the educational needs of Aboriginal students (2003, p.8).

These agreements do not replace LEAs, which address primarily the needs of Status-Indian on-reserve students and how federal funding for these students will be distributed. Although LEAs and EAs may have shared goals and elements, EAs address the needs of all Aboriginal students in a district (B.C. Ministry of Education, 2003). EAs include mandates to: 1) establish a body of representatives from the Aboriginal community; 2) ensure joint consultation, collaboration, joint decision-making and participation of the Aboriginal communities and the school district; 3) monitor Aboriginal student progress; and 4) provide Aboriginal students with Aboriginal education programs that emphasize academic performance as well as the cultural needs of Aboriginal students, including increasing knowledge of and respect for Aboriginal culture, language and history (B.C. Ministry of Education, 2001a, 2003). EAs outline specific performance goals (e.g., percentage of improvement in Aboriginal student graduation rates), how those goals will be monitored and measured, and how those goals will be achieved (B.C. Ministry of Education, 2003). As of the spring of 2004, EAs had been developed and implemented in 11 out of the 59 school districts in B.C., and the B.C. Ministry of Education has set a goal to have EAs established or in the process of negotiation within all provincial school districts by the end of 2005 (B.C. Ministry of Education, 2004a).



### **Current State of Aboriginal Education**

Whether recognized formally through LEAs or EAs or implemented informally, several Aboriginal education programs have been established across B.C.'s 59 public school districts. The types of programs range extensively across preschool, elementary and secondary schools and can include any of the following efforts (Assembly of First Nations, 1988; B.C. Human Rights Commission, 2001b; B.C. Ministry of Education, 2003; T. Cadwallader, First Nation School District Representative, personal communication, September 4, 2002; Cuthand, 1988; Faith, 1997; P. Tallio, Aboriginal Support Worker, personal communication, September 6, 2002):

- 1) Recognition and negotiation of formalized agreements between First Nation or Aboriginal communities, school districts, and provincial ministries; what aspects of Aboriginal education are included in these agreements; whether provisions are made for on- and off-reserve Aboriginal members; and to what extent the agreements address Aboriginal versus school district concerns and goals;
- 2) Aboriginal involvement in decision and policy-making with regards to Aboriginal education programs and funding, which includes having Aboriginal Advisory Boards or similar councils; the degree to which recommendations made by the Aboriginal Advisory Boards are recognized and adhered to; and the proportion of Aboriginal representatives in administration and other positions of authority;
- 3) Integration of and emphasis on Aboriginal languages in the curriculum and school environment, which includes whether Aboriginal language courses are offered; what is included in Aboriginal language courses; how consistently and regularly Aboriginal language courses are offered;

who the courses are offered to and who takes the courses; and the degree to which these courses are taught by instructors with adequate knowledge of and experience with Aboriginal languages;

- 4) Emphasis on and integration of Aboriginal culture and history in the curriculum and school environment, which includes whether Aboriginal culture and history courses are offered; what is included in Aboriginal culture and history courses; how consistently and regularly Aboriginal culture and history courses are offered; who the courses are offered to and who takes the courses; and the degree to which these courses are taught by instructors with adequate knowledge of and experience with Aboriginal culture and history;
- 5) Increased Aboriginal parental, community, and student involvement, including implementation of programs to encourage Aboriginal parental, community and student involvement; inclusion of Aboriginal parents and representatives on Parent Advisory Committees and School Planning Councils; and recognition of First Nation Parent Advisory Councils, District First Nations Advisory Committees or other Aboriginal parental and community committees;
- 6) Cultural competency training for non-Aboriginal and Aboriginal teachers, staff and students to improve awareness of Aboriginal issues, and to reduce racism and prejudice; who takes these training programs; how often these training programs are offered; how these training programs are implemented; and the degree to which these training programs are lead by people with adequate knowledge of and experience with these issues;
- 7) Representative numbers of Aboriginal role models, including teachers, staff and Aboriginal Support Workers; and

- 8) Specialized services, including tutoring and literacy programs, and programs for low-income students, addressing the particular academic and non-academic needs of Aboriginal children.

### **Review of the Research on Aboriginal Education Programs**

Several case studies have shown that Aboriginal education programs within specific schools and school districts in B.C. have been effective in improving Aboriginal student school success. In 2003, the Society for the Advancement of Excellence in Education commissioned a qualitative study of ten schools across Canada who had been successful in improving the school success (e.g., graduation rates, school attendance, provincial test scores, student and teacher reports of satisfaction with their school) of Aboriginal students (Bell, 2004). Researchers collected data regarding each school's practices and approaches to addressing Aboriginal students' needs through semi-structured interviews, focus groups and surveys with teachers, students, parents and Elders, as well as classroom observations and review of school documents such as school policies and mission statements. Results showed that these schools demonstrated: 1) strong partnerships with Aboriginal communities as well as other community organizations that help to provide resources, funding, equipment, special programs and scholarships; 2) leadership that included consultation and input from staff, parents and community members in decision-making; 3) extensive efforts to include and develop trusting and supportive relationships with Aboriginal parents and communities; 4) school climates that fostered respect, pride, caring and school success; 5) a focus on improving literacy skills; 6) instruction in Aboriginal languages; 7) cultural teachings and

inclusiveness that were suited to the school's particular community; 8) academic and non-academic programs (e.g., reading programs, tutoring programs, lunch programs) designed to specifically meet the needs of Aboriginal students in that school; 9) respectful, culturally-sensitive, accepting and supportive teachers who were committed to student success; and 10) small instructional groups (e.g., breaking up a large class into smaller instruction groups) (Bell, 2004).

Other case studies have been conducted in two school districts in B.C. to examine the outcome of specific Aboriginal education programs on Aboriginal student school success. Early reading intervention programs were implemented in ten elementary schools in an urban public school district in B.C. in 1997 (B.C. Ministry of Education, 2001d). Aboriginal students from those schools performed at rates similar to non-Aboriginal students and higher than district averages on standardized reading and provincial learning assessment tests, one year after introducing these programs (B.C. Ministry of Education, 2001d). In another urban public school district, Aboriginal student graduation rates rose between 1995 and 2001 and Aboriginal student scores on standardized achievement tests did not differ significantly from those of non-Aboriginal students four years after the introduction of various Aboriginal education programs (e.g., Aboriginal student support services, Aboriginal counsellors, cultural presentations in classrooms, relevant field trips, Elders in the school system, cultural events, and increased parental and community involvement) (e.g., B.C. Ministry of Education, 2001b).

Although the available evidence suggests that Aboriginal education programs may be helping to improve Aboriginal student school attendance, it is based exclusively

on qualitative studies and district accountability reports restricted to one or two aspects of Aboriginal education implemented within a few school districts. It is not known whether these Aboriginal education programs are effective in other provincial school districts, nor whether other Aboriginal education programs are successful in improving Aboriginal school completion. This information is needed to determine how best to improve Aboriginal student school completion within the B.C. provincial public school system. The purpose of the present study was to systematically and quantitatively examine the relation between the various Aboriginal education programs implemented within B.C.'s public school districts and the school completion rates of Aboriginal students.

## **The Scope of the Present Study**

### **Goals and Hypotheses of the Present Study**

#### School Completion Rates of Aboriginal and Non-Aboriginal Students

Based on previous studies, it was hypothesized that a cohort of Aboriginal B.C. public school students who entered grade 8 in September, 1995 would be less likely to complete secondary school with a Dogwood Certificate by June, 2001 than their non-Aboriginal peers. In addition, those students who were always identified as Aboriginal on the B.C. Ministry of Education "Student Level Data Collection" forms were expected to show lower school completion rates than students who were sometimes identified as Aboriginal on these forms.

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### School Completion Rates across School Districts

Reports by the B.C. Ministry of Education (2001a) and the B.C. Human Rights Commission (2001a) indicate that school completion rates vary across school districts in B.C. Thus, it was predicted that graduation and drop-out rates for the sample of students who entered grade 8 in the B.C. public school system in September, 1995 would vary across school districts, particularly for Aboriginal students.

### Factors Related to School Completion

The final aim of this study was to determine why graduation and drop-out rates vary across school districts, and which factors may be related to school completion. To address this goal, several research questions were explored:

Student, district and community factors. Factors across multiple contexts contribute to an individual's academic success. Thus, individual, school district and community factors (e.g., student age and gender, school district size, and level of poverty in the geographic area of the school district) were examined to assess whether these factors were related to the school completion of students in this sample. It was expected that some student, district and community factors would be universal in predicting the school completion of all students, but that some of these risk and protective factors would be specific to Aboriginal students. Therefore, results were examined in terms of three possible categories: 1) factors that were related to the school completion of all students in the sample (Aboriginal and non-Aboriginal); 2) factors that related to the school completion of Aboriginal students but not non-Aboriginal students; and 3) factors that were uniquely associated with the school completion of students who were always

identified as Aboriginal on the B.C. Ministry of Education “Student Level Data Collection” forms, students who were sometimes identified as Aboriginal on these forms, or non-Aboriginal students.

Aboriginal education programs. A comprehensive telephone interview was developed and used to ask Aboriginal education representatives in 50 public school districts in B.C. whether, and to what extent, various Aboriginal education programs had been implemented in the districts between the 1995/1996 and 2000/2001 school years. Each Aboriginal education program was given a score per school district, based on the extent to which the program was made available in the district between the 1995/1996 and 2000/2001 academic years. District Aboriginal education program scores were compared to the district graduation and drop-out rates of Aboriginal students who entered grade 8 in September, 1995. It was expected that Aboriginal education programs would play a protective role with regard to Aboriginal students’ academic success and be associated with higher Aboriginal student school completion rates within six years of entering grade 8. A related research question was to determine specifically which programs, and to what extent these programs, were related to improved school completion rates of Aboriginal students.

It was expected that certain Aboriginal education programs might have an impact on all Aboriginal students, but that some programs may be specifically related to the graduation and drop-out of students who were always identified as Aboriginal on the B.C. Ministry of Education “Student Level Data Collection” forms or students who were sometimes identified as Aboriginal on these forms<sup>7</sup>. Therefore, results regarding

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<sup>7</sup> Non-Aboriginal students were not included in the analyses regarding Aboriginal education since these programs are not designed for this group of students.

Aboriginal education programs were grouped in terms of two possible categories: 1) programs that related to the school completion of all Aboriginal students; and 2) programs that were uniquely associated with the school completion of students who were always identified as Aboriginal or students that were sometimes identified as Aboriginal on the B.C. Ministry of Education “Student Level Data Collection” forms.

#### Comparing Effect Sizes across Groups

Effect sizes were estimated in order to assess whether factors had a differential impact on students who were always identified as Aboriginal on the B.C. Ministry of Education “Student Level Data Collection” forms, students who were sometimes identified as Aboriginal on these forms, and non-Aboriginal students.

#### Comparing Graduation versus Drop-Out

Two measures of school completion (graduation and drop-out) were compared to assess whether factors were more likely to be related to graduation versus drop-out. Graduation referred to school completion with a Dogwood Certificate within six years of entering grade 8, whereas drop-out referred to not completing high school with a Dogwood Certificate and being absent from school six years after entering grade 8.



## **METHOD**

### **Participants**

#### **Participating School Districts and Aboriginal Education Representatives**

Aboriginal education representatives from fifty (84.7%) of the 59<sup>8</sup> public school districts in B.C. participated in the present study. Four school districts did not participate because there was no available representative of Aboriginal education to complete the study; one district did not participate because the local First Nations band requested that the district not participate; and four school districts did not reply to requests to participate in the study. Fifty-five people who were involved in Aboriginal education in their school district and who were appointed by that district as a representative of Aboriginal education were interviewed by telephone to assess whether, and to what extent, various Aboriginal education programs were implemented in secondary schools in their school district between the 1995/1996 and the 2000/2001 school years. In 45 of the school districts, only one representative was interviewed, whereas two representatives were interviewed in each of the remaining five participating districts for the purposes of assessing reliability. Participating Aboriginal education representatives included 12 District Principals and three Vice-Principals of Aboriginal Education, Special Services, School Services, or Alternate Education; 25 Aboriginal Education Coordinators,

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<sup>8</sup> There are actually 61 public school districts in B.C., but only 59 districts potentially offered Aboriginal education programs between the 1995/1996 and 2000/2001 school years. The Francophone school district, which comprises all French public schools in the province, and a district comprising all students who complete their secondary school studies through distance education, did not have specific Aboriginal education programming between the 1995/1996 and 2000/2001 academic years (Josette Desquins, Francophone District Representative, personal communication, February 16, 2003).

Directors of Instruction, Curriculum Coordinators, Administrators, or Heads of First Nation Education Services; five First Nation and Aboriginal teachers, resource teachers, or liaison teachers; four First Nation and Aboriginal support workers or youth workers; and six School Principals, Superintendents or Assistant Superintendents. On average, representatives had worked in the area of Aboriginal education within their school district for approximately six years, with more than half having worked in Aboriginal education in their district for five years or more ( $M = 6.61$  years,  $Mdn = 5$  years,  $SD = 5.596$ , range = 1 to 28 years). Forty-eight representatives (87.3% of those that participated) were involved in Aboriginal education in their district between the 1995/1996 and 2000/2001 school years. Seven people (12.7% of those that participated) were recently appointed Aboriginal education representatives, having been involved in Aboriginal education in the last one to three years and not during the 1995/1996 to 2000/2001 time period. Of those seven representatives, five were able to provide information regarding Aboriginal education programs in their district between 1995/1996 and 2000/2001 based on information gathered by previous representatives of Aboriginal education (in three of those districts, the previous Aboriginal education representative was also interviewed to corroborate information provided by the current representative); the other two people interviewed were the first Aboriginal education representatives in their district and had few or no specific Aboriginal education programs in their district between the 1995/1996 and 2000/2001 academic years. On a question asking representatives whether they identified themselves as being Aboriginal, twenty-nine representatives (52.7% of those that participated) identified themselves as being of Aboriginal descent, whereas 25 representatives (45.5% of those that participated) identified themselves as being non-

Aboriginal. One representative (1.8% of those that participated) did not indicate whether they were of Aboriginal or non-Aboriginal descent.

### **Sample of Students Included in the Present Study**

Archival data were obtained for all students who were enrolled in grade 8 in the B.C. school system in September, 1995 ( $N=51,134$ ). Of those students, 4578 (9%) were identified as being Aboriginal at least once on the B.C. Ministry of Education “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school years<sup>9</sup>. These data were obtained from Edudata Canada, an organization affiliated with the B.C. Ministry of Education that controls educational data on all students in B.C. (Edudata Canada, n.d.).

### Inclusion/Exclusion Criteria

Students who met the following criteria were included in the study:

The student’s main system<sup>10</sup> of enrolment between the 1995/1996 and 2000/2001 academic years must have been the public school system, and not the independent or band school system. This is because interviews regarding Aboriginal Education programs referred to programs within public schools and not independent or band schools. A total of 3275 students (107 Aboriginal students, and 3168 non-Aboriginal

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<sup>9</sup> This is the definition of “Aboriginal” identity used by the B.C. Ministry of Education (e.g., B.C. Ministry of Education, 2001a).

<sup>10</sup> The main system, facility, district of enrolment and type of schooling were defined as the modal system, facility, district of enrolment and type of schooling that the student was enrolled in between the 1995/1996 and 2000/2001 school years. If the student was only in school for one year, or if there were no modes or multiple modes between the 1995/1996 and 2000/2001 academic years, the most recent school system, facility, district of enrolment and type of schooling were used instead.

students) were enrolled in a main school system other than the public school system, and were excluded from the study.

The student's main facility<sup>10</sup> of enrolment between the 1995/1996 and 2000/2001 school years must have been a standard school facility, and not alternative, continuing education, or other facilities. This is because interviews regarding Aboriginal Education programs referred to programs within standard schools and not alternative, continuing education or other facilities. A total of 1445 students (365 Aboriginal students, and 1080 non-Aboriginal students) were enrolled in a main school facility other than a standard school facility, and were excluded from the study.

The student's main district<sup>10</sup> of enrolment between the 1995/1996 and 2000/2001 academic years must not have been school districts 93 or 101. This is because school district 93, the Francophone school district, and district 101, Distance Education, do not offer Aboriginal Education programs, and were therefore not interviewed for this study. A total of 128 students (10 Aboriginal students, and 118 non-Aboriginal students) had districts 93 or 101 as their main district of enrolment, and were excluded from the study.

The student's main type of schooling between the 1995/1996 and 2000/2001 school years must not have been home schooling. This is because the Aboriginal Education programs examined in this study are not available for students who receive home schooling. A total of 18 students (1 Aboriginal student, and 17 non-Aboriginal students) had been primarily home-schooled, and were excluded from the study.

The student must have been between the ages of 11 and 15 (inclusively) on September 30, 1995. The age limit was chosen as 13 (standard age for grade 8) plus or minus two years because 99% of the sample fell within that age range, and any higher

range would likely include students in adult education who would not have received Aboriginal Education programming. A total of 150 students (49 Aboriginal students, and 101 non-Aboriginal students) were excluded from the study based on their age.

Finally, analyses included only those students whose main district of enrolment was one of the participating school districts. A total of 4274 students (586 Aboriginal students, and 3688 non-Aboriginal students) were primarily enrolled in one of the non-participating districts, and were therefore also excluded from the analyses.

The final sample included 41,988 students (3490 Aboriginal students, and 38,498 non-Aboriginal students), representing 76% of the original Aboriginal student 1995 grade 8 cohort, and 83% of the original non-Aboriginal student 1995 grade 8 cohort.

### Reporting Aboriginal Identity

Aboriginal students in this cohort did not consistently self-declare or were not consistently reported by their parents as being Aboriginal. Of those students who were ever identified as being Aboriginal on the B.C. Ministry of Education “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school years, only 34% of them were always reported as being of Aboriginal ancestry. The remaining 66%, however, were reported as being of Aboriginal ancestry during some of their years in school, but were reported as not being of Aboriginal ancestry in other years.

As can be seen in Table 2, a large proportion (26%) of students were initially reported as being non-Aboriginal but at some point while they attended school, reports changed such that they consistently self-declared or were identified as being Aboriginal from that point onwards. A small percentage (5%) of students was first identified as

Aboriginal and then later was consistently identified as being non-Aboriginal. The remaining 35% switched from being reported as Aboriginal to non-Aboriginal (or vice-versa) more than once.

Table 2: Percentage of Aboriginal Students Who Were Always Versus Sometimes Identified as Aboriginal on the “Student Level Data Collection” Forms Between the 1990/1991 and 2000/2001 School Years.

Always identified as Aboriginal	Initially identified as non-Aboriginal then later consistently identified as Aboriginal	Initially identified as Aboriginal then later consistently identified as non-Aboriginal	Switched from being identified as Aboriginal to non-Aboriginal (or vice-versa) two times	Switched from being identified as Aboriginal to non-Aboriginal (or vice-versa) three times	Switched from being identified as Aboriginal to non-Aboriginal (or vice-versa) four times	Switched from being identified as Aboriginal to non-Aboriginal (or vice-versa) five times
34%	26%	5%	26%	6%	2%	1%

Previous studies have shown that cultural identity can and does change for many adolescents, including Aboriginal youth, and that students whose cultural identity shifts may show different developmental outcomes in comparison to students whose cultural identity remains stable throughout adolescence (Eschbach and Gómez, 1998; Hallett et al., 2005; Stephan & Stephan, 2000; Want et al., 2004). It was therefore hypothesized that there might be important differences between those students that were consistently identified by themselves or their parents as Aboriginal, and those that were sometimes reported as being Aboriginal. For this reason, students were considered as belonging to one of the following three groups: those that were always identified as Aboriginal on the “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school

years (the “always Aboriginal” group,  $n=1267$ ); those that were sometimes identified as Aboriginal on the “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 academic years (the “sometimes Aboriginal” group,  $n=2223$ ) and; those that were never identified as Aboriginal on the “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school years (the non-Aboriginal group,  $n=38,498$ ).

