PREDICTORS OF PROBLEM BEHAVIOURS IN THE STUDENT POPULATION SERVED BY THE SASKATOON TRIBAL COUNCIL

A Thesis Submitted to the College of Graduate Studies and Research in Partial Fulfilment of the Requirements for the Degree of Master of Education in the Department for the Education of Exceptional Children
University of Saskatchewan
Saskatoon

by
David Brian Mykota
March, 1996

© Copyright David B. Mykota, 1996. All rights reserved.
The author has agreed that the Library, University of Saskatchewan, may make this thesis freely available for inspection. Moreover, the author has agreed that permission may be granted by the professor or professors who supervised the thesis work recorded herein or, in their absence, by the Head of the Department or the Dean of the College in which the thesis work was done. It is understood that due recognition will be given to the author and the University of Saskatchewan in any use of the material in this thesis. Copying or publication or any use of the thesis for financial gain without approval by the University of Saskatchewan and the author’s written permission is prohibited.

Requests for permission to copy or to make other use of material in this thesis in whole or in part should be addressed to:

Head of the Department
for the Education of Exceptional Children
University of Saskatchewan
Saskatoon, Saskatchewan
Canada. S7N 0W0
ABSTRACT

Children and adolescents at risk for school failure have become the focus of increased attention because the severity of problems facing them has been intensifying. Teachers report that at-risk children and adolescents in the classroom are not only effecting their own educational opportunities but also those of their peers. Furthermore, in the area of education services for First Nation communities, biases in the identification of at-risk students has been suggested to exist. In order for effective remediation to occur, it is necessary to examine those processes which place children and adolescents at-risk. As problem behaviours have been identified as placing children and adolescents at risk for failure in school or life, those variables which influence the development of problem behaviours need be understood.

Thus the purpose of the present study is to investigate the predictors of problem behaviours which place the student population served by the Saskatoon Tribal Council at risk for failure in school. Specifically, the study examines the predictors of problem behaviours as measured by the Teacher Rating Scale of the Behaviour Rating Profile-2nd Edition with the variables sex, age group, school, nonverbal reasoning ability as measured by the Matrix Analogies Test-Short Form, and academic performance as measured by the teacher completed Academic Performance Rating Scale.

In determining the strength of the relationship between the variables problem behaviours, academic performance, non-verbal reasoning ability, age group, sex, and school correlates are presented. Further analysis of the data
using multiple linear regression, with problem behaviours as the criterion variable and non-verbal reasoning ability, academic performance, school, sex, and age group as the predictor variables are reported. The present study also determined if there is a significant difference in problem behaviours for the student population served by the Saskatoon Tribal Council as based on age group (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age), sex (male and female), and school (Band or provincial).

The results of the study indicate that because academic performance continues to be such a strong predictor of problem behaviours, underscores the importance of the school as an ameliorative factor in the prevention and treatment of behavioural problems. As well, because females 10 to 13 years of age attending provincial schools are rated with fewer problem behaviours than their counterparts attending Band schools, or those in other age groups, is indicative of the need for the appropriate allocation of resources for children and youth at-risk. Given these findings, the present study recognizes the significance of intervention as a preventive measure for all age groups and the responsibility of federal and provincial funding agencies to continue to make available to First Nation communities resources appropriate for the development of educational services for students at-risk.
ACKNOWLEDGEMENTS

I would like to acknowledge the permission received by the Saskatoon Tribal Council and Gordon Lobe to conduct the present study. As well, Lorna Robert’s diligent gathering of the data and her own thesis research pertaining to the Saskatoon Tribal Council study on exceptionalities is duly acknowledged. I would like to thank my external examiner Dr. Fred Reekie for the insight provided and my committee members Dr. Barbara Bloom and Dr. Don Saklofske for their guidance and support. In conclusion, I would like to acknowledge my advisor Dr. Vicki Schwean for offering me the opportunity to undertake the present study and for her continued commitment to research in exceptionalities.
DEDICATION

This thesis is dedicated to the children and youth who participated in the Saskatoon Tribal Council study on exceptionalities.
# TABLE OF CONTENTS

PERMISSION TO USE........................................................................................................... i
ABSTRACT ................................................................................................................................ ii
ACKNOWLEDGEMENTS ........................................................................................................ iv
DEDICATION ........................................................................................................................... v
TABLE OF CONTENTS ........................................................................................................... vi
LIST OF FIGURES ................................................................................................................ xi
LIST OF TABLES ................................................................................................................... xii
1 INTRODUCTION ................................................................................................................ 1
   1.1 Purpose .......................................................................................................................... 3
2 LITERATURE REVIEW ......................................................................................................... 7
   2.1 Demographics of Aboriginal People in Canada .............................................................. 9
      2.1.1 Population Distribution ......................................................................................... 9
      2.1.2 Birth Rates ............................................................................................................. 12
      2.1.3 Dependency Ratio ................................................................................................. 15
      2.1.4 Living Conditions ................................................................................................. 16
      2.1.5 Education ............................................................................................................. 18
      2.1.6 Economic Status ................................................................................................. 20
      2.1.7 Unemployment and Labour Force Participation Rates ........................................ 21
      2.1.8 Language ............................................................................................................. 24
      2.1.9 Summary ............................................................................................................. 24
   2.2 Mental Health in Aboriginal Communities ................................................................. 25
      2.2.1 Definitional Criteria ............................................................................................... 26
      2.2.2 Indicators of Mental Health ..................................................................................... 27
         2.2.2.1 Mortality ........................................................................................................... 28
         2.2.2.2 Alcohol and Substance Abuse ......................................................................... 30
         2.2.2.3 Family Violence and Child Sexual Abuse......................................................... 31
         2.2.2.4 Summary ......................................................................................................... 31
      2.2.3 Epidemiological Studies ........................................................................................ 33
         2.2.3.1 Ontario Child Health Study ............................................................................. 34
         2.2.3.2 Ontario Child Health Study: Findings and Limitations ...................................... 35