### Demographics

Overall, the mean age of students in the sample was 13.4 years ( $M=13.4$ ,  $SD=.448$ ). Mean ages were similar across groups (“always Aboriginal” group:  $M=13.68$ ,  $SD=.673$ ; “sometimes Aboriginal” group:  $M=13.52$ ,  $SD=.542$ ; non-Aboriginal group:  $M=13.37$ ,  $SD=.428$ ). In the overall sample, 48.5% of the students were female; 49.3%, 48.9%, and 48.4% of the students were female in the “always Aboriginal”, “sometimes Aboriginal” and non-Aboriginal groups respectively. Four percent of students in the overall sample had been enrolled in special education at least once between the 1995/1996 and 2000/2001 school years. More specifically, over a quarter of Aboriginal students (27.3% in the “always Aboriginal” group and 26.7% in the “sometimes Aboriginal” group) had been enrolled in special education at least once between the 1995/1996 and 2000/2001 academic years, compared to 1.9% of non-Aboriginal students. Among the Aboriginal students, 68.2% of the “always Aboriginal” group and 11.9% of the “sometimes Aboriginal” group were registered as Status Indians living on-reserve<sup>11</sup>.

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<sup>11</sup> School districts receive federal funding for students who are registered as being Status Indians living on-reserve, under the Indian Act. Districts, therefore, keep track of which Aboriginal students are Status Indian living on-reserve, but do not officially record whether other Aboriginal students are non-Status Indians or First Nations, Inuit, Métis, or living off-reserve.

## Materials

### Aboriginal Education Interview

A telephone interview was developed in order to assess which Aboriginal education programs were implemented in each B.C. public school district between the 1995/1996 and 2000/2001 school years. An initial draft of this interview was developed with the assistance of Aboriginal support workers, Aboriginal education district representatives, Aboriginal parents, and other members of the Aboriginal education community<sup>12</sup>, who provided feedback regarding programs they considered most relevant and important in defining Aboriginal education. Information regarding each of these programs was also gathered from additional sources, including the B.C. Ministry of Education Aboriginal Education Enhancements Branch, the Department of Indian Affairs and Northern Development, researchers from Simon Fraser University, the University of British Columbia, and the University of Victoria, school district reports, and literature on Aboriginal education. The initial draft of the interview was piloted with two school districts in B.C., and questions were modified, omitted and added based on the information provided in those interviews. The final version of the interview (see Appendix A) included questions regarding demographic information about the respondent, and various Aboriginal education programs in secondary schools in the district between the 1995/1996 and 2000/2001 school years.

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<sup>12</sup> Discussions occurred primarily using the Abnet listserv, an email forum initiated by the B.C. Ministry of Education for individuals and groups involved in Aboriginal education, including Aboriginal and non-Aboriginal teachers, staff, parents, students, and researchers. Feedback was also collected from members of the Aboriginal education community at the Eighth Annual Provincial Conference on Aboriginal Education in Richmond, B.C. in November 2002.



### **Student Data**

Archival data on each student enrolled in grade 8 in B.C. in the 1995/1996 school year were obtained from Edudata Canada, based on information collected by the B.C. Ministry of Education on the annual “Student Level Data Collection” forms. These data included:

- 1) The student’s age on September 30, 1995;
- 2) The student’s gender;
- 3) Whether the student was identified as being Aboriginal in the 1990/1991, 1991/1992, 1992/1993, 1993/1994, 1994/1995, 1995/1996, 1996/1997, 1997/1998, 1998/1999, 1999/2000, and 2000/2001 school years;
- 4) Whether the student was registered as a Status Indian living on-reserve;
- 5) Whether the student had been enrolled in special education in the 1995/1996, 1996/1997, 1997/1998, 1998/1999, 1999/2000, and 2000/2001 school years;
- 6) Which grade, school, school district, school system, and school facility the student was enrolled in (if still enrolled in school) in the 1995/1996, 1996/1997, 1997/1998, 1998/1999, 1999/2000, and 2000/2001 school years;
- 7) Whether the student was absent<sup>13</sup> in the 1995/1996, 1996/1997, 1997/1998, 1998/1999, 1999/2000, and 2000/2001 school years; and
- 8) Whether the student graduated by June, 2001 with a Dogwood Certificate.

### **Community Data**

Further archival data for each school district were obtained from the B.C. Ministry of Education. These data were collected and gathered from the 1996 Canadian

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<sup>13</sup> Students who are not enrolled in school on September 30 when the “Student Level Data Collection” forms are completed are considered absent for that year. This includes primarily students who have dropped out of or have completed high school, as well as students who are absent temporarily, or who have moved to a school out of province.

Census and summarized by school district by the B.C. Ministry of Education using Census respondents' postal codes. These data included the proportion of lone-parent families, the unemployment rate, the average household income, the proportion of households with income less than \$30,000<sup>14</sup>, and the proportion of urban (versus rural) population, within the geographic area of the school district.

## **Procedure**

### **Aboriginal Education Interview**

Aboriginal district representatives were first contacted by e-mail in order to provide information about the study (see Appendix B). Following this introductory e-mail, representatives were contacted by telephone by the researcher or research assistants<sup>15</sup> to provide further information about the study, to ask if they were willing to participate, and to complete the interview. All interviews were audio-taped, with verbal permission from the interviewee. The interview took between 30 minutes and 1 hour to complete.

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<sup>14</sup> According to recent reports from Statistics Canada, a Canadian family of three living in a large urban setting with an income of less than \$30,000, or a larger family living in a rural setting with an income of less than \$30,000, would be considered to be living below the poverty line (Canadian Council on Social Development, 2003). The low income cut-off of \$30,000 was therefore used as an indicator of poverty for the purposes of this study.

<sup>15</sup> Two research assistants were provided detailed background information about the study and were trained in how to complete the Aboriginal education interview, including how to obtain verbal consent for participation, how to address common questions, how to record responses, and how to ask for elaborations where necessary. Research assistants were provided with the interview in Appendix A, as well as telephone recording equipment to audiotape the interview.

## Research Design and Variable Definitions

### Research Design

Several predictor variables were obtained for each student in the sample. These variables included student factors (e.g., student age and gender), district and community factors (e.g., number of grade 8 students in the student's district, and the unemployment rate in the geographic area of the student's school district), and Aboriginal education program factors (e.g., whether the student's district offered Aboriginal language courses or collaborated with Aboriginal organizations). (See the following sections for precise definitions of each of these variables). These predictor variables were compared to two dichotomous outcome variables: 1) whether the student graduated and 2) whether they were considered to have dropped out of school. Graduation was defined as any student who graduated by June, 2001 and received a Dogwood Certificate<sup>16</sup>. Drop-out was defined as any student who did not graduate by June, 2001 with a Dogwood Certificate, and was absent in the 2000/2001 school year<sup>17</sup>.

Predictor and outcome variables were obtained for three groups in this study: 1) students who were always identified as Aboriginal on the "Student Level Data

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<sup>16</sup> This definition of graduation is used by the B.C. Ministry of Education (i.e., receiving a Dogwood Certificate within six years of entering grade 8).

<sup>17</sup> Rather than using transition to subsequent grade levels as an indicator of drop-out (as is used by the B.C. Ministry of Education), the definition used in this study is less likely to overestimate the drop-out rate because it does not include students who repeated grades and were still enrolled in school in the 2000/2001 school year but had not yet graduated (approximately 20-25% of Aboriginal students and 8% of non-Aboriginal students in this sample). This definition of drop-out does, however, still include students who were temporarily absent in the 2000/2001 school year, those who completed high school with a School Leaving Certificate, and those who moved out of province, although this is likely to represent a small proportion of students. It is not clear how many students may have been temporarily absent, or may have completed a School Leaving Certificate, but it is estimated that approximately 2-3% of students from a given cohort migrate out of province each year (Pat McCrea, Data Analysis and Reporting, B.C. Ministry of Education, personal communication, May 28, 2003).

Collection” forms between the 1990/1991 and 2000/2001 school years (“always Aboriginal” group); 2) students who were sometimes identified as Aboriginal on the “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school years (“sometimes Aboriginal” group); and 3) students who were never identified as Aboriginal on the “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school years (non-Aboriginal group).

### **Student Factor Scores and Definitions**

Previous research studies have shown that several individual risk and protective factors are related to Aboriginal student graduation and drop-out (e.g., Applied Research Branch of HRC, 2000; B.C. Human Rights Commission, 2001a; B.C. Ministry of Education, 2001a; Brunnen, 2004; Cummins et al., 1999; First Nations Education Council for District 73, n.d.; Janosz et al., 1997; Rampaul et al., 1984; Snell, 2004). The following student factors, based on the data provided by Edudata Canada, were included in the study because they were deemed to be potentially relevant to Aboriginal student school completion:

- 1) Each student’s gender;
- 2) Each student’s age on September 30, 1995;
- 3) Whether each student was registered as a Status Indian living on-reserve;  
and
- 4) Whether each student had ever been enrolled in special education between the 1995/1996 and 2000/2001 school years.

### **District and Community Factor Scores and Definitions**

District and community factors were calculated based on data provided by Edudata Canada as well as from the 1996 Census summarized by school district by the B.C. Ministry of Education. Variables from the 1996 Census were selected for this study based on literature (e.g., Krieger, Williams & Moss, 1997) and consultations with education researchers (e.g., Dara Culhane, Associate Professor, Simon Fraser University, personal communication, December 29, 2003; Edith Chen, Assistant Professor, University of British Columbia, personal communication, January 15, 2004). These community factors have been shown to be relevant to Aboriginal and non-Aboriginal student school completion (e.g., Applied Research Branch of HRC, 2000; Compas, 2004; McLoyd, 1998). These factors included:

- 1) The number of grade 8 students in the district in the 1995/1996 school year;
- 2) The proportion of Aboriginal<sup>18</sup> students in grade 8 in that district in the 1995/1996 school year;
- 3) The proportion of grade 8 Aboriginal students in that district in the 1995/1996 year that were registered as Status Indian living on-reserve;
- 4) The proportion of grade 8 Aboriginal students in that district in the 1995/1996 school year that had ever been in special education between the 1995/1996 and 2000/2001 school years;
- 5) The proportion of lone-parent families out of the total number of Census families in the geographic area of that district in 1996;
- 6) The unemployment rate in the geographic area of that district in 1996;

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<sup>18</sup> “Aboriginal” defined as having ever been identified as Aboriginal on the “Student Level Data Collection” forms between the 1990/1991 and 2000/2001 school years.

- 7) The average household employment income in the geographic area of that district in 1996;
- 8) The proportion of households with household incomes less than \$30,000 out of the total number of Census private households in the geographic area of that district in 1996;
- 9) The proportion of urban population out of the total Census population in the geographic area of that district in 1996.

Each of these variables was scored per school district. Students in the sample were considered to have one main district of enrolment, defined as the student's modal school district of enrolment between the 1995/1996 and 2000/2001 school years<sup>19</sup>, and received district and community scores that corresponded to their main district of enrolment. For example, all students whose main district of enrolment was district "X" would have the same district and community scores.

### **Aboriginal Education Program Scores and Definitions**

Based on responses from the Aboriginal education interviews, scores were calculated per district for each Aboriginal education program discussed in the interview. Rather than calculating dichotomous scores (e.g., whether each program was present or absent in the district between the 1995/1996 and 2000/2001 school years), continuous scores were used to assess the extent to which the programs were implemented in the district. For example, many of the programs were offered in specific secondary schools within the district rather than across the entire district. The following definitions were used in scoring each Aboriginal education program, per school district:

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<sup>19</sup> If the student was only in school for one year, or if there were no modes or multiple modes between the 1995/1996 and 2000/2001 school years, the most recent school district of enrolment was used instead.

- 1) Local Education Agreements: The proportion of Status Indian on-reserve students<sup>20</sup> in the sample who were members of bands that had Local Education Agreements with the district for three or more years (i.e., the majority of the time) between the 1995/1996 and 2000/2001 school years;
- 2) First Nation and Aboriginal committees: The estimated average proportion of Aboriginal members in a group, committee, council or board that had authority over<sup>21</sup> Aboriginal education policy-making and funding decisions in the district between the 1995/1996 and 2000/2001 school years;
- 3) First Nation and Aboriginal language courses<sup>22</sup>: The average proportion of time Aboriginal<sup>23</sup> students in the sample attended secondary schools where Aboriginal language courses were offered between the 1995/1996 and 2000/2001 school years;
- 4) First Nation and Aboriginal culture and history courses: The average proportion of time Aboriginal students in the sample attended secondary schools where Aboriginal culture or history courses were offered in the district between the 1995/1996 and 2000/2001 school years;
- 5) First Nation and Aboriginal parental and community involvement: The average proportion of time Aboriginal students in the sample attended secondary schools where efforts were made to increase First Nation and Aboriginal parental and community involvement in the district between the 1995/1996 and 2000/2001 school years;

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<sup>20</sup> Local Education Agreements (LEAs) pertain solely to Status Indian on-reserve students, and therefore the proportion of Status Indian on-reserve, rather than Aboriginal, students was used in calculating the LEA score. If there are no Status Indian on-reserve students in a district, an LEA is not applicable. For those districts that did not have Status Indian on-reserve students, and therefore no LEA, the LEA variable was scored as “0”.

<sup>21</sup> All school districts that participated in the study had some form of First Nation or Aboriginal advisory committee. What varied across districts was the extent to which they had authority over the decisions made.

<sup>22</sup> If offered, Aboriginal language courses are typically courses in the local Aboriginal language spoken within the geographic area of the district. Districts that have no local Aboriginal language in the community do not typically offer Aboriginal language courses. For districts that did not have a local Aboriginal language in the community, and thus no Aboriginal language course, the Aboriginal language course variable was scored as “0”.

<sup>23</sup> Proportions were calculated separately for students in the “always Aboriginal” and the “sometimes Aboriginal” groups respectively.

- 6) First Nation and Aboriginal parents on Parent Advisory Committees (PACs): The highest estimated proportion of First Nation or Aboriginal parents on any of the secondary school PACs<sup>24</sup> in the district between the 1995/1996 and 2000/2001 school years;
- 7) Cross-cultural programs: The average proportion of time Aboriginal students in the sample attended secondary schools in the district where cross-cultural education programs for teachers, staff and students were offered to improve awareness of First Nation and Aboriginal issues, as well as racism and prejudice, between the 1995/1996 and 2000/2001 school years;
- 8) Tutoring programs and homework clubs: The average proportion of time Aboriginal students in the sample attended secondary schools where tutoring programs or homework clubs were available in the district between the 1995/1996 and 2000/2001 school years;
- 9) Literacy and reading programs: The average proportion of time Aboriginal students in the sample attended secondary schools where literacy or reading programs were available in the district between the 1995/1996 and 2000/2001 school years;
- 10) Programs for low-income students: The average proportion of time Aboriginal students in the sample attended secondary schools where programs to address the needs of low-income students were available in the district between the 1995/1996 and 2000/2001 school years;
- 11) First Nation and Aboriginal members working in the district: The highest estimated proportion of First Nation or Aboriginal members working in secondary schools in the district between the 1995/1996 and 2000/2001 school years;

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<sup>24</sup> For those districts that had a specific First Nation or Aboriginal PAC, which included only First Nation and Aboriginal parents, this variable was scored as "1".



- 12) Collaborations between the district and local First Nation bands: Whether the district collaborated on Aboriginal education programs with local First Nation bands between the 1995/1996 and 2000/2001 school years<sup>25</sup>;
- 13) Collaborations between the district and other Aboriginal organizations: Whether the district collaborated on Aboriginal education programs with other Aboriginal organizations (e.g., Métis Association) between the 1995/1996 and 2000/2001 school years;
- 14) Collaborations between the district and other non-Aboriginal organizations: Whether the district collaborated on Aboriginal education programs with other non-Aboriginal organizations (e.g., universities, local libraries) between the 1995/1996 and 2000/2001 school years.

Students received Aboriginal education program scores that corresponded to their modal district of enrolment.

## **Data Reduction Techniques**

### **Missing Data**

Student, community, graduation and drop-out variables based on the data provided by Edudata Canada and the B.C. Ministry of Education were obtained for all students in the sample and all districts in B.C. A small number of participating districts, however, had missing information regarding specific Aboriginal education programs. To

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<sup>25</sup> The continuous score was initially calculated as the average proportion of time Aboriginal students in the sample attended secondary schools in the district that collaborated with local First Nation bands, other Aboriginal organizations, or other non-Aboriginal organizations between the 1995/1996 and 2000/2001 school years. However, in all participating districts, collaborations with other groups either occurred across the entire district or not at all, and so the dichotomous score (i.e., whether the district collaborated or not with these groups) was used.

avoid further excluding districts and students with missing information from the analyses, missing data were replaced in the following manner.

Two districts ( $n=100$  Aboriginal students) knew there had been an LEA in the district between the 1995/1996 and 2000/2001 school years, but did not know which local First Nation bands had an LEA with the district. For those two districts, it was assumed that the district likely had an LEA with only one band in the district, with the band that had the greatest proportion of Status Indian on-reserve students in that district. The proportion of Status Indian on-reserve students in the sample who were members of that band was used to score the LEA variable for those two districts.

Three districts ( $n=144$  Aboriginal students) did not know whether there had been any First Nation or Aboriginal parents on any of the secondary school PACs between the 1995/1996 and 2000/2001 school years. For those three districts, it was assumed that they either did not have any First Nation or Aboriginal parents on the secondary school PACs, or if they did, they did not likely have a specific First Nation or Aboriginal PAC. The average proportion of Aboriginal parents on secondary school PACs was calculated across all other districts that had either no Aboriginal parents on PACs, or some Aboriginal parents on PACs (but did not have specific Aboriginal PACs). This average proportion was used to score the PAC variable for those three districts.

One district ( $n=190$  Aboriginal students) knew there were some Aboriginal parents on their secondary school PACs between the 1995/1996 and 2000/2001 school years, but did not know the estimated proportion of Aboriginal parents on those PACs. It was assumed that although they had at least some Aboriginal parents on the PACs in the district, they did not likely have a specific First Nation or Aboriginal PAC. The average

proportion of Aboriginal parents on secondary school PACs was calculated across all other districts that had at least some Aboriginal parents on PACs, but did not have specific Aboriginal PACs. This average proportion was used to score the PAC variable for this district.

One district ( $n=46$  Aboriginal students) knew there were tutoring programs or homework clubs, as well as literacy or reading programs, but did not know which secondary schools in the district offered these programs between the 1995/1996 and 2000/2001 school years. Similarly, two districts ( $n=171$  Aboriginal students) knew there were programs for low-income students, but did not know which secondary schools in the district offered these programs between the 1995/1996 and 2000/2001 school years. It was assumed that these programs were not likely offered across the entire district. Therefore, the average proportion of time Aboriginal students in the sample attended secondary schools which offered tutoring programs, literacy programs or programs for low-income students respectively was calculated separately across all other districts that had at least some schools that offered these programs, but not for districts that offered these programs across the entire district. These average proportions were used to score the tutoring programs, literacy programs, and programs for low-income students respectively for these districts.

### **Data Reduction**

Logistic regression analyses allow a researcher to assess the relationship between multiple predictive factors and a dichotomous outcome variable (Tabachnick & Fidell, 2000a), and were conducted in order to address some of the research questions in the

present study. (See data analysis section for a more complete description of logistic regression analyses and why and how these analyses were conducted in this study). Using a large number of variables in logistic regressions results in less predictive power among individual factors (Tabachnick & Fidell, 2000a). Thus, variable reduction approaches were used to minimize the number of predictive factors included in the logistic regression analyses conducted in this study.

Factors that do not vary across subjects are not useful in predicting different subject outcomes. For example, if all students in a sample are female, one cannot suggest that gender explains the differences in graduation among those students. In logistic regression analyses, variables that have limited variability do not help to predict specific outcomes and may “dilute” or dampen the relationships between other useful predictor variables and outcomes (Tabachnick & Fidell, 2000a). To address this potential problem, all variables in this study that showed limited or no variability across districts were removed from the analyses, including:

- 1) First Nation and Aboriginal parental and community involvement (all participating districts reported making efforts to increase Aboriginal parental and community involvement across the entire district between the 1995/1996 and 2000/2001 school years);
- 2) Cross-cultural programs (all except one district reported having cross-cultural education programs for teachers, staff and students offered across the entire district between the 1995/1996 and 2000/2001 school years);
- 3) First Nation and Aboriginal members working in the district (all participating districts reported that they had First Nation or Aboriginal workers in the district, and that approximately 10% or fewer people working in secondary schools in the district between the 1995/1996 and 2000/2001 school years were First Nation or Aboriginal);

- 4) Collaborations between the district and local First Nation bands (all except two districts reported that they collaborated on Aboriginal education programs with local First Nation bands between the 1995/1996 and 2000/2001 school years).

Including variables that are deemed unessential and unimportant predictors with regard to specified outcomes also affect logistic regression results (Tabachnick & Fidell, 2000a). For example, one would not expect a student's height or shoe size to predict the student's likelihood of graduating, and including such variables in logistic regression analyses would minimize the relationship between other relevant predictors and graduation. Results from a logistic regression analysis which included all variables in the study indicated that a number of variables were unrelated to graduation and drop-out for each of the "always Aboriginal", "sometimes Aboriginal" or non-Aboriginal groups (see Appendix C). These variables were therefore considered unessential in predicting school completion and were removed from further analyses:

- 1) The proportion of grade 8 Aboriginal students in that district in the 1995/1996 school year that were registered as Status Indian living on-reserve;
- 2) The average proportion of time Aboriginal students in the sample attended secondary schools where Aboriginal language courses were offered in the district between the 1995/1996 and 2000/2001 school years;
- 3) The average proportion of time Aboriginal students in the sample attended secondary schools where Aboriginal culture or history courses were offered in the district between the 1995/1996 and 2000/2001 school years;
- 4) The highest estimated proportion of First Nation or Aboriginal parents on any of the secondary school PACs in the district between the 1995/1996 and 2000/2001 school years; and

- 5) The average proportion of time Aboriginal students in the sample attended secondary schools where tutoring programs or homework clubs were available in the district between the 1995/1996 and 2000/2001 school years.

Principal component analyses were used to further reduce the number of variables in the present study. Principal components analyses allow a researcher to assess whether groups of variables can be combined into a smaller number of factors representing common constructs (Tabachnick & Fidell, 2000b). Principal components analyses were conducted using the student factors, district and community factors, and Aboriginal education programs respectively. Two variables, the average household income and the proportion of households with income less than \$30,000, were combined into one factor using regression weights from the principal components analysis (see Appendix D). This factor represented the level of poverty in the community within the geographic area of the district. Results from these analyses did not group any other variables into conceptually clear and obvious factors, and so the remainder of the variables were not combined.

## **Data Analysis**

### **Reliability**

In five school districts (8.5% of the participating districts), a second representative of Aboriginal education was interviewed in order to assess the reliability of the information provided by respondents regarding their district's Aboriginal education programs. In six of the school districts (10.2% of the participating districts), a second

rater scored each of the Aboriginal education programs in the districts from audio-taped recordings of the Aboriginal education interview, in order to assess the reliability of the coding method. Intraclass correlation analyses allow a researcher to measure how closely two variables of a common class are related to one another; high intraclass correlation coefficients indicate reliable measurements across sources and coders (McGraw & Wong, 1996). Intraclass correlation<sup>26</sup> analyses were therefore conducted and yielded adequate inter-respondent (intraclass correlation coefficients > .789) and inter-coder (intraclass correlation coefficients > .875) reliabilities across variables and groups (see Appendix E). That is, different sources within a district reported similar information regarding their Aboriginal education programs, and different raters calculated similar scores for each of the Aboriginal education programs within a given district.

### **Representativeness of the Sample**

Nine school districts (15% of the 59 public school districts in B.C.) did not participate in the study, thus it was important to ensure that the sample of districts that participated in the study was representative of provincial school districts in B.C., particularly with regard to Aboriginal student graduation and drop-out. In the participating districts, the graduation rate of Aboriginal students was 41.4% compared to 39.8% in those districts that did not participate in the study. A chi-square analysis showed that there was no significant difference in Aboriginal student graduation between participating and non-participating districts ( $\chi^2=.540$ ,  $df=1$ ,  $p=.462$ ). The drop-out rate of

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<sup>26</sup> All intraclass correlations used absolute agreement rather than consistency, because ratings were used 'as is', without being modified to correct for possible rater bias. Intraclass correlations were also for a single rating rather than an average rating, because the ratings used in the regression analyses were not averaged over raters.

Aboriginal students in the participating districts was 35.3% in contrast to 34.1% in the non-participating districts. Results from a chi-square analysis demonstrated that there was no significant difference in Aboriginal student drop-out rates between participating and non-participating school districts ( $\chi^2=.302$ ,  $df=1$ ,  $p=.583$ ). These findings suggest that the sample of Aboriginal students from participating school districts was representative of the entire cohort of Aboriginal students in B.C. who entered grade 8 in September, 1995, with regards to graduation and drop-out.

### **School Completion Rates of Aboriginal and Non-Aboriginal Students**

Graduation and drop-out rates for students in all participating districts were calculated for the “always Aboriginal”, the “sometimes Aboriginal” and non-Aboriginal groups. Chi-square tests were completed to confirm whether there was a significant difference in student graduation and drop-out rates between these groups.

### **School Completion Rates across School Districts**

The graduation and drop-out rates for each of the “always Aboriginal”, “sometimes Aboriginal” and non-Aboriginal groups were calculated for each participating school district. Chi-square analyses were conducted to assess whether there was a significant difference in student graduation and drop-out across districts. Some school districts had few or no students per school district when groups were analyzed separately. Thus, chi-square tests were conducted using only districts with a minimum number of students per school district; that is, districts that had at least 5, 10 or 15



students for the “always Aboriginal” and “sometimes Aboriginal” groups, and districts that had at least 100, 200, and 300 students for the non-Aboriginal group.

### **Factors Related to School Completion**

Logistic regression analyses were conducted to determine which individual, district and community and Aboriginal education factors were significantly related to student graduation and drop-out respectively, given the presence of all other variables in the analyses<sup>27</sup> (e.g., whether collaborating with Aboriginal organizations was related to “always Aboriginal” student graduation when all other student factors, district and community factors and Aboriginal education programs were taken into account).

Logistic regression analyses were conducted for the “always Aboriginal”, “sometimes Aboriginal”, and non-Aboriginal groups separately<sup>28</sup> to assess whether the relationship between predictive factors and school completion was common to all students in the sample, or specific to “always Aboriginal”, “sometimes Aboriginal” or non-Aboriginal students.

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<sup>27</sup> Single-predictor logistic regression analyses could have been done for each variable separately, ignoring all other variables, but such analyses were deemed inappropriate for this study because they are confounded by correlations among the predictors and do not identify the variables that are adding unique information to the predictions.

<sup>28</sup> It was not known whether different factors predicted school completion for “always Aboriginal” and “sometimes Aboriginal” students respectively. Analyses were conducted in order to determine whether to combine all Aboriginal students into one group, or to keep groups separate when analyzing which factors predicted school completion. Results showed a main effect for group (for graduation,  $B = -.18$ ,  $SE = .096$ ,  $p = .062$ ; for drop-out,  $B = .257$ ,  $SE = .095$ ,  $p = .007$ ), a significant interaction of group with the predictor variables (for graduation,  $\chi^2 = 4214.67$ ,  $df = 16$ ,  $p = .027$ ; for drop-out,  $\chi^2 = 4146.07$ ,  $df = 16$ ,  $p = .004$  when comparing the -2 log likelihood value for all Aboriginal students versus the sum of the -2 log likelihood values for the “always Aboriginal” and “sometimes Aboriginal” groups respectively), and a significant difference in regression weights for some of the predictor variables across groups (see Appendix F for z-scores). Therefore, all logistic regression analyses were conducted separately for the “always Aboriginal”, “sometimes Aboriginal” and “non-Aboriginal” groups.

Effect sizes were also calculated in order to evaluate the strength of the relationships between predictors and school completion. When comparing effect sizes across predictor variables, the change in Menard's (2000)  $R^2_L$  coefficient<sup>29</sup> ( $\Delta R^2_L$ ) when the target variable was included versus removed from the analyses was used as a measure of effect size. When comparing the strength of individual predictor variables across groups, regression weights were used as measures of effect sizes, and z-tests using Bonferroni corrections for the number of comparisons made and the number of predictor variables included were used to test for significance<sup>30</sup>. The following predictor variables were included in these analyses (see Appendix G for a summary of the means and standard deviations of each predictor variable score for each group):

- 1) Student factors:
  - a. Student age on September 30, 1995;
  - b. Student gender;
  - c. Whether the student was registered as a Status Indian living on-reserve; and
  - d. Whether the student had ever been enrolled in special education between the 1995/1996 and 2000/2001 school years.

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<sup>29</sup> Menard's (2000)  $R^2_L$  coefficient is analogous to  $R^2$  in linear regressions and represents the goodness-of-fit of the model in explaining the relationship between the predictor and outcome variables. It does not, however, equal the percent of variance accounted for. As with the ordinary  $R^2$ ,  $R^2_L$  ranges from 0 to 1, with larger values indicating larger effect sizes. According to Menard (2000), some statisticians have argued that  $R^2_L$  is not a measure of goodness-of-fit (Hosmer and Lemeshow, 1989) and that  $R^2_L$  may underestimate the strength of the relationship between predictor and outcome variables when the outcome variable represents a continuous variable (Hagle and Mitchell, 1992). Although there are concerns with the use of analogous  $R^2$ s, Menard (2000) has argued that  $R^2_L$  is the most "generally applicable and consistently useful" (p. 24) coefficient of determination for logistic regression analyses, particularly when the outcome variable is truly dichotomous. Nonetheless, this measure must be interpreted with caution because of fundamental problems inherent in using  $R^2$  analogs as measures of effect size in logistic regressions. These limitations are described in more detail in the discussion section.

<sup>30</sup> Some statisticians (e.g., Hosmer and Lemeshow, 1989) recommend using structural parameters, such as regression weights, rather than  $R^2$  analogs to define the strength of the relationship between the independent and dependent variables. Regression weights, however, cannot be compared across predictor variables if they are measured in different units, as is the case in this study. Therefore,  $R^2$  was chosen to compare effect sizes across predictor variables, and regression weights were used to compare effect sizes across groups for each individual predictor variable.

## 2) Community and district factors:

- a. The number of grade 8 students in the district in the 1995/1996 school year;
- b. The proportion of Aboriginal students in grade 8 in that district in the 1995/1996 school year;
- c. The proportion of grade 8 Aboriginal students in that district in the 1995/1996 school year that had ever been in special education between the 1995/1996 and 2000/2001 school years;
- d. The proportion of lone-parent families out of the total number of Census families in the geographic area of that district in 1996;
- e. The unemployment rate in the geographic area of that district in 1996;
- f. The level of poverty (i.e., the weighted factor score combining average household employment income and the proportion of households with household incomes less than \$30,000) in the geographic area of that district in 1996; and
- g. The proportion of urban population out of the total Census population in the geographic area of that district in 1996.

## 3) Aboriginal education programs:

- a. The proportion of Status Indian on-reserve students in the sample who were members of bands that had Local Education Agreements with the district for three or more years (i.e., the majority of the time) between the 1995/1996 and 2000/2001 school years;
- b. The average proportion of time Aboriginal students in the sample attended secondary schools where literacy or reading programs were available in the district between the 1995/1996 and 2000/2001 school years;
- c. The average proportion of time Aboriginal students in the sample attended secondary schools where programs to address the needs of low-income students were available in the district between the 1995/1996 and 2000/2001 school years;

- d. Whether the district collaborated on Aboriginal education programs with Aboriginal organizations (e.g., Métis Association) between the 1995/1996 and 2000/2001 school years; and
- e. Whether the district collaborated on Aboriginal education programs with non-Aboriginal organizations (e.g., universities, local libraries) between the 1995/1996 and 2000/2001 school years.

## RESULTS

### **School Completion Rates of Aboriginal and Non-Aboriginal Students**

Graduation and drop-out rates were calculated for the “always Aboriginal”, “sometimes Aboriginal” and non-Aboriginal groups (see Figure 1). Results indicated a significant difference across groups with regards to both graduation ( $\chi^2=1872.17$ ,  $df=2$ ,  $p<.001$ ) and drop-out ( $\chi^2=789.30$ ,  $df=2$ ,  $p<.001$ ). Post-hoc analyses showed that all groups were significantly different from each other in terms of graduation and drop-out (see Appendix H). As hypothesized, non-Aboriginal students graduated at higher rates (75%) and dropped-out at lower rates (16.6%) than their Aboriginal peers. Furthermore, students who were always identified as being Aboriginal had lower graduation (33%) and higher drop-out rates (40.6%) than students who were only sometimes identified as being Aboriginal (46.2% graduation rate and 32.3% drop-out rate).

### **School Completion Rates across School Districts**

Graduation and drop-out rates were calculated for each provincial school district for each of the “always Aboriginal”, “sometimes Aboriginal” and non-Aboriginal groups. As predicted, chi-square analyses showed that school completion rates differed significantly across school districts for each of the groups (see Appendix I). Graduation rates ranged from 13.3% to 100% across districts for the “always Aboriginal” students,

12.5% to 100% for the “sometimes Aboriginal” students, and 28.6% to 100% for the non-Aboriginal students. Drop-out rates ranged from 0% to 83.3% across districts for the “always Aboriginal” students, 0% to 59.3% for the “sometimes Aboriginal” students, and 0% to 57.1% for the non-Aboriginal students.

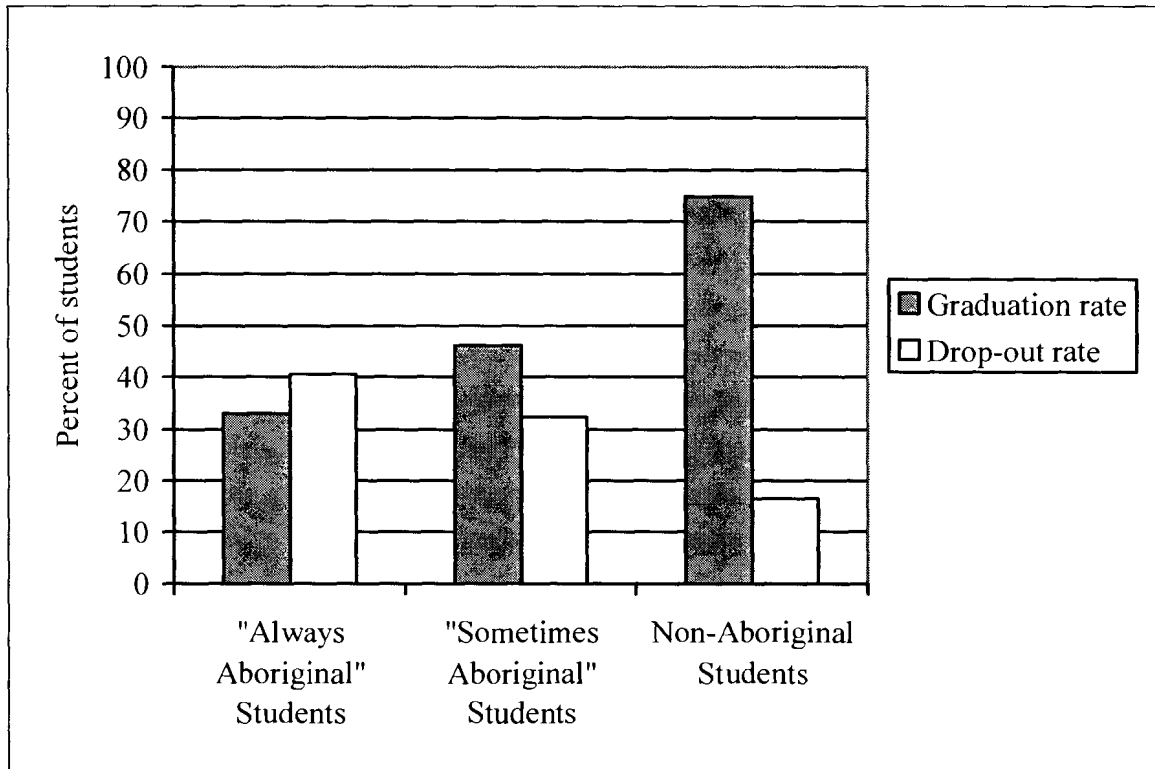


Figure 1. Graduation and drop-out rates for “always Aboriginal”, “sometimes Aboriginal” and non-Aboriginal students.

Some school districts had few or no students per school district when groups were analyzed separately, and so analyses were further restricted to districts that had at least 5, 10 or 15 students for the “always Aboriginal” and “sometimes Aboriginal” groups, and districts that had at least 100, 200, and 300 students for the non-Aboriginal group (see Appendix I). Even with small districts removed from the analyses, graduation and drop-

out rates differed across school districts ( $p < .003$  for all graduation analyses with small districts removed;  $p < .059$  for all drop-out analyses with small districts removed).

## **Factors Related to School Completion**

Logistic regression analyses were conducted to determine which student factors, district and community factors, and Aboriginal education programs were related to student graduation and drop-out, and to what extent they predicted these measures of school completion (see Appendix J).

### **Student, District and Community Factors**

#### Student, District and Community Factors Related to the School Completion of All Students

The student's age, whether they had ever been enrolled in special education, and the unemployment rate in the geographic area of the district were associated with school completion for all students, regardless of whether they were identified as Aboriginal or non-Aboriginal. Effect sizes, however, were generally weak.

Of these three factors, age was the strongest predictor for both graduation and drop-out of Aboriginal and non-Aboriginal students ( $\Delta R^2_L$  ranged from .021 to .060 across "always Aboriginal", "sometimes Aboriginal" and non-Aboriginal groups, and across graduation and drop-out). Given the presence of the other factors, the older a student was in grade 8, the less likely they were to graduate ( $p < .001$  for all groups), and the more likely they were to drop out ( $p < .001$  for all groups).

Enrolment in special education was the next strongest predictor of Aboriginal student graduation ( $\Delta R^2_L$  for: “always Aboriginal” graduation=.019, “sometimes Aboriginal” graduation=.035), and a very weak predictor of non-Aboriginal student graduation ( $\Delta R^2_L = .000$ ). Students were less likely to graduate if they had ever been enrolled in special education ( $p < .012$  for all groups), although only “sometimes Aboriginal” students were more likely to drop-out if they had ever been enrolled in special education ( $p = .017$ ).