2.2.4 Native American Child and Adolescent Mental Health

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.4.1 Statistical Overview</td>
<td>41</td>
</tr>
<tr>
<td>2.2.4.2 American Indian Health Survey</td>
<td>42</td>
</tr>
</tbody>
</table>

2.3 Variables Affecting Behaviour in Children and Adolescents

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.1 Special Education Students and Delinquency</td>
<td>45</td>
</tr>
<tr>
<td>2.3.2 Protective Effects of Intelligence on Delinquency</td>
<td>46</td>
</tr>
<tr>
<td>2.3.3 Familial Processes</td>
<td>48</td>
</tr>
<tr>
<td>2.3.4 Familial Factors, School Behaviour, and Learning Disabled Students</td>
<td>51</td>
</tr>
<tr>
<td>2.3.5 Socio-economic Status, Behaviour, and Intelligence</td>
<td>52</td>
</tr>
<tr>
<td>2.3.6 Summary</td>
<td>54</td>
</tr>
</tbody>
</table>

2.4 Psychopathology Across Cultures

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4.1 Culture Bound Syndromes</td>
<td>56</td>
</tr>
<tr>
<td>2.4.2 Psychological Change and Acculturation</td>
<td>57</td>
</tr>
<tr>
<td>2.4.3 Acculturative Stress</td>
<td>58</td>
</tr>
<tr>
<td>2.4.4 Somatization and Social Response to Distress</td>
<td>60</td>
</tr>
<tr>
<td>2.4.5 Deviance</td>
<td>61</td>
</tr>
<tr>
<td>2.4.5.1 Culturally Labelled Deviance</td>
<td>61</td>
</tr>
<tr>
<td>2.4.5.2 Societal Integration and Deviance</td>
<td>62</td>
</tr>
<tr>
<td>2.4.5.3 Stigmatization</td>
<td>63</td>
</tr>
<tr>
<td>2.4.6 Schizophrenia</td>
<td>64</td>
</tr>
<tr>
<td>2.4.7 Depression</td>
<td>65</td>
</tr>
</tbody>
</table>

2.5 Cross Cultural Assessment

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5.1 Formal Assessment</td>
<td>67</td>
</tr>
<tr>
<td>2.5.2 Emics and Etics</td>
<td>68</td>
</tr>
<tr>
<td>2.5.2.1 The Combined Emic-Etic Approach</td>
<td>70</td>
</tr>
<tr>
<td>2.5.3 Psychometric Equivalence and Cross-Cultural Measurement Strategies</td>
<td>71</td>
</tr>
<tr>
<td>Figure 2.1</td>
<td>Percentage Growth Rate of Status Indian, Inuit, and Total Canadian Populations</td>
</tr>
<tr>
<td>Figure 2.2</td>
<td>Proportion of Person's of Native Origin and Total Canadian Population by Region</td>
</tr>
<tr>
<td>Figure 2.3</td>
<td>On-Reserve, Off-Reserve, and Total Canadian Population by Region</td>
</tr>
<tr>
<td>Figure 2.4</td>
<td>Age Structure of Status Indian and Total Canadian Populations</td>
</tr>
<tr>
<td>Figure 2.5</td>
<td>Crowded Dwellings: On-Reserve, Off-Reserve, Inuit, and Total Canadian Populations</td>
</tr>
<tr>
<td>Figure 2.6</td>
<td>Single Parent Families: On-Reserve, Off-Reserve, Inuit, and Total Canadian Populations</td>
</tr>
<tr>
<td>Figure 2.7</td>
<td>Children in Care for On-Reserve and Total Canadian Population, 1981-1987</td>
</tr>
<tr>
<td>Figure 2.8</td>
<td>On-Reserve, Off-Reserve, and Total Canadian Populations with less than Grade 9</td>
</tr>
<tr>
<td>Figure 2.9</td>
<td>On-Reserve, Off-Reserve, and Total Canadian Population with High School Diploma</td>
</tr>
<tr>
<td>Figure 2.10</td>
<td>Income Level of Families On-Reserve, Off-Reserve, and Total Canadian Population</td>
</tr>
<tr>
<td>Figure 2.11</td>
<td>Unemployment Rate of On-Reserve, Off-Reserve, Inuit, and Total Canadian Population</td>
</tr>
<tr>
<td>Figure 2.12</td>
<td>Labour Force Activity for On-Reserve, Off-Reserve, Inuit, and Canadian Populations</td>
</tr>
<tr>
<td>Figure 2.13</td>
<td>Schematic Operationalization of Emics and Etics</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Interaction Effect (Males) for Age Group and School</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>Interaction Effect (Females) for Age Group and School</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Correlation Model for Predictors of Problem Behaviours</td>
</tr>
</tbody>
</table>
**LIST OF TABLES**