Finally, a higher unemployment rate in the geographic area of the school district was related to higher graduation of all students in the sample ( $p < .024$  for all groups), but the effect sizes were small across all students ( $\Delta R^2_L$  for: “always Aboriginal” graduation=.005, “sometimes Aboriginal” graduation=.002, non-Aboriginal graduation=.001).

### Student, District and Community Factors Related to the School Completion of Aboriginal Students

Certain results were specific to Aboriginal students; that is, certain factors were related to Aboriginal student school completion but not non-Aboriginal school completion. When adjusting for the presence of all other predictor variables included in the study, those that were registered as Status Indian living on-reserve showed lower graduation rates than those that were not registered as Status Indian living on-reserve ( $p < .002$  for both Aboriginal groups), although the strength of this relationship was weak for both groups ( $\Delta R^2_L$  for: “always Aboriginal”=.006, “sometimes Aboriginal”=.011).



There was no relation, however, between being Status Indian living on-reserve and drop-out ( $p > .187$  for both Aboriginal groups).

District size was also related to Aboriginal student school completion, although effect sizes were weak ( $\Delta R^2_L$  for: “always Aboriginal”  $< .002$  across graduation and drop-out; “sometimes Aboriginal” =  $.001$  for graduation and drop-out). Graduation was marginally lower for “always Aboriginal” students in districts with a greater number of grade 8 students ( $p = .080$ ), but not for “sometimes Aboriginal” ( $p = .119$ ) or non-Aboriginal ( $p = .242$ ) students. Larger district size did, however, predict higher drop-out for students who were sometimes identified as Aboriginal ( $p = .047$ ), but not for those students who were always ( $p = .583$ ) or never ( $p = .810$ ) identified as Aboriginal.

#### Student, District and Community Factors Related to the School Completion of “Always Aboriginal”, “Sometimes Aboriginal” or Non-Aboriginal Students Specifically

There were no student, district or community factors that uniquely predicted the school completion of “always Aboriginal” or “sometimes Aboriginal” students. Some factors, however, were related to both “sometimes Aboriginal” and non-Aboriginal student school completion. Accounting for the presence of other predictor variables in this study, female students were more likely to graduate if they were sometimes identified as Aboriginal ( $p = .05$ ) or if they were considered to be non-Aboriginal ( $p < .001$ ). Non-Aboriginal female students were also less likely to drop out ( $p < .001$ ). Although significant, the impact of gender on school completion was minimal ( $\Delta R^2_L < .006$ ). Gender had no significant relation to the graduation or drop-out of “always Aboriginal” students, or to the drop-out of “sometimes Aboriginal” students.

A higher proportion of Aboriginal students in the district was associated with lower graduation and higher drop-out of “sometimes Aboriginal” ( $p=.016$  for graduation and  $p=.022$  for drop-out) and non-Aboriginal ( $p<.001$  for graduation and  $p=.001$  for drop-out) students, but not of “always Aboriginal” students. Again, the effect sizes were small ( $\Delta R^2_L < .002$ ).

Other findings were specific to non-Aboriginal students, although the degree to which predictors were related to outcome variables was minimal. A greater proportion of Aboriginal students in special education within a district was significantly related to higher graduation and marginally lower drop-out of non-Aboriginal students ( $p<.001$  for graduation,  $p=.10$  for drop-out), but the effect sizes were weak ( $\Delta R^2_L = .000$ ). Higher graduation and lower drop-out for non-Aboriginal students were also associated with a lower proportion of lone-parent families and a higher proportion of urban population ( $p<.001$  for both variables for graduation and drop-out) in the geographic area of the district. Furthermore, the lower the level of poverty in the geographic area of the district, the more likely a non-Aboriginal student in that district was to graduate ( $p=.005$ ). The level of poverty in the community, however, was not related to non-Aboriginal student drop-out ( $p=.413$ ). Effect sizes were negligible across these variables ( $\Delta R^2_L < .001$ ).

### **Aboriginal Education Programs**

#### Aboriginal Education Program Factors Related to the School Completion of All

#### Aboriginal Students

Given the presence of other student, community and Aboriginal education program variables, a greater proportion of Status Indian on-reserve students who were \_\_\_\_\_

members of bands that had LEAs with the district, and collaborating with non-Aboriginal organizations, were both related to a greater probability of graduation of Aboriginal students ( $p < .007$  and  $p < .018$  respectively, across “always Aboriginal” and “sometimes Aboriginal” groups). Although significant, LEAs and collaborating with non-Aboriginal groups had a weak impact on Aboriginal student graduation ( $\Delta R^2_L < .006$ ). These factors were also related to lower “always Aboriginal” student drop-out, but only marginally with regards to LEAs ( $p = .097$  and  $p = .033$  for LEAs and collaborating with non-Aboriginal groups respectively), and again, effect sizes were negligible ( $\Delta R^2_L < .003$ ). Neither factor predicted drop-out of “sometimes Aboriginal” students ( $p = .577$  and  $p = .572$  for LEAs and collaborating with non-Aboriginal groups respectively).

#### Aboriginal Education Program Factors Related to the School Completion of “Always Aboriginal” or “Sometimes Aboriginal” Students Specifically

Literacy programs were specifically related to “always Aboriginal” student graduation ( $p = .01$ ), although the effect size was small ( $\Delta R^2_L = .004$ ). The greater the average proportion of time students attended schools that offered literacy programs, the greater the likelihood of graduation of “always Aboriginal” students when adjusting for the presence of other variables in the study. Literacy programs did not predict drop-out of “always Aboriginal” students ( $p = .394$ ) or the graduation or drop-out of “sometimes Aboriginal” students ( $p = .158$  and  $p = .314$  for graduation and drop-out respectively).

For “sometimes Aboriginal” students, the greater the average proportion of time students attended schools that offered programs for low-income students, the higher the probability of drop-out ( $p < .001$ ), when taking into consideration the influence of other

student, community and Aboriginal education program factors. This finding is contrary to what might be expected, although again, the strength of the association between programs for low-income students and “sometimes Aboriginal” student drop-out was weak ( $\Delta R^2_L = .004$ ). Programs for low-income students were not related to “sometimes Aboriginal” student graduation ( $p = .447$ ), nor were they related to the graduation or drop-out of “always Aboriginal” students ( $p = .127$  for graduation,  $p = .126$  for drop-out).

Finally, collaborating with Aboriginal organizations did not predict “always Aboriginal” student graduation or drop-out but did predict “sometimes Aboriginal” student graduation and drop-out, although in an unexpected direction. Collaborating with Aboriginal organizations was related to lower graduation ( $p = .001$ ) and higher drop-out ( $p = .001$ ) of “sometimes Aboriginal” students. The strength of the relationship between collaborations with Aboriginal organizations and “sometimes Aboriginal” student school completion was very weak ( $\Delta R^2_L = .004$ ).

### **Comparing Effect Sizes across Groups**

Although effect sizes appeared to be slightly stronger for Aboriginal students overall ( $R^2_L$  ranged from .070 to .112 across “always Aboriginal” and “sometimes Aboriginal” groups, and across graduation and drop-out) relative to non-Aboriginal students ( $R^2_L$  for non-Aboriginal graduation = .040 and non-Aboriginal drop-out = .052), the strength of the relationships between variables included in this study were weak across all groups. Z-tests comparing regression weights across groups showed that except for age, enrolment in special education and gender, there was no significant

difference in effect sizes across groups for each individual predictor variable (see Appendix F). Effect sizes for age and graduation ( $z=3.29$ ,  $p=.001$ ) and gender and drop-out ( $z=3.42$ ,  $p=.001$ ) were greater for non-Aboriginal students in comparison to “always Aboriginal” students. For enrolment in special education and graduation, effect sizes were stronger for “always Aboriginal” ( $z=-3.59$ ,  $p=.001$ ) and “sometimes Aboriginal” ( $z=-6.56$ ,  $p<.001$ ) students relative to non-Aboriginal students.

### **Comparing Graduation versus Drop-Out**

Whenever predictor variables were related to both graduation and drop-out, findings were consistent across these outcomes; that is, if a variable predicted higher graduation, it also predicted lower drop-out, and vice-versa. Not all variables, however, were associated with both graduation and drop-out of “always”, “sometimes” and non-Aboriginal students. Many predictor variables were more likely to be related to graduation than drop-out. Nine factors were predictive of “always”, “sometimes” or non-Aboriginal student graduation but not drop-out: gender, being Status Indian on-reserve, ever being enrolled in special education, the number of grade 8 students in a district, the unemployment rate, the level of poverty, the proportion of Status Indian students who were members of bands that had LEAs with the district, the average proportion of time students spent in districts that offered literacy program, and whether the district collaborated with non-Aboriginal organizations. Two factors (the number of grade 8 students in a district and the average proportion of time students spent in schools that

offered programs for low-income students) were associated with “sometimes Aboriginal” student drop-out but not graduation.

## DISCUSSION

Over the last decade, Aboriginal education programs have been implemented across B.C.'s public school districts with the intention of addressing important risk factors faced by Aboriginal students in the public school system. By removing current barriers for Aboriginal students in public school, by improving services and funding directed towards Aboriginal students, and by increasing Aboriginal students' sense of well-being and inclusion in public schools, these district-level initiatives aim to provide a protective influence and to improve the educational success of Aboriginal students. The primary goal of the present study was to assess whether, and to what extent, Aboriginal education programs implemented in B.C.'s public schools are related to one aspect of Aboriginal students' academic success: school completion with a Dogwood Certificate within six years of entry to grade 8. As expected, Aboriginal students in the present study (particularly students who were always identified as Aboriginal on the B.C. Ministry of Education's "Student Level Data Collection" forms) were more likely to drop out of school than their non-Aboriginal peers. Aboriginal student graduation and drop-out rates also varied significantly across B.C.'s public school districts. Results indicated that variations in school completion rates across districts may have been due, in part, to differences in Aboriginal education and other individual, district and community risk and protective factors across districts. Results showed that certain individual and community factors, including older age and enrolment in special education, and a low unemployment rate in the community were associated with low graduation rates of both Aboriginal and non-Aboriginal students, whereas factors such as living on-reserve and large district size

were uniquely related to Aboriginal student school attrition. Certain Aboriginal education programs, including collaborations with non-Aboriginal organizations outside the district and literacy programs, were related to higher Aboriginal student graduation rates, although the strength of the relationship between these programs and Aboriginal student school completion was weak. Finally, findings from the present study showed that Aboriginal education programs and other factors were more likely to be related to student graduation than drop-out.

## **School Completion Rates of Aboriginal and Non-Aboriginal Students**

### **Comparison of Aboriginal and Non-Aboriginal Students**

As hypothesized, results from the present study showed that Aboriginal student rates of school completion with a Dogwood Certificate were significantly lower than non-Aboriginal student school completion rates in a sample of students who entered grade 8 in the B.C. public school system in September, 1995. This finding is consistent with previous reports that Aboriginal students are less likely to remain in school than non-Aboriginal students (e.g., B.C. Ministry of Education, 2001a, 2004b). Graduation rates for non-Aboriginal and Aboriginal students in this study (75% and 41% respectively) were similar to B.C. Ministry of Education provincial averages for non-Aboriginal and Aboriginal students in the 2000/2001 school year (77% and 39% respectively) (B.C. Ministry of Education, 2001b).



### **Comparison of “Always Aboriginal” and “Sometimes Aboriginal” Students**

Findings also indicated that students who were always identified as Aboriginal on the B.C. Ministry of Education’s “Student Level Data Collection” forms were less likely to graduate (33% graduation rate) and more likely to drop-out (40.6% drop-out rate) than students who were sometimes identified as Aboriginal (46.2% graduation rate and 32.3% drop-out rate). This result is consistent with Hallett and colleagues’ (Hallett, 2005; Want et al., 2004) findings that students who consistently self-declare or are consistently identified as being Aboriginal on the “Student Level Data Collection” forms are less likely to complete high school than students who are inconsistently identified as Aboriginal.

These results highlight the view that Aboriginal students are not a homogenous group and may be exposed to varying experiences that will differentially influence their educational outcomes. However, it is not clear from this study what those differing experiences may be for students who are always or sometimes identified as Aboriginal on the “Student Level Data Collection” forms.

Assuming that students in this sample were consulted regarding what identity they chose to report on the “Student Level Data Collection” forms, changes in Aboriginal identification over time may have represented changes in the student’s self-declaration of Aboriginal ancestry. Studies have shown that adolescents sometimes adopt different personal ethnic labels at different points in time (Eschbach and Gómez, 1998; Stephan & Stephan, 2000). Some researchers have suggested that changes in cultural self-identification may represent changes in how one perceives the values of one’s culture, how one views the beliefs and prejudices of others about that particular culture, or how

strongly one feels about being a member of that culture (Hallett et al, 2005; Want et al., 2004). If those students who always identified themselves as Aboriginal were strongly tied to their Aboriginal identity, but had negative perceptions of their cultural group or adopted the view that Aboriginal people cannot succeed in school, they may have been less likely to overcome the challenges of school. Students who were inconsistent in declaring themselves as being Aboriginal may also have had negative perceptions of Aboriginal culture but may not have felt strongly committed to that identity (and hence did not always identify themselves as being Aboriginal), and so were not as strongly affected by these perceptions and were more likely to remain in school. It is also possible that of those students who sometimes self-declared an Aboriginal identity, those that initially reported themselves as being non-Aboriginal but subsequently changed their reports to being Aboriginal did so out of a newfound sense of pride. Their positive perceptions of their cultural group may have positively influenced their commitment to graduating. Want and colleagues (2004) found that students who were initially identified as being non-Aboriginal but were later identified as Aboriginal showed the lowest drop-out, as compared to students who were initially identified as Aboriginal but later reported as non-Aboriginal, students who were identified as Aboriginal once, or students whose reported identity changed multiple times. However, given that perceptions regarding their ethnic identity were not assessed in this study, it is difficult to ascertain whether “always Aboriginal” and “sometimes Aboriginal” students had different feelings of pride regarding their Aboriginal status, and whether this helped to explain differences in school completion rates between these two groups.

Studies have also shown that students who change cultural labels over the course of adolescence often come from different backgrounds and are exposed to different risks than those whose cultural identification remains stable (Eschbach and Gómez, 1998). One finding in the present study was that more “always Aboriginal” students (68.2% of “always Aboriginal” in comparison to 11.9% of “sometimes Aboriginal” students) were registered as Status Indian living on-reserve. Previous research has demonstrated that Aboriginal students living on-reserve face more challenges, including poverty, isolation and racism, and are less likely to complete school than those living off-reserve (Brunnen, 2004; Kirmayer, 1994). It may have been that those students who lived on-reserve were more likely to perceive themselves as clearly Aboriginal and always declare themselves as being Aboriginal, and because of the greater risks they faced while living on-reserve, were more likely to drop out of school. In contrast, those who were living off-reserve may have been less immersed in Aboriginal culture and therefore did not consistently adopt an Aboriginal identity. Living off-reserve may have made it less likely that they faced the same difficulties as those students living on-reserve, which may have allowed these students more opportunities and resources to remain in school. These speculations, however, are tentative given that other indicators of cultural identity were not obtained in this study.

### **School Completion Rates across School Districts**

As predicted, graduation and drop-out rates of students in this sample varied considerably across the 50 school districts that participated in this study. Generally, there

was a greater range in graduation and drop-out rates for Aboriginal students, with some districts demonstrating Aboriginal student graduation rates as low as 13% (in contrast to the provincial average of 46% for Aboriginal students) and drop-out rates as high as 83% (in comparison to approximately 35% of Aboriginal students in B.C. (B.C. Ministry of Education, 2004b)). In some districts, Aboriginal student graduation was higher than the provincial average of 46% (as high as 71% in certain districts with at least 5 Aboriginal students), whereas drop-out was lower than the provincial average of 35% (as low as 16% in certain districts with at least 5 Aboriginal students). These results are similar to previous studies (e.g., B.C. Ministry of Education, 2001a; B.C. Human Rights Commission, 2001a) that have shown that Aboriginal student school completion rates differ significantly from one public school district to another. The findings from this study suggest that specific district characteristics, such as size and type of Aboriginal education programming may explain differences in graduation and drop-out rates of students across districts.

## **Factors Related to School Completion**

### **Student, District and Community Factors Related to the School Completion of All Students**

Some factors, including older age, enrolment in special education, and low unemployment rate, were predictive of school attrition for all students, suggesting that these variables may represent universal risk factors across both Aboriginal and non-Aboriginal groups. Students who are older when entering grade 8 are likely to have had

past academic failures, repeated grades, or extended absences from school, factors that are related to lower graduation (e.g., Rampaul et al., 1984; First Nations Education Council for District 73, n.d.; Walton, 1999). Enrolment in special education has also been shown in previous studies to be associated with increased school drop-out and poor academic achievement (Snell, 2004). Students in special education are more likely to have learning and behavioural difficulties that impact on their cognitive and academic abilities (Snell, 2004; Smylie, 2001). Although students in special education may complete school with a School Leaving Certificate based on Individual Education Plan goals, results from this study indicate that they are less likely to graduate from high school with a Dogwood Certificate within six years of entry to grade 8 than those students who do not need special education support. Finally, findings from this study regarding unemployment are consistent with those reported by the Applied Research Branch of Human Resources Canada (2000). Lower unemployment rates were associated with poorer school completion rates for all students in the present study, suggesting that the availability of minimum wage jobs made students' decision to drop out of school more feasible (Applied Research Branch of HRC, 2000).

### **Student, District and Community Factors Related to the School Completion of Aboriginal Students**

Some student, district and community factors, including being registered as a Status Indian on-reserve and district size, were specifically predictive of Aboriginal student rates of school completion, but not rates of non-Aboriginal school completion.

This finding suggests that these risk factors may be specifically related to the educational outcome of B.C. Aboriginal students.

Being registered as a Status Indian on-reserve was related to decreased graduation of all Aboriginal students. This finding is similar to reports by Brunnen (2004) that showed that living on-reserve is associated with an increased likelihood of facing significant risk factors, such as poverty and isolation, and a decreased likelihood of completing high school, in comparison to living off-reserve.

District size was also related to Aboriginal student school completion. “Always Aboriginal” students were marginally less likely to graduate, and “sometimes Aboriginal” students were significantly more likely to drop-out in districts that had a large number of grade 8 students. This is consistent with previous research; for example, Bell (2004) found that schools that had small instructional groups were more successful in helping Aboriginal students remain in and complete high school. Aboriginal students may be more likely to become alienated and their needs may be more likely to go unrecognized in larger districts, making it more difficult for them to graduate.

### **Student, District and Community Factors Related to the School Completion of “Always Aboriginal”, “Sometimes Aboriginal” or Non-Aboriginal Students Specifically**

In some cases, “sometimes Aboriginal” students were more similar to non-Aboriginal students than to “always Aboriginal” students. More specifically, some factors, including gender and the proportion of Aboriginal students in the district, were

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associated with “sometimes Aboriginal” and non-Aboriginal school completion but not “always Aboriginal” graduation or drop-out.

Female “sometimes Aboriginal” and female non-Aboriginal students were more likely to graduate than male students. Several reports in Canada and the United States have demonstrated that in recent years, more females than males tend to graduate from high school and continue on to complete post-secondary education, and that these findings are true for Caucasian as well as other minority ethnic groups (B.C. Ministry of Education, 2001a; Ensminger & Slusarcick, 1992; Khatiwada & Sum, 2002; Sum & Sullivan, 2002). It is not clear why gender may act as a risk or protective factor for school graduation and drop-out, although there is evidence that aggression, early academic difficulties and low educational expectations during adolescence have a greater impact on male than female student school completion (Ensminger & Slusarcick, 1992).