Table 2.1  A Cross Cultural Assessment Model.......................... 87
Table 3.1  Sample by Age.............................................................. 99
Table 3.2  Sample by Instrument.................................................. 101
Table 4.1  Sample by Age and by Cognitive, Academic, and Behavioural Measure.................................................. 114
Table 4.2  Age Group by School and Sex.............................................. 115
Table 4.3  Distribution Statistics by Instrument for Total Sample.................................................. 116
Table 4.4  Results of Data Transformation.............................................. 117
Table 4.5  Correlations by Variable for Total Sample.............................. 118
Table 4.6  Stepwise Multiple Regression Predictions of Problem Behaviours (TRS of the BRP-2).................................................. 120
Table 4.7  Collinearity Diagnostics..................................................... 122
Table 4.8  Outliers at 3 Standard Deviations.......................................... 124
Table 4.9  Descriptive Statistics for the Teacher Rating Scale of the BRP-2.................................................. 125
Table 4.10 Analysis of Variance Teacher Rating Scale of the BRP-2 by Age Group, Sex, and School.......................... 126
Table 4.11 Analysis of Variance Teacher Rating Scale of the BRP-2 (Males) by Age Group and School.......................... 127
Table 4.12 Analysis of Variance Teacher Rating Scale of the BRP-2 (Females) by Age Group and School.......................... 127
Table 4.13 Analysis of Variance Teacher Rating Scale of the BRP-2 (Provincial Schools) by Age Group and Sex.......................... 130
Table 4.14 Analysis of Variance Teacher Rating Scale of the BRP-2 (Band Schools) by Age Group and Sex...... 130
CHAPTER ONE
INTRODUCTION

The study of the relationship between psychiatric disorders and the demographic, cognitive, and academic correlates among children and youth was pioneered in the Isle of Wright surveys conducted by Rutter during the mid 1960's. Rutter's work on the Isle of Wright is of significance because it was the first large scale epidemiological study of childhood and adolescent educational, psychiatric, and physical disorders completed. Since the Isle of Wright surveys, a number of epidemiological studies have been undertaken to help ascertain what are the at-risk and protective factors in child development, future delinquency, and quality of adult adaptation to stressful life events. Most noteworthy is the Kauai longitudinal study (Werner & Smith, 1992) which continues to monitor the impact of biological and psychosocial risk factors, stressful life events, and protective factors on the development of a birth cohort into adulthood.

Within Canada, the Ontario Child Health Study (OCHS), conducted in 1983 in the Province of Ontario, is the most comprehensive study of child and adolescent epidemiology. The OCHS (Offord, Boyle, & Racine, 1989, 1991) sought to estimate the prevalence of psychiatric disorders within child and youth populations while at the same time exploring the correlates of the disorders. Although the OCHS was extensive in its survey sample, three groups of children and youth between 6 to 16 years of age were excluded. One of these groups represented First Nation children living on their reserve. This occurred because the researchers recognized the lack of instrument standardization as
problematic in an epidemiological study which included Aboriginal children (Armstrong, 1993). As a result of this shortcoming, studies are being conducted in some Aboriginal communities by the same researchers to rectify earlier concerns (Kirmayer, 1994a). The need for these studies is made manifest when it is realized that Native adolescents are at greater risk for the development of emotional disorders (Beiser & Attneave, 1982; Health and Welfare Canada Medical Services Branch, 1992; Kirmayer, 1994a, 1994b; Report of the Steering Committee Medical Services Branch, 1991). This is not surprising considering the stressors placed on youth experiencing the effects of cultures in contact. Even though there is epidemiological data available for Canadian child and youth psychopathology, information pertaining to Aboriginal populations is scant (Kirmayer, 1994a). This type of research is imperative if culturally sensitive educational interventions are to be developed which take into account the special needs and challenges facing Aboriginal children and adolescents today.

Similarly, in the area of education services, when First Nations and the federal government use the criteria for high cost special education services as dictated by provincial formulas, biases in the identification of special needs First Nation students have been suggested to exist. Specifically, concerns regarding the instrumentation and measurement techniques advocated by the provincial formula are circumspect when applied to First Nation populations (Schwean & Saklofske, 1994). To rectify this shortfall in epidemiological studies of exceptionality among First Nation children and to assist in the development of school based treatments and interventions, the Saskatoon Tribal Council (STC) initiated a research project under the auspices of University of Saskatchewan faculty: Dr. V.L. Schwean, Department for the Education of Exceptional Children; Dr. D.H. Saklofske, Department of Educational Psychology; and
conducted by Ms. L. Robert, a graduate student in the Department for the Education of Exceptional Children.

1.1 Purpose

The purpose of the present study is to determine the predictors of problem behaviours which would place the child and youth population of the Saskatoon Tribal Council at-risk. The present study is descriptive in nature and will draw on the Saskatoon Tribal Council special education research undertaken by Dr. V. L. Schwean, Department for the Education of Exceptional Children, Dr. D. H. Saklofske, Department of Educational Psychology, and Ms L. Robert, Department for the Education of Exceptional Children. Permission to conduct an analysis of the screening instruments and data obtained from the Saskatoon Tribal Council’s special education study was received through Gordon Lobe, Superintendent of Education for the Saskatoon Tribal Council (personal communication, February 14, 1994), see Appendix 1.

Longitudinal and cross sectional research in child psychopathology has investigated both at-risk and protective factors in children and adolescents who are vulnerable to a disorder and susceptible to biological and psychosocial risk factors (Offord et al., 1989, 1991; Rutter, 1989; Werner & Smith, 1992). Briefly stated:

Resilience and protective factors are the positive counterparts to both vulnerability, which denotes an individual’s susceptibility to a disorder, and risk factors, which are biological or psychosocial hazards that increase the likelihood of a negative developmental outcome in a group of people. (Werner & Smith, p. 3)

In the present study, at-risk will refer to those students who are likely to fail in life or school due to a number of factors that include economic, social, and physical variables which act as barriers to their normal development (Frymier & Gansneder, 1989). The term at-risk is not intended to be pejorative, rather
children at risk have become the focus of increased attention because the severity of the problems facing at-risk children has been intensifying (Planning and Evaluation Branch, Saskatchewan Education, Training and Employment, 1994). Teachers in Saskatchewan report that the prevalence of at-risk children in the classrooms is increasing and that these children are not only effecting their own educational opportunities but also those of their peers (Planning and Evaluation Branch, Saskatchewan Education, Training and Employment). In order for at-risk children to lead productive lives, it is necessary to examine the social, emotional, academic, and cognitive variables to determine what factors impede at-risk children’s ability to succeed in school, lead productive lives, and contribute fully to society.

In the Kauai longitudinal study conducted by Werner and Smith (1992), which encompassed both quantitative and qualitative research methodologies, it was found that in determining predictors of delinquency and the likelihood of a negative developmental outcome in both the male and female child and adolescent populations, a low IQ (<90) coupled with behaviour and learning problems for girls and boys, respectively, were the most powerful predictors of future delinquency. Of those who went on to become persistent offenders in youth, a significant higher proportion were described by their classroom teachers as having uncontrollable emotional problems and being extremely irritable (Werner & Smith). Other risk factors which were predictors of a negative psychosocial developmental outcome were low socio-economic status, a low level of education for the mother, and a congenital defect or handicap in the child (Werner & Smith).

In a recent study of educational risk and resilience among African-American youth in Atlanta and New York, Connel, Spencer, and Aber (1994) found:

...that disaffected behavior in low-income African-American youth can lessen parental involvement, which in turn contributes to negative appraisals of self that exacerbate disaffected patterns of action [emotional
and behavioral engagement and contribute to negative educational outcomes [low attendance, low test scores, low grades, suspension, and retention]. In order to avert these destructive transactional processes, adults, including but not restricted to parents, will have to reinterpret disaffected behavior on the part of youth and find ways to increase (not decrease) their involvement with these youth. (p. 504)

The implication for teachers who encounter the disaffected behaviour of youth which contributes to their negative educational outcomes is the need to facilitate and maintain the educational involvement of these youth rather than allowing destructive processes to continue.

In terms of the Aboriginal child and youth population in Canada, similar studies need to be undertaken if Aboriginal children are to succeed in the classroom and in life. Since Werner and Smith (1992) have validated classroom teachers as viable observers of problem behaviours which can be predictive of delinquency and a negative psychosocial outcome, it is important that other variables like intelligence, academic performance, education, and demographics are also considered as they combine to enhance the predictive power of problem behaviours in the the school based environment which place children and youth at-risk.

The social, economic, and mental health conditions currently experienced by Aboriginal children and youth place them at disadvantage to experience what Canadian society takes for granted. The effects of poverty, unemployment, crowded living conditions, higher rates of illiteracy, and lower levels of income typifies the ecological context of many Aboriginal communities (Hagey, Larocque, & McBride, 1989a, 1989b; Muir, 1991; Norris, 1990; The Social Trends Analysis Directorate, 1991). As well, elevated prevalence rates of alcohol and drug abuse, suicide, and family violence characterize the social and mental health of some of these communities (Health and Welfare Canada Medical Services Branch, 1992; Kirmayer, 1994a, 1994b; Northern Medical
The purpose of the present study is to determine the predictors of problem behaviours which place children and youth at-risk. The relationship between problem behaviours and the demographic, academic, and cognitive variables are explored. The variables are analyzed independently and in conjunction as predictors of problem behaviours. As well, between group comparisons of problem behaviours are made. Problem behaviours are defined as those which encompass behavioural and emotional problems and include item descriptors such as verbal aggression, swearing, in school referrals for discipline, motivation and interest, stealing, lying, bullying, cheating, passivity and withdrawal, overactivity and restlessness, nervous habits, daydreaming, lack of concentration, few friends in class, unacceptable personal habits and hygiene, does not follow directions, and self-centredness.

Problem behaviours are measured by the Teacher Rating Scale of the Behavior Rating Profile-2nd Edition (BRP-2; Brown & Hammill, 1990). Academic achievement based on teacher judgments is measured by the Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1990). Estimates of the child's non-verbal reasoning ability and cognitive development are assessed by the Matrix Analogies Test-Short Form (MAT-SF; Naglieri, 1985b), with the collection of demographic data pertaining to age, sex, and school facilitated through a teacher-completed student identification questionnaire. In conclusion, it is hoped the present research will facilitate the development of policy initiatives and program planning which will enable at-risk children and youth to experience success at school and in life.
CHAPTER TWO
LITERATURE REVIEW

In North America, over thirteen different cultural areas specific to Aboriginal peoples have been identified (Driver & Massey, 1957). Research corroborating the internal cultural similarities represented by these areas has been demonstrated ecologically and linguistically, lending support and corresponding to the cultural areas delineated. The thirteen generally agreed to Aboriginal cultural areas which correspond to linguistic and ecological distinctiveness in North America and identified by McShane and Berry (1988) are:

1. Central and Eastern Arctic
2. Western Arctic
3. Yukon Sub-Arctic
4. MacKenzie Sub-Arctic
5. Eastern Sub-Arctic
6. Northwest Coast
7. Plateau
8. Plains
9. Prairies
10. East
11. California
12. Great Basin
13. Southwest (p. 388)

In discussing issues relevant to assessment in Aboriginal populations, as well as the mental health of these same populations, the literature will draw on the North American experience with reference to comparative studies both including and excluding indigenous populations. Reference to Canadian developments in research among Aboriginal people will refer to the cultural areas specific to Canada or common both to Canada and the United States (Driver & Massey, 1957). An important distinction is made by this point: national borders are not the same as cultural boundaries and a Native person living in Saskatchewan might have more in common culturally with a Native in South
Dakota than a non-Native living in Saskatchewan.