A greater proportion of Aboriginal students in a school district was related to lower graduation and higher drop-out of “sometimes Aboriginal” and non-Aboriginal students. Districts that had a high proportion of Aboriginal students were also typically more rural and remote, a factor that is related to student school completion (Applied Research Branch of HRC, 2000). Although “sometimes Aboriginal” students were in some ways more similar to non-Aboriginal students than to their “always Aboriginal” peers, their graduation rates were lower than those of non-Aboriginal students. This finding indicates that even students who are only sometimes identified as Aboriginal are at greater risk for poor educational outcomes in comparison to non-Aboriginal students.

Some factors were specific to non-Aboriginal student school completion. In particular, non-Aboriginal students were affected by the proportion of Aboriginal

students in special education in the district, and the proportion of urban population, lone-parent families and level of poverty in the geographic area of the district. For example, non-Aboriginal students were more likely to graduate if there was a large proportion of Aboriginal students in special education. One explanation for this finding is that the proportion of Aboriginal students in special education may have indirectly reflected the proportion of non-Aboriginal students in special education. The greater the proportion of Aboriginal students in special education, the fewer non-Aboriginal students may have been enrolled in special education. Because enrolment in special education is related to a decreased likelihood of graduating, districts that had more Aboriginal students in special education may have been more likely to have fewer non-Aboriginal students in special education, and therefore higher graduation rates for non-Aboriginal students.

Non-Aboriginal students were more likely to graduate and less likely to drop out if the district had a primarily urban population, and were less likely to graduate and more likely to drop out if there was a high proportion of lone-parent families in the geographic area of the district. A high level of poverty in the geographic area of the district was also related to a decreased likelihood of graduating. These findings are consistent with previous studies that have shown that poverty, living in a single-parent family, and living in remote, rural areas represent significant risk factors that are associated with poor school retention (e.g., Applied Research Branch of HRC, 2000; First Nations Education Council for District 73, n.d.; Janosz et al., 1997; Walton, 1999). These students may have less access to resources and supports that are necessary to complete high school.

Poverty, living in a single-parent family, and living in remote, rural areas, however, did not predict school completion of Aboriginal students, suggesting that these



community risk factors do not necessarily have a negative impact on all students. It may be that other factors within Aboriginal communities may be more significant and are more likely to predict Aboriginal student education outcomes. For example, Hallett and colleagues (Hallett, 2005; Hallett et al., 2004) found that students from First Nation bands that were actively involved in restoring and supporting Aboriginal culture in their communities were more likely to graduate than students from bands that did not demonstrate these “cultural restoration” factors. Whether local band councils and Chiefs consider education to be a priority has also been shown to be an important community factor related to Aboriginal student school success (Kavanagh, 1998).

Alternatively, limitations inherent in Census-level data may explain why the community risk variables included in the present study were not related to Aboriginal student school completion. For example, Aboriginal students who lived with extended and foster families rather than with both of their biological parents would have been considered as having a lone parent family, according to the Census definition (Dr. Dara Culhane, Associate Professor, Simon Fraser University, personal communication, December 29, 2003). These students would be more likely to have access to resources and support than students who were living with only one parent. Therefore, one would not expect that all Aboriginal students defined as having a “lone parent family” would be at greater risk for school drop-out. Furthermore, household income as a measure of poverty would not take into consideration subsistence work which may be equally important in providing for families in Aboriginal communities (Dr. Dara Culhane, Associate Professor, Simon Fraser University, personal communication, December 29, 2003). Students who come from families with low household incomes but who are able

to sufficiently provide their family with food, shelter and clothing by means of fishing, hunting and agriculture, are likely to have many of their basic needs met, and are more likely to be able to remain in school. Not all Aboriginal students from poor communities, therefore, would face the same challenges. Other factors, such as parental support, may be stronger predictors of Aboriginal school completion than poverty. For example, even in poor families, Aboriginal students can achieve school success if their parents value education and encourage their children to stay in school (Walton, 1999).

Another possibility is that Census-based variables represent the proportion of all Census respondents in the community, and not just Aboriginal people in the community. For example, although the proportion of lone-parent families may be high or low within the geographic area of a particular district, this proportion may represent primarily non-Aboriginal families and few Aboriginal families. This proportion would be a more accurate depiction of the non-Aboriginal students' community, and therefore would have more relation to non-Aboriginal students' likelihood of graduating. Thus, it is possible that community-level risk factors such as single parent families, isolation in a remote and rural area, and poverty are related to Aboriginal student school completion, but such relationships were not detected in this study due to limitations in the operationalization of the variables.

### **Aboriginal Education Programs Related to the School Completion of Aboriginal Students**

A greater proportion of Status Indian on-reserve students who were members of bands that had LEAs with the district, and collaborations with non-Aboriginal

organizations, were both related to improved graduation of “always Aboriginal” and “sometimes Aboriginal” students. This finding is consistent with other studies that have found that Aboriginal students achieve greater academic success in schools that have strong partnerships with Aboriginal communities as well as other community organizations (e.g., Bell, 2004; Lofthouse, 1999). Collaborations with groups outside of the district help to provide additional resources, funding, equipment, special programs and scholarships, and can help to ensure that Aboriginal students’ needs are met.

One unexpected finding is that collaborating with Aboriginal organizations specifically (e.g., Métis Association) was not related to “always Aboriginal” student school completion, and it was negatively associated with “sometimes Aboriginal” student graduation and positively associated with “sometimes Aboriginal” student drop-out. One interpretation of this finding is that high Aboriginal student school attrition may be the pivotal variable; that is, districts that have poor Aboriginal student graduation rates, and districts that have high Aboriginal student drop-out rates, may be more likely to seek out help from Aboriginal organizations in an effort to address this concern. The B.C. Ministry of Education Aboriginal Education Enhancements Branch strongly advocates the importance of partnerships and collaborations with Aboriginal organizations in the community (B.C. Ministry of Education, 2003), and this would seem to be particularly important for districts with large Aboriginal student populations and those with a significant proportion of Aboriginal students having difficulty completing school.

### **Aboriginal Education Programs Related to the School Completion of “Always Aboriginal” or “Sometimes Aboriginal” Students Specifically**

In addition to differences described above, there were other important differences between “always Aboriginal” and “sometimes Aboriginal” students, with regards to which factors predicted school completion. The findings suggest that “always Aboriginal” and “sometimes Aboriginal” students may represent somewhat different groups of students that respond differently to school programs.

Students who were always identified as Aboriginal were more likely to graduate in districts in which students spent a greater proportion of time in schools that had literacy programs. Recent studies (e.g., B.C. Ministry of Education, 2001c; Bell, 2004; First Nations Education Council for District 73, n.d.) have also reported that implementation of literacy programs have helped to improve Aboriginal student academic achievement and school completion. Illiteracy has been shown to be one of the strongest risk factors for school drop-out (e.g., B.C. Human Rights Commission, 2001a). Supporting Aboriginal student literacy is therefore considered an important priority in addressing Aboriginal student school completion (B.C. Ministry of Education, 2003). It is interesting, however, that literacy programs were related to the graduation of “always Aboriginal” students, but not of “sometimes Aboriginal” students in this study. It may be that students who are consistently identified as Aboriginal and who are more likely to live on-reserve may also have less access to reading materials and resources. They may therefore be more likely to experience reading difficulties and may be more likely to

benefit from literacy programs, as compared to students who are sometimes identified as Aboriginal.

A greater average proportion of time spent in schools that had programs for low-income students was associated with higher drop-out for “sometimes Aboriginal” students, but not for “always Aboriginal” students. This finding is contrary to what would be expected; “sometimes Aboriginal” students were less likely to remain in school if their district had programs for low-income students. Studies (e.g., Bell, 2004) have found that programs for low-income students (particularly Aboriginal students) such as breakfast and lunch programs, are important ways of countering the effects of poverty and supporting students to remain in school. The B.C. Human Rights Commission (2001a, 2001b) and the B.C. Ministry of Education Aboriginal Education Enhancements Branch (B.C. Ministry of Education, 2003) encourage school districts to provide programs to address the needs of students affected by poverty, including Aboriginal students. Results from this study suggest that such programs had little impact or a negative impact on “sometimes Aboriginal” student school completion. Given previous research findings, however, it seems more likely that the relationship between programs for low-income students and drop-out can be interpreted in the opposite direction; that is, districts that had high Aboriginal student drop-out rates may have been more likely to implement programs to address the needs of low-income students, particularly if a large proportion of Aboriginal students in the district were affected by poverty. Most districts that participated in the study had few Status Indian on-reserve students, but if there was a large proportion of off-reserve Aboriginal students who were affected by poverty, schools may have been compelled to establish programs for low-income Aboriginal students.

This may explain why such programs were associated primarily with “sometimes Aboriginal” (the majority of which live off-reserve) school completion, rather than “always Aboriginal” school completion.

### **Aboriginal Education Programs Not Related to the School Completion of Aboriginal Students**

There were several Aboriginal education programs that were not significantly related to Aboriginal student school completion in this study. These included efforts to improve Aboriginal parent and community involvement, having Aboriginal representatives (either on a committee with authority over Aboriginal education decisions, in parent advisory councils or Aboriginal members working in the district), cultural programs (such as Aboriginal language or culture and history courses, and cross-cultural training programs for teachers and students), and tutoring programs. This is a surprising finding since the risk and resilience literature would suggest that supporting a student’s cultural identity is likely to have an influence on school completion (e.g., Chavous et al., 2003; Cohler et al., 1995; Fordham & Ogbu, 1986; Garcia Coll et al., 2000; Oyserman et al., 2001; Smith et al., 2003). Several research reports have indicated that cultural programs, including increasing Aboriginal parental involvement, have a positive impact on Aboriginal student school success (B.C. Ministry of Education, 2001b, 2001c, 2003; B.C. Human Rights Commission, 2001a, 2001b; Bell, 2004; Faith, 1997; First Nations Education Council for District 73, n.d.; Janosz et al., 1997; Lofthouse, 1999).

Anecdotal comments from school district Aboriginal education representatives provide some clues that may explain the lack of association between efforts to improve Aboriginal parental involvement, having Aboriginal representatives in the school district, cultural and tutoring programs, and Aboriginal student school completion. For example, eight district representatives reported that although Aboriginal language and culture courses were technically offered in their district, their impact and effectiveness were hindered by problems such as low teacher expectations, institutional racism, lack of funding and resources, or the teacher's limited knowledge, training or experience with First Nation issues. One representative reported: "Teachers in our district have very little knowledge of Aboriginal issues, and it is difficult to get them to acknowledge that there is a difference between First Nation students and other kids. Racism continues to exist". Aboriginal education representatives also indicated that even when these courses were made available to Aboriginal students, few of them attended due to shame, stigma, disinterest, peer influence, poor self-esteem, involvement in substance abuse, or as one representative described, "consequences of trauma and pain at home".

In 15 school districts, Aboriginal education representatives indicated that when cross-cultural programs were offered, few teachers attended, particularly those that had little interest in or experience with Aboriginal issues. Out of the 55 district representatives interviewed in this study, only four representatives reported that their district provided incentives for teachers to attend these workshops or made attendance compulsory; attendance was reported as voluntary across all other districts. Representatives made comments such as: "it is difficult to get teachers to see the value in attending workshops on First Nation issues"; "the only ones who consistently attend

seminars on Aboriginal culture are those who already have a great deal of knowledge of and experience with working with Aboriginal students...it is like preaching to the converted”; and “teachers are often only interested in ‘fun’ Aboriginal activities such as learning how to make dream-catchers or carving. These activities do not help teachers respect Aboriginal children or learn ways to teach Aboriginal students”; and “we’d like to offer more programs on Aboriginal culture but we are unable to offer regular workshops on Aboriginal issues because of the low turn-out at these workshops”.

Another stated concern was that although all participating districts had some form of Aboriginal advisory committee, only 16 of them were reported to have authority over decisions regarding Aboriginal education. Three representatives declared that although decisions were made at the advisory board level, these decisions were not always implemented by individual schools and teachers. One representative stated: “Although the superintendent and school board in our district are supportive of Aboriginal education, there are often difficulties and obstacles at the school-level... Schools do not always comply with decisions made by the Aboriginal Advisory Committee or as outlined in Local Education Agreements... As a group, schools often make decisions without including an Aboriginal voice, and divert and water down efforts and resources that are intended for Aboriginal students. Even when decisions are formalized in an agreement, it can be difficult to get the system to honor the agreement”.

It is possible that more districts experienced similar problems with their Aboriginal education programs, but due to the sensitive nature of this topic, representatives may not have felt comfortable reporting these drawbacks. Many district representatives, however, did report concerns about how some Aboriginal education



programs were implemented in certain districts, and this may explain why these programs were unrelated to the school completion of Aboriginal students in the present sample. Both the B.C. Ministry of Education Aboriginal Education Enhancements Branch (B.C. Ministry of Education, 2003) and the B.C. Human Rights Commission (2001a, 2001b) have outlined similar barriers and challenges that must be addressed in order to make Aboriginal education programs effective in improving Aboriginal student school success. More detailed data regarding each program and whether students participated in these programs would be necessary to more precisely evaluate the impact of these programs on student graduation and drop-out.

### **Comparing Effect Sizes across Groups**

It was hypothesized that different factors may predict school completion of Aboriginal versus non-Aboriginal students and that the strength of these relationships might differ across groups. Results from this study, however, did not clearly indicate that effects were stronger for one group. Although effect sizes appeared to be slightly stronger for Aboriginal students, particularly “sometimes Aboriginal” students, and weaker for non-Aboriginal students, the strength of these relationships was generally weak across all groups ( $R^2_L < .112$ ). Small differences in effect sizes across groups may have been due, at least in part, to differences in sample size, base rates, and variances in the predictor scores (see limitations section for a more detailed discussion).

There were also few differences across groups when comparing regression weights of individual predictor variables. There were significant differences in effect

sizes across groups for only three predictor variables: there was a significantly stronger relationship between enrolment in special education and lower graduation for Aboriginal students in comparison to non-Aboriginal students, and a significantly stronger association between older age and lower graduation and female gender and lower drop-out for non-Aboriginal students relative to “always Aboriginal” students. The strength of these relationships, however, was weak, making it difficult to ascertain whether these differences were truly meaningful.

### **Comparing Graduation versus Drop-Out**

Findings were consistent across outcome variables; that is, if a variable predicted graduation and drop-out, it was associated with higher graduation and lower drop-out, or lower graduation and higher drop-out. This finding suggests that both outcome variables were related indicators of school completion.

There were some differences, however, between graduation and drop-out. Several factors were predictive of student graduation but not drop-out. This is likely due to some important limitations in how the two outcome measures were defined. Graduation, defined as having obtained a Dogwood Certificate within six years of entering grade 8, is a clear and reliable indicator that a student has completed high school. Drop-out, however, can be defined in many different ways including: not graduating with a Dogwood Certificate within a designated period, not ever graduating with a Dogwood Certificate, not completing grade 12 and requirements for Dogwood or other recognized certificate (e.g., School Leaving Certificate), not transitioning to the

next grade level from year to year, and being absent from school without having graduated at a certain, designated date. The Applied Research Branch of Human Resources Development Canada (2000) has cautioned that many such definitions of drop-out can overestimate the number of students who have truly dropped out of school. For example, students who have not graduated from high school with a Dogwood Certificate within six years of entering grade 8 could include students who graduated with a Dogwood Certificate after more than six years of secondary education, students who completed high school with a School Leaving Certificate, students who moved to and completed high school in another province, students who were still in school after six years of entering grade 8 and may later have graduated or dropped out, and students who legitimately dropped out of school. In this study, approximately 20-25% of Aboriginal students and 8% of non-Aboriginal students were still in school after six years of entering grade 8. If a substantial portion of these students completed high school at a later date, defining drop-out simply as not having a Dogwood Certificate within six years would greatly overestimate the number of true drop-outs for this cohort. To minimize this error, drop-out was defined instead as not having graduated with a Dogwood Certificate and being absent from school six years after entering grade 8. Although this definition was less prone to overestimation, it nonetheless included students who were temporarily absent that year but returned and completed secondary school at a later date, students who completed school with a School Leaving Certificate, and students who migrated to and graduated in another province or country. Not all students who were considered to have dropped-out, therefore, were “true” drop-outs. Predictor variables therefore may have been less likely to be associated with drop-out.

The use of graduation as a measure of school completion is also consistent with the developmental-systems view that studies on risk and resilience should focus on strengths and protective factors rather than on deficits, risks and vulnerabilities (Chandler & Lalonde, 1998; Iarocci et al., in press). By looking at whether certain factors and programs aid Aboriginal student graduation, rather than reduce Aboriginal student drop-out, one is recognizing that a significant proportion of Aboriginal students do graduate and that many have resources, strengths and abilities to overcome adversity. According to a strengths-based perspective, Aboriginal education efforts are therefore viewed as intended to foster resilience and contribute to the available sources of support they have access to across individual, family, peer, community and cultural contexts.

## **Limitations of the Present Study**

### **Lack of Adequate Measures of Effect Sizes When Doing Logistic Regression**

#### **Analyses**

There are inherent difficulties and limitations in using effect sizes to measure the strength of relationships in logistic regression analyses. In linear regression analyses,  $R^2$ , or the proportion of variance explained, is generally used as an indicator of model fit; that is, how strongly the predictor variables are related to the outcome variables. In logistic regressions, however, there is no clear established measure of effect size.  $R^2$  analogs are typically used in logistic regressions as ways of predicting the probability that a particular independent variable will be associated with a specific outcome variable. Several different  $R^2$  analogs can be calculated and used, but all are limited by mathematical and

conceptual problems that make it challenging to interpret the meaning of these coefficients (Menard, 2000). When comparing effect sizes using  $R^2$  analogs across groups and predictor variables, it is unknown whether differences in these coefficients represent true differences in how strongly the predictors relate to the outcome variables, or if the differences are due to other artefacts such as differences in scales of measurement and base rates<sup>31</sup>. Variance in the predictor scores can also be related to effect size. If the variance in a particular predictor score is smaller for one group relative to another group, the group with the smaller variance will show a smaller effect size for that predictor (Dr. Ray Koopman, Associate Professor, Simon Fraser University, personal communication, January 16, 2005). Menard (2000) has argued that  $R^2_L$  is less influenced by such drawbacks, particularly base rate, and is therefore the most useful  $R^2$  analog to define the strength of predictor variables in logistic regressions. It is possible, however, that effect sizes obtained in this study did not represent the true strength of the relationships between predictor and outcome variables.

### **District-Level versus Individual-Level or School-Level Data**

Analyses for the present study were primarily district-based. For example, individual information about whether students attended courses and seminars offered in the district or their satisfaction with these programs was not available. Rather, the data obtained only reflected whether these programs were available or offered in a given

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<sup>31</sup> Base rate refers to the proportion of cases that are equal to one (or zero) for a particular variable. For example, the base rate for graduation would be the proportion of cases in a particular group (e.g., “always Aboriginal” students) who graduated, out of the total number of cases.  $R^2$  analogs are often highly correlated with base rates, such that, as Menard (2000) expressed, “the base rate itself could practically be used as a coefficient of determination” (p. 23). Menard’s  $R^2_L$  has been demonstrated to be less sensitive to base rate than other  $R^2$  analogs (Menard, 2000).

school district. This information was then generalized across all students who had spent most of their time in that school district. Students' "main district of enrolment" was defined as their modal district, or the most recent district if there were no modes or multiple modes. This definition may not accurately represent the extent to which each individual student had access to and participated in the various Aboriginal education programs. Without this individual information, it is difficult to truly evaluate the impact of these programs on individual Aboriginal students' school completion.