Simply stated, a member of the linguistic group represented by the language Dakota, is part of the same Plains Indian cultural group as the Cree speaking individual in southern Saskatchewan and served by the same tribal council, a point alluded to in a statement provided by Gordon Lobe (cited in Schwean & Saklofske, 1994), Superintendent of Education for the Saskatoon Tribal Council, as part of the STC exceptionality study project background:

There are seven First Nations in the Saskatoon Tribal Council [John Smith, Kinistin, Mistawasis, Moosewoods, Muskeg Lake, One Arrow, and Yellow Quill], each of them representing a jurisdiction autonomous unto itself. ....The seven First Nations in this district include three different language groups (Cree, Saulteaux-Ojibway, and Dakota). The sizes of the different communities vary from 200 to 800 total population.... (p.1)

Returning to the cultural and linguistic areas of Aboriginal populations in North America, it is incumbent given the variance in cultural areas due to ecological and linguistic variables, that the effects of acculturation are recognized as influencing the development of indigenous cultures. Moreover, it is important to realize that acculturation has not affected all Aboriginal cultures in the same way and the degree or extent of contact has affected Aboriginal cultures differentially.

Acculturation, which refers to the replacement of traditional values and beliefs with those of the dominant culture, can occur in two differential contexts. In one way, the culture of the Aboriginal group can become more like the Western European norm and, in this ethnocentric sense, become closer to the norms of the larger more dominant society (McShane & Berry, 1988). In another, more debilitating way, acculturation can lead to the breakdown of the cultural and psychological functioning of a people (McShane & Berry), a topic which will be considered under the rubric of community mental and social health.
2.1 Demographics of Aboriginal People in Canada

As already has been stated, there are over nine different Aboriginal cultural groups in Canada. Within these nine different cultural groups exist over 606 Indian bands, with an average population of 550 people per band, that speak approximately 58 different dialects derived from 11 linguistic areas (Report of the Steering Committee Medical Services Branch, 1991; Health and Welfare Canada Medical Services Branch; 1992). Furthermore, Canadian government legislation has delineated these cultural areas into four major Native groupings. There are status Indians, which refers to those who are registered under the Indian Act of Canada; non-status Indians, meaning those who were not registered under the Indian Act of Canada; Metis, who are of both Indian and non-Indian ancestry; and the Inuit, who reside mainly in the Northwest Territories and Northern Labrador. For the purposes of this study, it should be noted that the Saskatoon Tribal Council is comprised of status Indians who are living on the reserve and therefore, are registered according to the Indian Act of Canada.

2.1.1 Population Distribution

Demographically, Aboriginal people are unique within Canada. At time of first contact with the Europeans, it is estimated the Aboriginal population numbered over 200,000. However, due to disease (tuberculosis) and war, this population base dwindled to about 80,000 in the late 1870’s and then superseded the precontact population in the 1960’s, to about 220,000 (Norris, 1990). Currently, it is estimated Aboriginal people number over 712,000, which is approximately 2.8% of the total Canadian population and of the total Aboriginal population, only 28% or 159,665, live on-reserves. In Saskatchewan, over 53% of the Aboriginal population, by birth, reside on-reserves. When the
statistics compiled by Muir (1991) for the Department of Health and Welfare on registered Indians are consulted, it is found that status Indians represented 1.7% of the total Canadian population in 1988, compared with 1.3% in 1981.

In Figure 2.1, the projected population trend for status Indian and Inuit people in Canada according to Indian and Northern Affairs Canada (Hagey et al., 1989a) predicts a higher growth rate for both population groups. Due to Bill C-31, the off-reserve status Indian population will almost double its proportion of the population from .41% to .77%, with the higher growth rates in the status Indian population between the years 1985 to 1990 primarily due to the effects of Bill C-31 (Report of the Statistical Data Technical Working Group Medical Services Branch, 1991). Thus not only will Aboriginal people's social and political influence develop as their population grows, but because of the increasing off-reserve population, federal and provincial governments may find themselves having to provide services to off-reserve Indians which are similar to those provided to on-reserve Indians (Hagey et al., 1989a, 1989b).

![Figure 2.1. Percentage Growth Rate of Status Indian, Inuit, and Total Canadian Populations. Source: Report of the Statistical Data Technical Working Group Medical Services Branch, 1991.](image-url)
In Figure 2.2, the distribution of Native people in Canada varies considerably with both the Northwest Territories and Yukon having the highest proportion of their populations claiming Native ancestry at 58% and 21%, respectively (Norris, 1990; The Social Trends Analysis Directorate, 1991). Provincially, Saskatchewan and Manitoba have the highest proportion of Native people at 8%, followed by British Columbia and Alberta at 5%, and central and eastern Canada between 1% and 2% (Norris, 1990; The Social Trends Analysis Directorate, 1991). When the population demographics are consulted specifically for Saskatchewan, remembering that Native people comprise 8% of the population, it is found that over two-thirds of the Native population for the province reside in Northern Saskatchewan, an area equivalent to Statistic Canada’s census division no. 18 (Northern Medical Services Research and Development Committee, 1991). In other words, 5 to 6% of Canada’s Native population resides in northern Saskatchewan and 2 to 3% of Canada’s Native population resides in southern Saskatchewan.

![Figure 2.2. Proportion of Persons of Native Origin and Total Canadian Population by Region. Source: The Social Trends Analysis Directorate, 1991.](image)
In Figure 2.3, the number of Native people by region in Canada are compared. It is found that 42% of the total Native population reside in Ontario, 36.3% in British Columbia, 36.1% in Saskatchewan, 27.6% in Manitoba, 27.2% in Alberta, 24.3% in Quebec, 9.8% in Atlantic Canada, and 6.7% in the Territories (The Social Trends Analysis Directorate, 1991). Furthermore, the majority of Native people who live in Saskatchewan reside off-reserve as compared with those living on-reserve.