Using a developmental-systems framework, one would expect factors from multiple systems and contexts to influence an individual's ability to remain in school. Available data in the present study, however, included few individual-level or school-level predictor variables. According to Bronfenbrenner's (1977, 1979) ecological model, the variables used in this study may have represented more distal factors from macro- and exosystems (e.g., district-wide policies, philosophies about Aboriginal education, values and beliefs about Aboriginal culture within the school system etc.), rather than proximal factors from micro- and individual systems (e.g., the specific school setting, the family, the individual). Distal factors have a mediating or moderating influence on proximal factors (Bronfenbrenner, 1977, 1979; Cicchetti & Toth, 1997), but these latter variables were not available and could not be examined in the present study. It is possible that many individual and school risk factors, such as previous academic failures, substance abuse, teenage pregnancy, trauma, low teacher expectations and racism (Cummins et al., 1999; Faith, 1997; Janosz et al., 1997; Lofthouse, 1999; Rampaul et al., 1984), have a much stronger impact on a student's ability to complete secondary school than do district-level policies and programs. For example, one district representative who

participated in the present study stated: “Aboriginal students do not take grade 12 classes or stay in school if they are focused on trying to survive”. In that school district, it was felt that Aboriginal students’ individual and emotional needs had to be acknowledged, validated and addressed before educational programs could be effective. According to that district’s Aboriginal education representative

Aboriginal students are more likely to succeed if you start by acknowledging their emotional pain... and help them to not give up hope on themselves. Goals for Aboriginal education should include: 1) validating and acknowledging the pain Aboriginal students experience, 2) creating a belonging environment, 3) providing cultural elements that they can identify with, and 4) focusing on academics. Many of these things cannot be pulled off at the district-level; they have to be implemented by schools, teachers and individuals and have to be tailored to each student’s needs.

The weak effect sizes yielded in the present study suggest that the policy of having Aboriginal education programs may be necessary but not sufficient; the policy must be implemented in specific ways such that programs are targeted to specific students’ needs.

### **Other Methodological Limitations**

Self-report measures did not adequately capture the quality or the extent to which interventions were implemented, and information was obtained solely from Aboriginal education representatives rather than from multiple sources. These limitations may explain why efforts to increase Aboriginal parental involvement, cross-cultural training programs for teachers, and cultural and tutoring programs for students were not related to Aboriginal student school completion in the present study.

Questions regarding whether districts had made any efforts to include First Nation parents or had offered any cross-cultural programs were likely to be strongly affected by social desirability; few districts would state that they had not done at least something to encourage Aboriginal parents to become involved in the school system, or offered at least one workshop on a cross-cultural topic. Some districts, however, may have been much more dedicated, structured and systematic about making sure that First Nation parents were welcome and included in the schools, or that teachers and students received training in cross-cultural and Aboriginal issues. Measures used in this study did not adequately assess the quality of these efforts, although some district representatives were quite vocal regarding the extent to which these programs were implemented.

In terms of parental involvement, asking representatives whether specific efforts had been made (e.g., home visits by Aboriginal support workers, community gatherings at the school with parents and community leaders, documentation provided to families in Aboriginal languages etc.) may have been a more effective indicator of parental involvement. Measures obtained from other sources, including parent reports or the number and proportion of Aboriginal parents on various school committees, that attended parent-teacher conferences, that attended school events, or who volunteered for field trips and other student activities, may also have been more likely to be predictive of Aboriginal student school completion. Furthermore, asking Aboriginal education representatives whether there were any Aboriginal parents on the parent advisory committees may not have accurately depicted how active or involved these members and committees were in making decisions about their children's education.



Similarly, for cross-cultural programs, more depth in defining specific programs (e.g., whether programs included professional development workshops, continuing education workshops, seminars for students, field trips and activities, and what topics were addressed) would have led to a greater sensitivity of the measures. Obtaining other measures (e.g., the number and proportion of teachers who attended each workshop, the number of hours teachers spent attending these workshops, the total number of workshops offered, etc.) would also have been helpful in assessing the extent to which these programs were offered in a particular district.

With regards to Aboriginal language and culture courses, these variables were defined as the average proportion of time students spent in schools that offered such courses. This definition, however, did not take into account the number of courses available, how consistently they were offered between the 1995/1996 and 2000/2001 school years, what grade levels these courses were offered at, the proportion of Aboriginal students who actually attended these courses, the background and knowledge of the teachers teaching the courses, or the content covered in these courses. Including all of these factors into the definitions was prohibitive in this study (see section on future studies for some suggestions on how this issue might be addressed), but the oversimplification of these definitions may, in part, explain why these programs were not significantly related to Aboriginal student school completion; they simply did not reflect the extent to which these programs were implemented across various school districts.

It is possible that many of these factors would be related to Aboriginal student school completion, but that the way in which these variables were defined and obtained in this study made it difficult to detect these relationships. From a developmental-systems

point of view, obtaining information from multiple contexts and sources is necessary to fully understand the impact of those factors on an individual's development (Cicchetti & Cohen, 1995; Cicchetti & Toth, 1997; Mash & Dozois, 2003).

### **Future Studies**

The present study provides some preliminary evidence that district-level policies and programs are helpful in addressing Aboriginal student needs in the public school system, but they may not be sufficient. In order to assess the full impact of Aboriginal education on Aboriginal student school success in the public education system, future studies are needed. Using Bronfenbrenner's (1977, 1979) constructs, it is possible that other more direct risk and protective factors at the microsystems and individual levels (e.g., school factors, student factors) may have a stronger influence on Aboriginal student school completion. In future studies, more detailed information obtained directly from schools (e.g., whether specific schools implement Aboriginal education programs, the number of students who attend these programs, the specific content of these programs etc.) and teachers (e.g., whether and how often they attended cross-cultural programs, their knowledge and awareness of Aboriginal issues etc.) would allow researchers to assess the impact of potentially important school-level factors. Evaluating other individual and family risk factors (e.g., alcohol and drug abuse, trauma, teenage pregnancy, depression, death or incarceration of a parent etc.) and whether these have a greater impact on Aboriginal student school completion in the B.C. public school system relative to the variables included in this study, would also be important.

Replications of this study with a more recent cohort and including more recent Aboriginal education programs would also be helpful. Results from the present study are based on programs implemented between the 1995/1996 and 2000/2001 school years, at a period when Aboriginal education programs were only beginning to be introduced in many provincial districts. More current studies would allow for the longitudinal investigation of programs that have been in place for a considerable amount of time, as well as the examination of more recently implemented programs.

Use of different variable definitions may also allow future researchers to more accurately measure the quality and the extent to which Aboriginal education programs are implemented. For example, rather than assigning district-level scores of Aboriginal education to each student according to their modal school district of enrolment, programs could be defined and scored at the school- or individual-level (e.g., scores given per student for enrolment in a specific Aboriginal education program, rather than whether that program is available in the student's modal school district). Avoiding census-based data and reliance on Aboriginal education representatives' self-reports only, and obtaining information from multiple sources (e.g., objective measures from school and district databases, and self-report measures from schools, teachers, parents, students) would also represent more accurate operationalizations of Aboriginal education programs and other risk and protective factors.

A developmental-systems approach to risk and resilience emphasizes that resilience is not a static, fixed characteristic but rather, a dynamic process that changes, particularly at important transition points, over the course of an individual's development. This study focused on risk factors and outcomes during a specific time in

students' development. Adolescence represents a turbulent and challenging time for most people, as individuals struggle to establish their identity (Carter & McGoldrick, 1999; Compas, 2004; Erikson, 1968). It may be that Aboriginal students who were previously resilient in their earlier, elementary school years began to face new and difficult challenges in adolescence that overwhelmed their abilities to overcome adversity. Aboriginal education programs may have less of an impact at this period in development because of the greater challenges faced by adolescents, but may be more influential at other periods of development, such as during primary school. It would be important therefore for future studies to include Aboriginal education programs in elementary schools, or to use a prospective rather than a retrospective approach, to better assess the change in Aboriginal students' resilience over the course of their development.

According to a developmental-systems perspective, it is also important to recognize that academic functioning, and more specifically school completion, represents only one domain of adaptive functioning (Cicchetti & Cohen, 1995; Luthar, 1991, 1995; Mash & Dozois, 2003). Although many of the factors included in this study were associated with school completion, they may or may not be related to other measures of academic success, such as grades, scores on provincial exams, or qualitative measures of student satisfaction and well-being. Several researchers (e.g., B.C. Human Rights Commission, 2001a, 2001b; Kavanagh, 1998) have argued that school completion rates are not necessarily the best measures of school success or preparation for life and work after high school, particularly for Aboriginal students. Other outcomes, such as improved self-esteem, involvement in one's Aboriginal community, being able to speak one's Native language, and reduced risk of suicide, teenage pregnancy, drug and alcohol abuse,

and incarceration, may be more meaningful goals when working with individual students. Kavanagh (1998) has highlighted the constant struggle between preparing Aboriginal students for post-secondary education, vocational training, and eligibility for jobs in “mainstream” society, and supporting their cultural background, traditions and way of life in a way that allows them to feel welcome in their schools and equipped to function proudly and successfully in their own Aboriginal communities. Results from this study indicate that many efforts and programs in schools and districts help to support and encourage Aboriginal students to stay in school. Future studies would be necessary to assess whether these programs have an equal or greater impact on other aspects of academic achievement, job success and overall quality of life.

Another direction for future studies could include a closer assessment of the barriers that may continue to exist in various Aboriginal education programs and how these can be more effectively addressed. Despite previous studies that have shown that cultural programs in particular are effective at improving students’ academic success (e.g., Chavous et al., 2003; Cohler et al., 1995; Fordham & Ogbu, 1986; Garcia Coll et al., 2000; Oyserman et al., 2001; Smith et al., 2003), results from the present study did not show a significant relationship between these programs and Aboriginal student school completion. It is possible that problems, such as lack of funding, lack of attendance and racism, are hindering the effectiveness of these programs. Future studies would be valuable in determining what those barriers are, how they are impacting students, and how they can be addressed.

Finally, results from this study are consistent with findings at the University of British Columbia (Hallett, 2005; Want et al., 2004) that students who are consistently

identified as Aboriginal on the B.C. Ministry of Education “Student Level Data Collection” forms show lower graduation and higher drop-out rates than those who are inconsistently identified as Aboriginal. Future studies are necessary to determine whether these changes in identification represent changes in students’ self-declarations or changes in parent reports, and why these changes occur. By understanding how and why, for example, some Aboriginal students are consistently declared as Aboriginal and the relation to poorer school outcomes, will help to develop interventions and strategies targeted to their particular needs in order to support them to stay in school.

### **Implications of Research Findings and Concluding Remarks**

Although some studies have been conducted in a small number of school districts in B.C. to evaluate the effectiveness of Aboriginal education programs implemented in those districts, the present study represents the only comprehensive research to date that examines the impact of Aboriginal education throughout the province. This study is also the first to attempt to standardize definitions and measurements of the many diverse ways in which Aboriginal education programming has been implemented in school districts in B.C.

There are several research and policy implications based on the results of this study. To begin, results from this research indicate that Aboriginal students in B.C. are still not achieving the same level of school success as non-Aboriginal students in public schools. It is therefore important that efforts continue to be made to support Aboriginal students to stay in school. Findings in the present study, however, suggest that

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Aboriginal education programs may not be sufficient. Effect sizes were small and several Aboriginal education programs were not significantly related to Aboriginal student school completion. However, this finding does not imply that such programs are ineffective. Results demonstrated that certain efforts, including LEAs with local bands, collaborations with organizations outside of the district, literacy programs and programs for low-income students, were related to Aboriginal student graduation and drop-out. These and other programs may have a strong influence on Aboriginal student graduation, but because individual information about whether students participated in and were satisfied with these programs was not available, the relationship between these programs and school completion could not be adequately measured. It is also likely that there are continuing barriers to the implementation of various Aboriginal education programs, including lack of funding, lack of attendance, and continued racism. Districts should continue to investigate these issues. In developing programs for Aboriginal students, it is also important to recognize that risk and resilience are the result of a complex interaction of factors across multiple contexts. There may be individual- and school-level risk factors that have a greater influence on Aboriginal student school completion, and additional programs that target individual students' needs may be necessary to substantially improve Aboriginal student graduation rates.

Findings from this research demonstrated that certain factors affect both Aboriginal and non-Aboriginal students, but other factors specifically affect Aboriginal students. Furthermore, this study also supported the notion that Aboriginal students are not a homogenous group. Students who were always identified as Aboriginal (either through self-declarations or parent reports of Aboriginal ancestry on the B.C. Ministry of

Education “Student Level Data Collection” forms) were shown to be particularly at risk for dropping out in comparison to those students who were inconsistently identified as Aboriginal. These findings have important implications for district programming; Aboriginal students from different backgrounds may need different programs that target their unique needs, in order to help support their academic success.

Findings from this study have important policy implications with regards to current efforts by the B.C. Ministry of Education and provincial districts to remove education barriers for Aboriginal students in the B.C. public school system. As districts across the province negotiate and establish Enhancement Agreements in the upcoming years, results from this study are likely to be important in justifying the inclusion of specific goals and approaches to address Aboriginal student achievement in public schools. Certainly, major improvements have been made over the last decade; more Aboriginal students are graduating now than ever before, and results from the present study suggest that the commitment to implement Aboriginal education programs may be at least partially responsible for Aboriginal students’ increased success in school. However, more specific study and attention is needed to identify and define the steps necessary to effectively translate district-level policies into the implementation of Aboriginal education programs that are specifically suited to students, schools and communities.

As Enhancement Agreements and more programs continue to be implemented and improved, future research will be necessary to monitor the impact of these agreements and programs and help to ensure that Aboriginal students experience education equity in the B.C. public school system.

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## **Appendices**

## APPENDIX A

### ABORIGINAL EDUCATION TELEPHONE INTERVIEW

1. BRIEFLY, what is your role in this district as \_\_\_\_\_ (Aboriginal district rep, superintendent, Aboriginal support worker)?

Are you of Aboriginal ancestry yourself? **YES NO PREFER NOT TO SAY**

2. Do you have other positions or duties within this school district (teacher, principal, program coordinator etc.)? **YES NO**  
 If so, what duties or positions? (*\*\*If within a specific school, ask which one*)
3. How long have you been a(n) \_\_\_\_\_ (Aboriginal district rep, superintendent, Aboriginal support worker) in this district?  
 (if less than 7 years, ask who else was in that position before them, and for contact info)
4. Could I please get the name and contact information for some of the Aboriginal support workers in this district?
5. What FN/Aboriginal bands and tribes are represented in the students in your district?
6. Which schools in your district have the highest proportions of FN/Aboriginal students?
7. Were there any Local Education Agreements in this school district between 1995 and 2001?  
 (*\*\* NOTE that these are different from ENHANCEMENT AGREEMENTS*)

**YES** (if yes, complete questions 7a,b,c,d)  
**NO** (if no, move on to question #8)  
**DON'T KNOW** (if don't know, ask who would know and get contact info if possible, then move on to question #8)

- a) If so, approximately how many?
- b) BRIEFLY, what was included in these agreements (give examples – for example, policies about Aboriginal student federal funding)? What were the PURPOSES or GOALS of these agreements?  
 (*\*note: these may be specific to each agreement. If so, just list the types of things covered across ALL of the agreements*)
- c) In what year(s) were these agreements implemented?
- d) Did these agreements pertain to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If within certain schools only, which public SECONDARY schools did these agreements apply to between 1995 and 2001? (*\*NOTE: this may be different for each LEA*)

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8. Were FN/Aboriginal members involved in policy-making regarding Aboriginal education in this district between 1995 and 2001? That is, were they involved in decision-making about Aboriginal programs, funding etc.?

**YES** (if yes, complete questions 8a,b,c,d,e,f)  
**NO** (if no, move on to question #9)  
**DON'T KNOW** (if don't know, ask who would know and get contact info if possible, then move on to question #9)

- a) Please give examples (for example, Aboriginal advisory, board, or council, Aboriginal representatives in positions of authority, local tribal and band education organizations etc.)
- b) How were these FN/Aboriginal members appointed to these positions, and by whom? (for example, nominated or designated by the local band, elected by the school district etc.)
- c) BRIEFLY, what were the roles of these FN/Aboriginal reps or board? What did they make decisions about?
- d) How was their decision-making power exercised? (for example, did they have a consultative role? Did they make suggestions or make decisions? Were decisions made by them enforceable?)
- e) Approximately what proportion of those involved in policy-making was FN/Aboriginal between 1995 and 2001?
 

<input type="checkbox"/> 1% or less	<input type="checkbox"/> between 25 & 50%
<input type="checkbox"/> 10% or less	<input type="checkbox"/> between 50 & 75%
<input type="checkbox"/> between 10 & 25%	<input type="checkbox"/> more than 75%
- f) Were policy decisions made by FN/Aboriginal members between 1995 and 2001 applicable to only some schools (for example, only those schools with FN/Aboriginal students), or to the entire district?  
**CERTAIN SCHOOLS ONLY    ENTIRE DISTRICT    DON'T KNOW**

If not, which public secondary schools did their decisions apply to between 1995 and 2001?

9. Were FN/Aboriginal members involved, more specifically, in the control of Aboriginal education funding and resources in this district between 1995 and 2001?

**YES** (if yes, complete questions 9a,b,c,d,e,f)  
**NO** (if no, move on to question #10)  
**DON'T KNOW** (if don't know, ask who would know and get contact info if possible, then move on to question #10)

- a) Please give examples (for example, Aboriginal advisory, board, or council, Aboriginal representatives in positions of authority, local tribal and band education organizations etc.)
- b) How were these FN/Aboriginal members appointed to these positions, and by whom? (for example, nominated or designated by the local band, elected by the school district etc.)
- c) BRIEFLY, what were the roles of these FN/Aboriginal reps or board? HOW were they involved in the control of Aboriginal education funding and resources? (for example, were they responsible for gathering information about the budget and/or Aboriginal education needs? Did they propose methods of allocating funding and resources? Did they make the final decisions about Aboriginal education funding and resources? etc.)
- d) How was their decision-making power exercised? (for example, did they have a consultative role? Did they make suggestions or make decisions? Were decisions made by them enforceable?)

- e) Approximately what proportion of those involved in the control of Aboriginal education funding and resources was FN/Aboriginal between 1995 and 2001?
- |   |   |
|---|---|
| <input type="checkbox"/> 1% or less       | <input type="checkbox"/> between 25 & 50% |
| <input type="checkbox"/> 10% or less      | <input type="checkbox"/> between 50 & 75% |
| <input type="checkbox"/> between 10 & 25% | <input type="checkbox"/> more than 75%    |

- f) Were Aboriginal education funding decisions made by FN/Aboriginal members applicable to only some schools (for example, only those schools with FN/Aboriginal students), or to the entire district?

**CERTAIN SCHOOLS ONLY    ENTIRE DISTRICT    DON'T KNOW**

If not, which public secondary schools did their decisions apply to between 1995 and 2001?

10. What FN/Aboriginal languages are spoken within the geographical location of this district? (for example, Gitksan, Haida, Kwakw'ala)

- a) Was there a middle- or high school course (or courses) offered in one or more of these FN/Aboriginal languages in this district between 1995 and 2001?

**YES**                      *(if yes, complete questions 10a,b,c,d,e,f,g)*  
**NO**                        *(if no, move on to question #11)*  
**DON'T KNOW**        *(if don't know, ask who would know and get contact info if possible, then move on to question #11)*

- b) What kind of course(s)? Please describe BRIEFLY (include **\*\*which language(s)\*\***, course content – conversation course or vocabulary/grammar course?).
- c) How often was this course (or courses) offered? (for example, one day workshop once a year, full-year course offered every 3 years etc.)
- d) Who tended to participate? (for example, Aboriginal, or non-Aboriginal students)?
- e) At what grade level was this class offered?
- f) Who taught this class? (Aboriginal or non-Aboriginal teachers? What kind of knowledge of FN languages did they have?)
- g) Were FN/Aboriginal language courses offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?

**CERTAIN SCHOOLS ONLY    ENTIRE DISTRICT    DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

11. Were any of the following middle- or high-school courses on FN/Aboriginal culture or history offered in schools in this district between 1995 and 2001?

- a) FN Social Studies?    **YES    NO    DON'T KNOW**    *(if no, move on to question #11b)*

- i. At what grade level was this class offered?
- ii. How often was this course (or courses) offered? (for example, one day workshop once a year, full-year course offered every 3 years etc.)
- iii. Who tended to participate? (for example, Aboriginal, or non-Aboriginal students)?

- iv. Who taught this class? (Aboriginal or non-Aboriginal teachers? What kind of knowledge of FN culture and history did they have?)
- v. Was this course offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

b) FN humanities? **YES NO DON'T KNOW** (if no, move on to question #11c)

- i. At what grade level was this class offered?
- ii. How often was this course (or courses) offered? (for example, one day workshop once a year, full-year course offered every 3 years etc.)
- iii. Who tended to participate? (for example, Aboriginal, or non-Aboriginal students)?
- iv. Who taught this class? (Aboriginal or non-Aboriginal teachers? What kind of knowledge of FN culture and history did they have?)
- v. Was this course offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

c) FN Arts? **YES NO DON'T KNOW** (if no, move on to question #11d)

- i. At what grade level was this class offered?
- ii. How often was this course (or courses) offered? (for example, one day workshop once a year, full-year course offered every 3 years etc.)
- iii. Who tended to participate? (for example, Aboriginal, or non-Aboriginal students)?
- iv. Who taught this class? (Aboriginal or non-Aboriginal teachers? What kind of knowledge of FN culture and history did they have?)
- v. Was this course offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

d) FN Literature? **YES NO DON'T KNOW** (if no, move on to question #11e)

- i. At what grade level was this class offered?
- ii. How often was this course (or courses) offered? (for example, one day workshop once a year, full-year course offered every 3 years etc.)
- iii. Who was this class offered to? Who tended to participate? (for example, Aboriginal, or non-Aboriginal students)?

- iv. Who taught this class? (Aboriginal or non-Aboriginal teachers? What kind of knowledge of FN culture and history did they have?)
- v. Was this course offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

e) Other FN courses? **YES NO DON'T KNOW** (if no, move on to question #12)

- i. Which course(s)?
- ii. At what grade level was this class offered?
- iii. How often was this course (or courses) offered? (for example, one day workshop once a year, full-year course offered every 3 years etc.)
- iv. Who was this class offered to? Who tended to participate? (for example, Aboriginal, or non-Aboriginal students)?
- v. Who taught this class? (Aboriginal or non-Aboriginal teachers? What kind of knowledge of FN culture and history did they have?)
- vi. Was this course offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

12. Were efforts made to increase FN/Aboriginal parental and community involvement in schools in this district between 1995 and 2001?

**YES** (if yes, complete questions 12a,b,c)  
**NO** (if no, move on to question #13)  
**DON'T KNOW** (if don't know, ask who would know and get contact info if possible, then move on to question #13)

- a) What efforts? (give examples) (for example, school documentation offered in local FN/Aboriginal language, community events held at the school, Aboriginal parent committees, phone follow-ups to all parents etc.)
- b) Were there any FN/Aboriginal parents or reps on parent committees?  
**YES NO DON'T KNOW**
  - i. What was their role?
  - ii. How was their decision-making power exercised? (for example, who did they answer to? Who answered to them? Did they have a consultative role? Did they make suggestions or make decisions? Were decisions made by them enforceable?)
  - iii. Approximately what proportion of those parental committees was FN/Aboriginal?  
 1% or less                       between 25 & 50%  
 10% or less                       between 50 & 75%

- between 10 & 25%                       more than 75%

- c) Were efforts to improve FN/Aboriginal parental and community involvement made in only certain schools (for example, only those schools with FN/Aboriginal students), or in the entire district between 1995 and 2001?

**CERTAIN SCHOOLS ONLY    ENTIRE DISTRICT    DON'T KNOW**

If not, in which public secondary schools were efforts made to address FN/Aboriginal parental and community involvement between 1995 and 2001?

13. Were there any cross-cultural education programs offered for teachers, staff and/or students to improve awareness of FN/Aboriginal issues, and to reduce racism and prejudice in schools in this district between 1995 and 2001?

**YES**                      *(if yes, complete questions 13a,b,c,d,e)*

**NO**                      *(if no, move on to question #14)*

**DON'T KNOW** *(if don't know, ask who would know and get contact info if possible, then move on to question #14)*

- a) What kinds of programs were offered? What was included in the training? (give examples) (for example, one-day workshop on how to use anti-racism "toolkit", 1-week mandatory training for all teachers on FN/Aboriginal culture, bi-yearly seminar for students on racism and cultural awareness)
- b) How long were the programs, and how often were they offered? Was attendance **COMPULSORY** or **VOLUNTARY**? (for example, an optional afternoon workshop once a year on a PD day, a mandatory 3-day training seminar for teachers, a guest speaker every few years etc.)
- c) Who tended to participate? (for example, Aboriginal, or non-Aboriginal students, teachers, staff, parents?)

(Please indicate whether the programs were offered to:

- Teachers and staff                      and/or                       Students

- d) Who designed and led these activities? (Aboriginal or non-Aboriginal leaders? What kind of knowledge of FN/Aboriginal issues and racism/prejudice did they have?)
- e) Were these programs offered to only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?

**CERTAIN SCHOOLS ONLY    ENTIRE DISTRICT    DON'T KNOW**

If not, which public secondary schools were they offered to between 1995 and 2001?

14. Were any of the following specialized services offered in this district between 1995 and 2001?

- a) Tutoring programs or homework clubs? **YES    NO    DON'T KNOW** *(if no, go to question #14b)*

- i. If so, approximately what proportion of the students using this service was FN/Aboriginal?

- 1% or less                       between 25 & 50%  
 10% or less                       between 50 & 75%  
 between 10 & 25%                       more than 75%

- ii. Were these kinds of specialized services offered in only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?

**CERTAIN SCHOOLS ONLY                      ENTIRE DISTRICT    DON'T KNOW**

If not, in which public secondary schools were these services offered between 1995 & 2001?

b) Early/secondary literacy or reading programs? **YES NO DON'T KNOW** (if no, go to question #14c)

- i. If so, please specify:
- ii. If so, approximately what proportion of the students using this service was FN/Aboriginal?
 

<input type="checkbox"/> 1% or less	<input type="checkbox"/> between 25 & 50%
<input type="checkbox"/> 10% or less	<input type="checkbox"/> between 50 & 75%
<input type="checkbox"/> between 10 & 25%	<input type="checkbox"/> more than 75%
- iii. Were these kinds of specialized services offered in only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY      ENTIRE DISTRICT      DON'T KNOW**

If not, in which public secondary schools were these services offered between 1995 & 2001?

c) Programs to address the needs of low-income students (e.g. lunch program)?  
**YES NO DON'T KNOW** (if no, go to question #14d)

- i. If so, please specify:
- ii. If so, approximately what proportion of the students using this service was FN/Aboriginal?
 

<input type="checkbox"/> 1% or less	<input type="checkbox"/> between 25 & 50%
<input type="checkbox"/> 10% or less	<input type="checkbox"/> between 50 & 75%
<input type="checkbox"/> between 10 & 25%	<input type="checkbox"/> more than 75%
- iii. Were these kinds of specialized services offered in only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY      ENTIRE DISTRICT      DON'T KNOW**

If not, in which public secondary schools were these services offered between 1995 & 2001?

d) Other services? **YES NO DON'T KNOW** (if no, go to question #15)

- i. If so, please specify:
- ii. If so, approximately what proportion of the students using this service was FN/Aboriginal?
 

<input type="checkbox"/> 1% or less	<input type="checkbox"/> between 25 & 50%
<input type="checkbox"/> 10% or less	<input type="checkbox"/> between 50 & 75%
<input type="checkbox"/> between 10 & 25%	<input type="checkbox"/> more than 75%
- iii. Were these kinds of specialized services offered in only certain schools (for example, only those schools with FN/Aboriginal students), or to the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY      ENTIRE DISTRICT      DON'T KNOW**

If not, in which public secondary schools were these services offered between 1995 & 2001?

15. Were there any FN/Aboriginal members working in this school district between 1995 and 2001? (for example, administration, teachers, support staff, support workers, counselors, social workers etc.)?

- YES** (if yes, complete questions 15a,b,c)
- NO** (if no, move on to question #16)
- DON'T KNOW** (if don't know, ask who would know and get contact info if possible, then move on to question #16)





If not, with which public secondary schools was this partnership established between 1995 & 2001?

c) Other groups or organizations? **YES NO DON'T KNOW** (if no, go to question #17)

- i. Please specify.
- ii. If so, what was the role of these organizations regarding Aboriginal education?
- iii. Did they provide any specialized services for Aboriginal students (e.g., tutoring programs, reading programs, Headstart program, leadership programs etc.).  
**YES NO DON'T KNOW**

If so, what services did they offer?

- iv. Were these groups involved in or associated with certain schools only (for example, only those schools with FN/Aboriginal students), or with the entire district between 1995 and 2001?

**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, with which public secondary schools was this partnership established between 1995 & 2001?

17. Were there other ways in which First Nation or Aboriginal communities controlled, made decisions about, or collaborated with the district to address the education of Aboriginal students in this district between 1995 and 2001?

**YES** (if yes, complete questions 17a,b)  
**NO** (if no, end interview)  
**DON'T KNOW** (if don't know, ask who would know and get contact info if possible, then end interview)

- a) If so, in what way(s)? (give examples)
- b) Did FN/Aboriginal communities control, make decisions about, or collaborate with the district to address Aboriginal education in only certain schools (for example, only those schools with FN/Aboriginal students), or within the entire district between 1995 and 2001?  
**CERTAIN SCHOOLS ONLY ENTIRE DISTRICT DON'T KNOW**

If not, in which public secondary schools were these efforts made between 1995 and 2001?

**That's the end of the interview. Thank you greatly for your time and help. Do you have any questions? The study should be completed within the next year. If you would like further information about the project or the results of the study, you can contact Julie Desroches at 604-291-3354 or by email at [jld@sfu.ca](mailto:jld@sfu.ca). Thanks again for participating.**

**APPENDIX B**

## INTRODUCTORY E-MAIL LETTER

September 30, 2002

To whom it may concern:

My name is Julie Desroches and I am a graduate student in the Department of Psychology at Simon Fraser University. As part of my doctoral dissertation, I am conducting a province-wide study on how Aboriginal education programs in the provincial public school system impact on the graduation and drop-out rates of Aboriginal students. This project has been developed with the assistance of Aboriginal support workers, Aboriginal school district representatives, Aboriginal parents, and other members of the Aboriginal education community and the B.C. Ministry of Education, as well as Dr. Michael Chandler, Dr. Christopher Lalonde, and Dr. Grace Iarocci from the University of British Columbia, the University of Victoria, and Simon Fraser University. The study has received ethical approval from Simon Fraser University and is funded by the Human Early Learning Partnership at the University of British Columbia. Findings from this study will have important implications for strategies and approaches used by Aboriginal communities, school districts, and federal and provincial governments in addressing the education inequity for Aboriginal students.

In order to evaluate the impact of Aboriginal education programs on Aboriginal students in B.C., it is important to obtain information from every provincial school district. I will be contacting Aboriginal school district representatives by telephone from every school district in B.C. to ask questions about Aboriginal education programs in their school district, or schools within their district (attached is a copy of the interview). The interview will take between 30 minutes and one hour to complete over the phone.

I will be contacting you by telephone within the next few weeks, and will ask you if you are able and willing to participate in the study. At that time, I can also provide you with additional information about the study, and can arrange for a convenient time to complete the interview. If you wish to contact me for further information, you can contact me by email at [jdesroches@arts.sfu.ca](mailto:jdesroches@arts.sfu.ca).

I look forward to speaking with you, and thank you for your time and consideration.

Sincerely,

Julie Desroches, M.A.

APPENDIX C

Table 3: Logistic Regression Analysis Results for Graduation Without Non-Significant Variables Removed

	Always Aboriginal Group			Sometimes Aboriginal Group			Non-Aboriginal Group <sup>32</sup>		
	B	SE	p	B	SE	p	B	SE	p
<b>BLOCK 1:</b>									
Gender	.124	.127	.332	.180	.093	.052	.404	.024	.000
Age	-.562	.102	.000	-.945	.096	.000	-.922	.028	.000
Status on-reserve	-.496	.164	.003	-.911	.176	.000			
Ever in special education	-.848	.160	.000	-1.130	.112	.000	-.211	.084	.012
<b>BLOCK 2:</b>									
# of grade 8 students	.000	.000	.067	.000	.000	.169	.000	.000	.325
Proportion Aboriginal students	-1.393	1.027	.175	-1.366	.929	.141	-1.415	.305	.000
Proportion Ab.students that are Status on-reserve	.290	.417	<b>.486*</b>	-.398	.320	<b>.213*</b>	.051	.063	<b>.417*</b>
Proportion of Ab students in special education	-.011	.924	.990	-.660	.562	.240	.415	.123	.001
Proportion of lone-parent families	-4.442	5.242	.397	-.080	5.198	.988	-3.903	1.040	.000
Unemployment rate	12.127	4.137	.003	9.618	3.374	.004	4.358	.908	.000
Level of poverty in the community	-.111	.138	.420	-.133	.096	.168	-.054	.019	.005
Proportion urban population	.516	.440	.241	-.083	.390	.832	.383	.108	.000

\* Non-significant across groups and outcome variables.

<sup>32</sup> Analysis for the non-Aboriginal group does not include the student's Aboriginal status or any of the Aboriginal education factors.

Table 3 (continued): Logistic Regression Analysis Results for Graduation Without Non-Significant Variables Removed

	Always Aboriginal Group			Sometimes Aboriginal Group			Non-Aboriginal Group <sup>33</sup>		
	B	SE	p	B	SE	p	B	SE	p
<b>BLOCK 3:</b>									
LEAs	.700	.241	.004	.565	.170	.001			
Aboriginal reps with authority	-.099	.237	<b>.676*</b>	-.197	.194	<b>.310*</b>			
Aboriginal language course	-.019	.223	<b>.934*</b>	-.285	.213	<b>.181*</b>			
Aboriginal culture course	-.184	.194	<b>.344*</b>	-.093	.157	<b>.554*</b>			
Aboriginal parents on PACs	-.017	.250	<b>.946*</b>	.290	.189	<b>.125*</b>			
Tutoring programs	.346	.216	<b>.109*</b>	.012	.149	<b>.936*</b>			
Literacy programs	.465	.240	.053	.210	.170	.216			
Programs for low-income students	-.227	.180	.208	-.134	.151	.375			
Collaborations with Aboriginal groups	-.131	.208	.530	-.363	.139	.009			
Collaborations with non-Aboriginal groups	.436	.179	.015	.116	.123	.345			

\* Non-significant across groups and outcome variables.

<sup>33</sup> Analysis for the non-Aboriginal group does not include the student's Aboriginal status or any of the Aboriginal education factors.

Table 4: Logistic Regression Analysis Results for Drop-Out Without Non-Significant Variables Removed

	Always Aboriginal Group			Sometimes Aboriginal Group			Non-Aboriginal Group <sup>34</sup>		
	B	SE	p	B	SE	p	B	SE	p
<b>BLOCK 1:</b>									
Gender	.127	.122	.297	-.026	.097	.787	-.294	.029	.000
Age	.884	.097	.000	1.146	.094	.000	1.147	.031	.000
Status on-reserve	-.078	.156	.620	.226	.170	.183			
Ever in special education	-.028	.141	.842	.268	.110	.015	.118	.098	.228
<b>BLOCK 2:</b>									
# of grade 8 students	.000	.000	.932	.000	.000	.020	.000	.000	.752
Proportion Aboriginal students	-.314	1.022	.758	2.489	.940	.008	1.117	.348	.001
Proportion Ab.students that are Status on-reserve	-.377	.397	<b>.343*</b>	-.237	.340	<b>.486*</b>	.029	.073	<b>.685*</b>
Proportion of Ab students in special education	1.276	.864	.140	-.491	.574	.392	-.243	.144	.091
Proportion of lone-parent families	-.380	5.191	.942	-1.216	5.578	.827	5.313	1.210	.000
Unemployment rate	1.529	3.992	.702	-9.843	3.507	.005	-3.159	1.047	.003
Level of poverty in the community	-.110	.125	.377	.007	.103	.948	.018	.022	.416
Proportion urban population	.221	.425	.603	.200	.415	.630	-.557	.125	.000

\* Non-significant across groups and outcome variables.

<sup>34</sup> Analysis for the non-Aboriginal group does not include the student's Aboriginal status or any of the Aboriginal education factors.

Table 4 (continued): Logistic Regression Analysis Results for Drop-Out Without Non-Significant Variables Removed

	Always Aboriginal Group			Sometimes Aboriginal Group			Non-Aboriginal Group <sup>35</sup>		
	B	SE	p	B	SE	p	B	SE	p
<b>BLOCK 3:</b>									
LEAs	-.288	.235	.221	.073	.177	.679			
Aboriginal reps with authority	-.203	.227	<b>.371*</b>	.181	.209	<b>.388*</b>			
Aboriginal language course	.041	.225	<b>.856*</b>	-.153	.224	<b>.494*</b>			
Aboriginal culture course	-.049	.186	<b>.794*</b>	.062	.170	<b>.713*</b>			
Aboriginal parents on PACs	-.143	.250	<b>.569*</b>	.127	.200	<b>.524*</b>			
Tutoring programs	.076	.200	<b>.703*</b>	-.162	.157	<b>.303*</b>			
Literacy programs	-.119	.228	.603	-.084	.178	.637			
Programs for low-income students	.243	.171	.155	.507	.159	.001			
Collaborations with Aboriginal groups	-.010	.197	.959	.442	.147	.003			
Collaborations with non-Aboriginal groups	-.299	.175	.087	-.097	.129	.451			

\* Non-significant across groups and outcome variables.

<sup>35</sup> Analysis for the non-Aboriginal group does not include the student's Aboriginal status or any of the Aboriginal education factors.