![Figure 2.3. On-Reserve, Off-Reserve, and Total Canadian Populations by Region. Source: The Social Trends Analysis Directorate, 1991.](image)

2.1.2 Birth Rates

It is generally agreed the determination of population growth through birth rates is somewhat fraught with difficulties, owing to definitional criteria, reporting, and data collection methods. Nevertheless, it is still an effective procedure for the charting of population growth, and at the moment, is the only technique available. Earlier it was mentioned that after contact with the Europeans, the Aboriginal population in Canada dropped off significantly. However, between the 1940's and 1980's, the Aboriginal population growth in
Canada is estimated to have reached 205%, compared with 109% for the Canadian population as a whole (Norris, 1990). In 1988, the crude birth rates for the registered Indian population, which takes into account all births irrespective of whether the birth was live or not, was 29.3 per 1,000, compared with the Canadian crude birth rate of 14.5 per 1,000 (Muir, 1991). Similarly, the natural increase, which is the excess of live births over deaths per 1000, according to Muir has been increasing for the registered Indian population.

In the Canadian population, the average mean age is 34, whereas for Canada's Aboriginal population the average mean age is 24. Similarly, only 47% of the Canadian population is under the age of 30, whereas over 68% of the Canadian Aboriginal population is under the age of 30 (Norris, 1990). Subsequently, the effect of the higher natural increase in birth rates has resulted in a younger age structure among Canada's Status Indian population in comparison to the total Canadian population, see Figure 2.4.

Figure 2.4. Age Structure of Status Indian and Total Canadian Populations. Source: Report of the Statistical Data Technical Working Group Medical Services Branch, 1991.
The implication of the younger age structure in the Aboriginal population for the education system is best understood in relation to the increasing Aboriginal proportion of the population (Hagey et al., 1989a):

There will be a dramatic increase in the number of Indians on-reserve in the education system not only through higher retention rates but due to a continuous increase in the school age population (5-21), with 21,000 more in this age group in the year 2001 than in 1991. (p. 17)

Because of this, there is a greater demand for local band run schools to be developed from community education resources. Therefore, it is imperative that educational services be adequately developed and implemented so as to serve the needs of the on-reserve school age population.

Even though both the crude and natural increase in birth rates is higher for Aboriginal people, as compared with the Canadian population, trends in fertility rates indicate that like the Canadian levels, Aboriginal fertility levels are declining (Norris, 1990). Part of the reason why this is so is because of the increased use of birth control, considerations relating to the timing, size of families, and marital instability (Norris). Likewise, if the total fertility rates are consulted, it is found the fertility rate of both Indian and Inuit people declined more rapidly than the Canadian norm and are lower in urban areas than rural (Norris). Nevertheless, even though total fertility rates are declining, Aboriginal families, especially among the Inuit, tend to have more children compared with the Canadian population:

The comparison of total fertility rates indicates that Inuit fertility has been and remains higher than that of registered Indians. Data from the 1981 Census on "children born to ever-married women" clearly confirm this relation. In 1981 the average number of children born to ever-married women, was highest for Inuit, at 4.7, followed by 4.1 for status Indians, 3.6 for Metis, 3.0 for non-status Indians, and 3.9 for non-status and status Indians combined. The average number of children for Canadians in general was much lower at 2.5, compared to 3.9 for Native people as a whole. (Norris, p. 45)
When data are consulted regarding family size, it has been found that status Indian families tend to be larger than the national average, on-reserve families are larger than those families off-reserve, and due to Bill C-31, the number of Indian families will increase as the year 2001 approaches (Hagey et al., 1989a).

2.1.3 Dependency Ratio

One result of the age composition outlined is an increase in the dependency ratio among Aboriginal people. The dependency ratio is calculated by determining the total population who has little or no wage earning potential, in other words, the dependent, and dividing it by the total population which has wage earning potential, the independent, using the following formula:

$$\left[\frac{\text{Total Population (0-14) + (65+)}}{\text{Total Population (15-64)}}\right] \times 100,$$

(Graham, 1987). Thus given the dependency ratio calculation outlined, if a dependency ratio exceeds 100, then there exists more than one dependent for each adult of working age. However, it is important to note that wage earning potential does not imply the adult of working age has to be gainfully employed.

At present, the Canadian dependency ratio is 46 per 100, whereas the dependency ratio for on-reserve Indians is 76 per 100 and for off-reserve Indians, 62 per 100. In Saskatchewan, which has the highest dependency ratio of all provinces and territories, the dependency ratio for on-reserve Indians is 91 per 100 and for off-reserve Indians, it is 81 per 100. The significance of this statistic, according to The Social Trends Analysis Directorate (1991) is that:

Because of this age structure, the dependency ratios of persons of Aboriginal origin are significantly more youth-biased than the general population. As a result, as the current youth generation of Aboriginal Canadians ages and enters the labour market, employment and job expectations will likely become an even more critical policy issue. (p. 6)

The implication for educational services is that these services will need to be matched with the current demands dictated by market and societal pressures.
2.1.4 Living Conditions

In the past, many on-reserve dwellings for Indian people had inadequate sewage systems and a higher proportion of homes without central heating and running water compared with the national average (Report of the Steering Committee Medical Services Branch, 1991). When considering the quality of living conditions, another important indicator is the number of individuals who reside within a crowded dwelling. Accordingly, "a crowded dwelling is defined as any dwelling occupied by more than one person per room" (Hagey et al., 1989a, p. 13). Although the percentage of crowded dwellings has been decreasing for the total Aboriginal population, the rates of crowded dwellings among Aboriginal people are significantly higher than the national average (Hagey et al.). Thus 28.9% of on-reserve Indians live in crowded dwellings, compared to 11.3% for off-reserve Indians, and 1.8% for the total Canadian population, see Figure 2.5. What these percentages demonstrate is that on-reserve status Indians live in crowded dwellings at 16 times the Canadian rate.