**APPENDIX D**

Table 5: Regression Factor Weights from Principal Components Analysis of the Proportion of Households with Income Less than \$30,000 and Average Household Employment Income

	Regression Factor Weights
Proportion of households with household income less than \$30,000 out of the total number of Census private households in the district	.962
Average household employment income in the district	-.962

\* Extraction method: Principal Components Analysis, 1 Factor



## APPENDIX E

Table 6: Inter-Respondent Reliability Estimates for Aboriginal Education Programs for “Always Aboriginal” and “Sometimes Aboriginal” Groups (n=5 districts)

	“Always Aboriginal” Group		“Sometimes Aboriginal” Group	
	ICC <sup>36</sup>	95% C.I. <sup>37</sup> for ICC	ICC	95% C.I. for ICC
LEAs	1.00		1.00	
Aboriginal reps with authority	.921	.483 - .991	.921	.483 - .991
Aboriginal language course	1.00		1.00	
Aboriginal culture course	.987	.906 - .999	.913	.497 - .990
Aboriginal parental involvement	No variability		No variability	
Aboriginal parents on PACs	.995	.947 - .999	.995	.947 - .999
Cross-cultural programs	No variability		No variability	
Tutoring programs	.825	.170 - .980	.789	.068 - .975
Literacy programs	No variability		No variability	
Programs for low-income students	.988	.918 - .999	.955	.707 - .995
Aboriginal workers	.969	.789 - .997	.969	.789 - .997
Collaborate with bands	No variability		No variability	
Collaborate with Ab. groups	1.00		1.00	
Collaborate with non-Ab. groups	1.00		1.00	

<sup>36</sup> ICC = Intraclass correlation coefficient<sup>37</sup> C.I. = Confidence interval

Table 7: Inter-Coder Reliability Estimates for Aboriginal Education Programs for “Always Aboriginal” and “Sometimes Aboriginal” Groups (n=6 districts)

	“Always Aboriginal” Group		“Sometimes Aboriginal” Group	
	ICC <sup>38</sup>	95% C.I. <sup>39</sup> for ICC	ICC	95% C.I. for ICC
LEAs	.919	.498 - .991	.890	.399 - .988
Aboriginal reps with authority	1.00		1.00	
Aboriginal language course	1.00		1.00	
Aboriginal culture course	.928	.609 - .989	.957	.736 - .994
Aboriginal parental involvement	1.00		1.00	
Aboriginal parents on PACs	1.00		1.00	
Cross-cultural programs	1.00		1.00	
Tutoring programs	1.00		1.00	
Literacy programs	1.00		1.00	
Programs for low-income students	1.00		1.00	
Aboriginal workers	.875	.341 - .986	.875	.341 - .986
Collaborate with bands	No variability		No variability	
Collaborate with Ab. groups	1.00		1.00	
Collaborate with non-Ab. groups	1.00		1.00	

<sup>38</sup> ICC = Intraclass correlation coefficient

<sup>39</sup> C.I. = Confidence interval

APPENDIX F

Table 8: Z-Test Results Comparing Regression Weights across Groups, for Graduation

	"Always Aboriginal" (n=1267)		"Sometimes Aboriginal" (n=2223)		Non-Aboriginal (n=38498)		Comparing "Always Aboriginal" and "Sometimes Aboriginal"		Comparing "Always Aboriginal" and Non-Aboriginal		Comparing "Sometimes Aboriginal" and Non-Aboriginal			
	B	SE	B	SE	B	SE	z	p <sup>40</sup>	z	p <sup>40</sup>	z	p <sup>40</sup>		
Gender	.116	.127	.181	.092	.404	.024	.157	-.41	.682	.129	-2.23	.026	-2.35	.019
Age	-.574	.102	-.935	.095	-.922	.028	.139	2.59	.010	.106	3.29	.001*	-.13	.190
Status on-reserve	-.443	.146	-.942	.166			.221	2.26	.024					
Ever in special ed.	-.860	.160	-1.13	.112	-.212	.084	.195	1.38	.168	.181	-3.59	.001**	-6.56	.000*
# of grade 8 students	.000	.000	.000	.000	.000	.000	.000	∅		.000	∅		∅	
Proportion Aboriginal students	-1.21	.931	-1.97	.821	-1.35	.294	1.24	.61	.542	.976	.14	.889	-.71	.478
Proportion Aboriginal in special education	-.336	.825	-.678	.524	.443	.119	.977	.35	.726	.834	-0.93	.352	-2.09	.037
Proportion lone-parent	-3.50	4.57	.044	4.65	-3.93	1.04	6.52	-.54	.589	4.69	.09	.928	.83	.407
Unemployment rate	9.92	3.55	6.58	2.92	4.26	.900	4.60	.73	.465	3.66	1.55	.121	.76	.447
Poverty	-.089	.122	-.084	.076	-.054	.019	.144	-.04	.976	.123	-.28	.779	-.38	.704
Proportion urban	.365	.423	.126	.355	.377	.108	.552	.43	.667	.437	-.03	.976	-.68	.497
LEAs	.599	.221	.440	.148			.266	.60	.549					
Literacy programs	.527	.204	.212	.150			.253	1.24	.215					
Low-income programs	-.253	.166	-.106	.139			.217	-.68	.497					
Collaborate with Aboriginal groups	-.254	.181	-.428	.125			.220	.79	.430					
Collaborate with non-Aboriginal groups	.438	.145	.244	.103			.178	1.09	.276					

Note: To maintain an overall familywise alpha of .05, the alpha for each of the 15 predictor that were tested was set at .05/15 = .0033. For each predictor, the smallest p-value is significant if it is less than .0033/3 = .0011; if the smallest p-value is significant then the other two are significant if they are less than .0033.

\* p < .0011 (i.e., p < α/3, using a Bonferroni correction for the number of comparisons being made)

\*\* p < .0033 (i.e., p < α)

<sup>40</sup> p = two-tailed probability

Table 9: Z-Test Results Comparing Regression Weights across Groups, for Drop-Out

	"Always Aboriginal" (n=1267)		"Sometimes Aboriginal" (n=2223)		Non-Aboriginal (n=38498)		Comparing "Always Aboriginal" and "Sometimes Aboriginal"		Comparing "Always Aboriginal" and Non-Aboriginal		Comparing "Sometimes Aboriginal" and Non-Aboriginal	
	B	SE	B	SE	B	SE	z	SE	z	SE	z	p <sup>41</sup>
Gender	.135	.122	-.031	.097	-.294	.029	1.07	.156	3.42	.125	2.60	.009
Age	.880	.096	1.147	.093	1.15	.031	-2.00	.134	-2.68	.101	-.03	.976
Status on-reserve	-.163	.141	.208	.157			-1.76	.211				
Ever in special ed.	-.031	.140	.262	.110	.118	.098	-1.65	.178	-.87	.171	.98	.327
# of grade 8 students	.000	.000	.000	.000	.000	.000	∅	.000	∅	.000	∅	
Proportion Aboriginal students	-.372	.910	1.856	.811	1.16	.334	-1.83	1.22	-1.58	.969	.79	.430
Proportion Aboriginal in special education	.772	.775	-.224	.537	-.228	.139	1.06	.943	1.27	.787	.01	.992
Proportion lone-parent	-2.26	4.47	.947	4.93	5.30	1.21	-.48	6.66	-1.63	4.63	-.86	.390
Unemployment rate	.534	3.45	-9.06	2.98	-3.22	1.04	2.11	4.55	1.04	3.60	-1.85	.064
Poverty	-.056	.109	-.050	.078	.018	.022	-.04	.134	-.67	.111	-.84	.401
Proportion urban LEAs	.263	.412	.277	.373	-.560	.124	-.03	.556	1.91	.430	2.13	.033
Literacy programs	-.359	.216	.086	.155			-1.67	.266				
Low-income programs	-.159	.187	-.155	.154			-.02	.242				
Collaborate with Aboriginal groups	.244	.159	.517	.146			-1.26	.216				
Collaborate with non-Aboriginal groups	-.020	.174	.428	.133			-2.05	.219				
	-.290	.137	-.060	.105			-1.33	.173				

Note: To maintain an overall familywise alpha of .05, the alpha for each of the 15 predictor that were tested was set at .05/15 = .0033. For each predictor, the smallest p-value is significant if it is less than .0033/3 = .0011; if the smallest p-value is significant then the other two are significant if they are less than .0033.

\* p < .0011 (i.e., p < α/3, using a Bonferroni correction for the number of comparisons being made)  
 \*\* p < .0033 (i.e., p < α)

<sup>41</sup> p = two-tailed probability

## APPENDIX G

Table 10: Means and Standard Deviations of Predictor Variables Across Groups

	“Always Aboriginal”		“Sometimes Aboriginal”		Non-Aboriginal	
	M	SD	M	SD	M	SD
Proportion of female students*	.493	.500	.489	.500	.484	.500
Age	13.68	.673	13.52	.542	13.37	.428
Proportion of Status on-reserve students*	.682	.466	.119	.324		
Proportion of students ever in special education*	.273	.446	.267	.442	.019	.137
# of grade 8 students	967.869	912.784	1311.612	1034.631	1704.08	1152.802
Proportion of Aboriginal students	.212	.206	.135	.115	.076	.066
Proportion of Aboriginal students in special education	.270	.104	.268	.103	.282	.113
Proportion of lone-parent families	.137	.021	.135	.017	.134	.019
Unemployment rate	.117	.048	.104	.025	.094	.021
Level of poverty	.111	.873	-.009	.851	-.446	1.022
Proportion urban population	.645	.271	.719	.215	.811	.204
Proportion of Status on-reserve students who are members of bands with LEAs	.309	.344	.239	.350		
Average proportion of time spent in schools with literacy programs	.247	.407	.186	.356		
Average proportion of time spent in schools with programs for low-income students	.382	.437	.378	.426		
Proportion of districts who collaborate with Aboriginal groups*	.67	.469	.66	.473		
Proportion of districts who collaborate with non-Aboriginal groups*	.37	.482	.41	.493		

\* Dichotomous predictor, so mean represents proportion and standard deviation is associated with this “mean”.

**APPENDIX H**

Table 11: Chi-Square Analyses Comparing “Always Aboriginal”, “Sometimes Aboriginal” and Non-Aboriginal Student Graduation and Drop-out Rates

	Graduation			Drop-Out		
	$\chi^2$	df	p	$\chi^2$	df	p
All groups	1872.17	2	.000	789.30	2	.000
“Always Aboriginal” Versus “Sometimes Aboriginal”	57.64	1	.000	24.89	1	.000
“Always Aboriginal” Versus Non-Aboriginal	1115.63	1	.000	493.09	1	.000
“Sometimes Aboriginal” Versus Non-Aboriginal	896.13	1	.000	356.27	1	.000

## APPENDIX I

Table 12: Comparing Graduation Rates Across School Districts Per Group With Small Districts Removed from the Analyses

	“Always Aboriginal”	“Sometimes Aboriginal”	Non-Aboriginal
<u>All participating districts:</u>			
Number of students	1267	2223	38,498
Number of districts	45	50	50
Range of graduation rates across districts	13.3% to 100%	12.5% to 100%	28.6% to 100%
Chi-square analysis results	$\chi^2=79.97$ , df=44, p=.001	$\chi^2=114.66$ , df=49, p<.001	$\chi^2=383.60$ , df=49, p<.001
<u>Districts with at least 5 students:</u>			
Number of students	1250	2216	
Number of districts	40	47	
Range of graduation rates across districts	13.3% to 71.4%	12.5% to 85.7%	
Chi-square analysis results	$\chi^2=68.96$ , df=39, p=.002	$\chi^2=112.16$ , df=46, p<.001	
<u>Districts with at least 10 students</u>			
Number of students	1200	2182	
Number of districts	33	42	
Range of graduation rates across districts	13.3% to 71.4%	25.4% to 70.8%	
Chi-square analysis results	$\chi^2=64.39$ , df=32, p=.001	$\chi^2=101.55$ , df=41, p<.001	
<u>Districts with at least 15 students:</u>			
Number of students	1153	2159	
Number of districts	29	40	
Range of graduation rates across districts	13.3% to 56%	25.4% to 70.8%	
Chi-square analysis results	$\chi^2=52.39$ , df=28, p=.003	$\chi^2=100.18$ , df=39, p<.001	
<u>Districts with at least 100 students:</u>			
Number of students			38,351
Number of districts			45
Range of graduation rates across districts			66.2% to 86.5%
Chi-square analysis results			$\chi^2=366.07$ , df=44, p<.001

Table 12 (continued): Comparing Graduation Rates Across School Districts Per Group With Small Districts Removed from the Analyses

	“Always Aboriginal”	“Sometimes Aboriginal”	Non-Aboriginal
<u>Districts with at least 200</u>			
<u>students:</u>			
Number of students			37,512
Number of districts			39
Range of graduation rates across districts			66.5% to 86.5%
Chi-square analysis results			$\chi^2=361.64$ , $df=38$ , $p<.001$
<u>Districts with at least 300</u>			
<u>students:</u>			
Number of students			36,173
Number of districts			34
Range of graduation rates across districts			66.5% to 86.5%
Chi-square analysis results			$\chi^2=355.46$ , $df=33$ , $p<.001$



Table 13: Comparing Drop-Out Rates Across School Districts Per Group With Small Districts Removed from the Analyses

	“Always Aboriginal”	“Sometimes Aboriginal”	Non-Aboriginal
<u>All participating districts:</u>			
Number of students	1267	2223	38,498
Number of districts	45	50	50
Range of graduation rates across districts	0% to 83.3%	0% to 59.3%	0% to 57.1%
Chi-square analysis results	$\chi^2=66.69$ , df=44, p=.015	$\chi^2=92.18$ , df=49, p<.001	$\chi^2=334.78$ , df=49, p<.001
<u>Districts with at least 5 students:</u>			
Number of students	1250	2216	
Number of districts	40	47	
Range of graduation rates across districts	16.1% to 83.3%	7.7% to 59.3%	
Chi-square analysis results	$\chi^2=62.48$ , df=39, p=.010	$\chi^2=91.30$ , df=46, p<.001	
<u>Districts with at least 10 students</u>			
Number of students	1200	2182	
Number of districts	33	42	
Range of graduation rates across districts	16.1% to 60%	7.7% to 59.3%	
Chi-square analysis results	$\chi^2=45.38$ , df=32, p=.059	$\chi^2=87.27$ , df=41, p<.001	
<u>Districts with at least 15 students:</u>			
Number of students	1153	2159	
Number of districts	29	40	
Range of graduation rates across districts	16.1% to 60%	16.3% to 59.3%	
Chi-square analysis results	$\chi^2=41.65$ , df=28, p=.047	$\chi^2=82.15$ , df=39, p<.001	
<u>Districts with at least 100 students:</u>			
Number of students			38,351
Number of districts			45
Range of graduation rates across districts			10.1% to 28.4%
Chi-square analysis results			$\chi^2=316.58$ , df=44, p<.001
<u>Districts with at least 200 students:</u>			
Number of students			37,512
Number of districts			39
Range of graduation rates across districts			10.1% to 26.8%
Chi-square analysis results			$\chi^2=301.05$ , df=38, p<.001

Table 13 (continued): Comparing Drop-Out Rates Across School Districts Per Group With Small Districts Removed from the Analyses

	“Always Aboriginal”	“Sometimes Aboriginal”	Non-Aboriginal
<u>Districts with at least 300 students:</u>			
Number of students			36,173
Number of districts			34
Range of graduation rates across districts			10.1% to 26.8%
Chi-square analysis results			$\chi^2=299.22$ , $df=33$ , $p<.001$

APPENDIX J

Table 14: Logistic Regression Analysis Results for Graduation

	Always Aboriginal $R^2_L = .073$				Sometimes Aboriginal $R^2_L = .112$				Non-Aboriginal $R^2_L = .040$			
	B	SE	p	$\Delta R^2_L$	B	SE	p	$\Delta R^2_L$	B	SE	p	$\Delta R^2_L$
<b>BLOCK 1:</b>				.051				.091				.035
Gender	.116	.127	.359	.001	.181	.092	.050*	.001	.404	.024	.000*	.006
Age	-.574	.102	.000*	.021	-.935	.095	.000*	.035	-.922	.028	.000*	.027
Status on-reserve	-.443	.146	.002*	.006	-.942	.166	.000*	.011				
Ever in special education	-.860	.160	.000*	.019	-.113	.112	.000*	.035	-.212	.084	.012*	.000
<b>BLOCK 2:</b>				.013				.004				.003
# of grade 8 students	.000	.000	.08**	.002	.000	.000	.119	.001	.000	.000	.242	.000
Proportion Aboriginal students	-1.21	.931	.192	.001	-1.97	.821	.016*	.002	-1.35	.294	.000*	.000
Proportion Ab. students in special ed.	-.336	.825	.684	.000	-.678	.524	.196	.001	.443	.119	.000*	.000
Proportion of lone-parent families	-3.50	4.57	.444	.000	.044	4.65	.992	.000	-3.93	1.04	.000*	.000
Unemployment rate	9.92	3.55	.005*	.005	6.58	2.92	.024*	.002	4.26	.900	.000*	.001
Level of poverty	-.089	.122	.467	.000	-.084	.076	.268	.000	-.054	.019	.005*	.000
Proportion urban	.365	.423	.389	.000	.126	.355	.723	.000	.377	.108	.000*	.000
<b>BLOCK 3:</b>				.011				.009				.009
LEAs	.599	.221	.007*	.005	.440	.148	.003*	.003				.003
Literacy programs	.527	.204	.010*	.004	.212	.150	.158	.001				.001
Programs for low-income students	-.253	.166	.127	.001	-.106	.139	.447	.000				.000
Collaborate with Aboriginal groups	-.254	.181	.161	.001	-.428	.125	.001*	.004				.004
Collaborate with non-Aboriginal groups	.438	.145	.002*	.006	.244	.103	.018*	.002				.002

\* p<.05  
\*\* p<.10

Table 15: Logistic Regression Analysis Results for Drop-Out

	Always Aboriginal R <sup>2</sup> <sub>L</sub> = .070				Sometimes Aboriginal R <sup>2</sup> <sub>L</sub> = .087				Non-Aboriginal R <sup>2</sup> <sub>L</sub> = .052			
	B	SE	P	ΔR <sup>2</sup> <sub>L</sub>	B	SE	P	ΔR <sup>2</sup> <sub>L</sub>	B	SE	P	ΔR <sup>2</sup> <sub>L</sub>
<b>BLOCK 1:</b>												
Gender	.135	.122	.267	.001	-.031	.097	.751	.000	-.294	.029	.000*	.047
Age	.880	.096	.000*	.055	1.15	.093	.000*	.060	1.15	.031	.000*	.003
Status on-reserve	-.163	.141	.245	.001	.208	.157	.187	.001				.041
Ever in special education	-.031	.140	.827	.000	.262	.110	.017*	.002	.118	.098	.230	.000
<b>BLOCK 2:</b>												
# of grade 8 students	.000	.000	.583	.005	.000	.000	.047*	.010	.000	.000	.810	.000
Proportion Aboriginal students	-.372	.910	.683	.000	1.86	.811	.022*	.002	1.16	.334	.001*	.000
Proportion Ab. students in special ed.	.772	.775	.319	.001	-.224	.537	.676	.000	-.228	.139	.10**	.000
Proportion of lone-parent families	-2.26	4.47	.614	.000	.947	4.93	.848	.000	5.30	1.21	.000*	.001
Unemployment rate	.534	3.45	.877	.000	-9.06	2.98	.002*	.003	-3.22	1.04	.002*	.000
Level of poverty	-.056	.109	.612	.000	-.050	.078	.526	.000	.018	.022	.413	.000
Proportion urban	.263	.412	.523	.000	.277	.373	.457	.000	-.560	.124	.000*	.001
<b>BLOCK 3:</b>												
LEAs	-.359	.216	.10**	.005	.086	.155	.577	.007				
Literacy programs	-.159	.187	.394	.000	-.155	.154	.314	.000				
Programs for low-income students	.244	.159	.126	.001	.517	.146	.000*	.004				
Collaborate with Aboriginal groups	-.020	.174	.909	.000	.428	.133	.001*	.004				
Collaborate with non-Aboriginal groups	-.290	.137	.033*	.003	-.060	.105	.572	.000				

\* p<.05

\*\* p<.10

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