As well, there are more single parent families of Native origin living in Canada today than the national average, see Figure 2.6. Approximately 19% of all Native families in Canada are single parent households, compared with the national average of 12.7% in 1986. Of the 26.9% status Indian families that are of single parentage, over 86% are single mothers, with 60% of these women living off-reserve (Hagey et al., 1989a).

![Bar chart showing single parent families On-Reserve, Off-Reserve, Inuit, and Total Canadian Populations.](image)

**Figure 2.6.** Single Parent Families: On-Reserve, Off-Reserve, Inuit, and Total Canadian Populations. Source: Report of the Statistical Data Technical Working Group Medical Services Branch, 1991.

Another indicator of social need and living conditions is the number of children who are in the care of child welfare authorities. Even though the number of Native children in the hands of child welfare agencies is decreasing, the proportion of children in care is already higher than the average, putting extra demands on limited resources and generally indicating overall poorer living conditions, see Figure 2.7. With higher rates of single parent families, crowded dwellings, and children in care, there may be a tendency for an overall greater demand to be put on social service resources.
2.1.5 Education

When examining the education level of the total population aged 15 years and over, it is found that approximately 26% of all on-reserve and off-reserve Indian people have less than grade nine level of completion, compared with 17.3% for the Canadian population, see Figure 2.8. The education level is also lower among those who live on-reserve, with over 43% of those surveyed reporting having attained grade nine or lower. This figure is even higher in Saskatchewan where 50.6% of all Native people living on-reserve have a grade nine or less, which is the second lowest education level in the country, with only Manitoba reporting a rate of 52.3% for their on-reserve population (The Social Trends Analysis Directorate, 1991). When the same measure is used for status Indians, it is discovered that 37% of all status Indians have less than grade nine, which is twice the proportion reported for all of Canada (Report of the Steering Committee Medical Services Branch, 1991). As well, when the

criteria of having received a high school diploma is used to determine education level, only 8.1% of the total Native population report having attained a secondary diploma, compared with the Canadian total of 12.8%. In Saskatchewan, only 1.6% of the on-reserve population and 4.6% of the off-reserve population have attained a high school diploma, see Figure 2.9 (The Social Trends Analysis Directorate, 1991).

As well, it has been noted that functional illiteracy is declining in Aboriginal communities (Report of the Steering Committee Medical Services Branch, 1991), with The Social Trends Analysis Directorate (1991) disclosing: "the educational characteristics of persons of Aboriginal descent living off-reserve appear to be closer to those of the Canadian population as a whole than those of Aboriginal people living on-reserve" (p.10).

<table>
<thead>
<tr>
<th>Region</th>
<th>On-Reserve</th>
<th>Off-Reserve</th>
<th>Total Canadian Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Territories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>British Columbia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alberta</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saskatchewan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manitoba</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ontario</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quebec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2.8.** On-Reserve, Off-Reserve, and Total Canadian Populations With Less Than Grade 9. Source: The Social Trends Analysis Directorate, 1991.
Economic Status

Over 19% of Aboriginal people in Canada have no income compared to 18% for the off-reserve population, 24% for the on-reserve population and 13% for the total Canadian population, see Figure 2.10 (The Social Trends Analysis Directorate, 1991). Similarly, 51% of all off-reserve Aboriginal people have an income of less than $10,000; with 68% of the Aboriginal population living on-reserve having an income of less than $10,000, compared with 39% for the total Canadian population. Regionally, Saskatchewan has one of the highest proportions of Aboriginal people living off-reserve with income less than $10,000, at approximately 60%; the highest rate of families living off-reserve below a combined income of $25,000 at 64%; and the second highest rate for on-reserve families living on a combined income of less than $25,000 at 75.8%. Manitoba’s on-reserve rate was only slightly higher at 76.7%, with the total
Canadian proportion of families combined income below $25,000 being 31% or one in three (The Social Trends Analysis Directorate). What these statistics describe is a population which has a higher proportion of people with either no income or a lower income than the national average, and of those that do have a higher income, only 12.6% report having an income greater than $20,000, compared with 31.1% for the Canadian population having this income level (Muir, 1991; The Social Trends Analysis Directorate).

![Figure 2.10. Income Level of Families On-Reserve, Off-Reserve, and Total Canadian Population. Source: The Social Trends Analysis Directorate, 1991.](image)

2.1.7 Unemployment and Labour Force Participation Rates

The definition offered by Statistics Canada for the concepts labour force participation and unemployment were not developed explicitly for Native populations. Because of this, activities such as hunting and trapping, which are traditional pursuits of Native people, are not considered labour force participation if the products of such endeavours are either bartered or consumed and therefore, do not enter the market economy (The Social Trends Analysis Directorate, 1991). On account of this, the validity of labour force and
unemployment statistics might be circumspect. Nevertheless, higher rates of unemployment exist among Canada's Native population, see Figure 2.11.

It should also be noted that the on-reserve Aboriginal population in 1986 had a 34.9% unemployment rate compared with the off-reserve rate of 20.5% and a Canadian rate of 10.3% with Saskatchewan's on-reserve and off-reserve populations posting unemployment rates of 33.6% and 27.9%, respectively, see Figure 2.11 (The Social Trends Analysis Directorate, 1991). In terms of participation rate in the labour force, it was found the on-reserve and off-reserve labour force participation rates were 43.2% and 65.1%, compared with the Canadian rate of 66.5%, with Saskatchewan's on and off-reserve rates being 36.7% and 56.5%, respectively. What these statistics describe for Canada's Aboriginal off-reserve population is an unemployment rate which is twice as high as the Canadian rate and a labour force participation rate which approximates the Canadian norm.

Figure 2.11. Unemployment Rate of On-Reserve, Off-Reserve, and Total Canadian Populations. Source: The Social Trends Analysis Directorate, 1991.
For on-reserve populations, the unemployment rate is over three times higher than the Canadian rate, see Figure 2.12. As well, the labour market participation rate is over 20% lower compared with the Canadian national rate. However, it should be realized that the validity of the data as previously described is limited, and if hunting and trapping outside of the market economy is considered, especially among on-reserve dwellers where hunting and trapping is more of a lifestyle choice and occurs as part of daily life, it is suspected some of the rates reported would change.

![Figure 2.12. Labour Force Activity for On-Reserve, Off-Reserve, Inuit, and Canadian Populations. Source: Report of the Statistical Data Technical Working Group Medical Services Branch, 1991.](image)

Regardless of the possible validity error in the statistics, as the increasing age-youth structure changes, remembering the Canadian trend is towards a greater percentage of elderly people in the population, higher rates of unemployment and dissatisfaction could result if resources are not allocated to serve the needs of Aboriginal youth (Hagey et al., 1989b):

As the Indian population ages and young people enter the work force, heavy demands will be placed on Indian communities to provide suitable
employment opportunities. By the year 2001, there will be 56,000 youth on-reserve of working age (17-24), 5,000 more than in 1991. Finding work for Indian youth will become an increasing challenge. Failure will add to the social assistance roles (p. 18).

Furthermore, the impact of even higher unemployment rates on the mental and social health of Aboriginal communities would be debilitating and therefore, it is imperative that government agencies and Indian communities work together to solve the current maladies facing Canada’s Aboriginal youth.

2.1.8 Language

The final topic to be covered in an examination of Aboriginal social and economic demographics is language. Of those Aboriginal people living off-reserve, only 11% report an Aboriginal language as their mother tongue, compared with 45% for the on-reserve population (The Social Trends Analysis Directorate, 1991). When the data are consulted for those persons of Aboriginal origin who speak an Aboriginal language at home, it is found 7% of the off-reserve population use their mother tongue as the primary language in the home compared with 35% for on-reserve dwellers. These figures seem to indicate that those who live on-reserve both retain and use their Aboriginal language more frequently than those who are living off-reserve.

2.1.9 Summary

Because of the previous demographic trends outlined and the unparalleled position in which Aboriginal people find themselves, there is good argument for considering these demographic indicators when attributing and delineating casual factors to conditions of mental health in Aboriginal communities. It is found that Aboriginal people are distinct from the broader context of Canadian society in many ways. The Aboriginal population in comparison to the total Canadian population has: a higher population growth confirmed by birth and
fertility rates that exceed the national rates; a higher proportion of younger people with a younger age structure by 10 years; lower overall provincial and territorial education levels; and a dependency ratio which is even more youth biased than the national average indicating an even greater demand among youth for scarce labour market resources, where current unemployment rates exist between 20 to 30%. Moreover, when these same statistics are consulted and the conditions facing on-reserve and off-reserve Indians are compared, it is discovered that on-reserve Indians are worse off than off-reserve Indians and the Canadian population as a whole.

But the social and economic demographics described do not occur in isolation. Rather they describe a society or culture in which children, youth, and families are at risk for a negative psychosocial developmental outcome. To understand the context which characterizes mental health in Aboriginal communities, it is necessary to understand the impact of social pathologies, like morbidity and mortality, on these same communities (Report of the Statistical Data Technical Working Group Medical Services Branch, 1991). By so doing, the mental health, and the predisposing at-risk factors, will be better understood in light of the socio-economic conditions currently facing Aboriginal people.

2.2 Mental Health in Aboriginal Communities

The rapid effects of acculturation have significantly altered the ecological context of Aboriginal people. Poverty is common in many communities and its causes are the social inequalities and discrimination which confront Aboriginal people today (Northern Medical Services Research and Development Committee, 1991). Higher rates of unemployment and illiteracy coupled with poorer living conditions are characteristic of the ecological context encountered in many Aboriginal communities. The result of this rapidly shifting ecological
context has seen the increased prevalence of mental and social health problems among numerous Aboriginal communities in Canada. But it is important to remember that culture change, in itself, is not responsible for all aspects of psychopathology that any particular society or community might experience. As Kirmayer (1994b) remarks:

All communities create and control certain forms of deviance to define and integrate themselves. Yet, social pressures on the individual labelled as deviant may be so powerful that they have deleterious effects on their mental health and create pathology. (p. 45)

Therefore, in order to understand mental health in Aboriginal communities, it will be necessary to explore a concept of mental health which is sensitive to the Aboriginal perspective.

2.2.1 Definitional Criteria

In 1990-91, a steering committee on Aboriginal mental health was initiated. This group consisted of representatives from Indian and Northern Health, the Department of Indian and Northern Development (DIAND), the Assembly of First Nations Health Commission, the Labrador Inuit Health Commission, the Nishnawbe Aski-Nation, River Desert, the Manitoba Assembly of Chiefs, the Meadow Lake Tribal Council, the Alberta Indian Health Care Commission, the Sto:Lo Nation, and the B.C. Congress of First Nations (Report of the Steering Committee Medical Services Branch, 1991). The mandate of this committee, formed under the auspices of Indian and Northern Health Services, Medical Services Branch, was to document current concerns and issues among the Aboriginal community surrounding mental and social health. Because of this, an attempt was made to provide direction to the federal government response so as to reflect the goals and aspirations of the communities it serves (Report of the Steering Committee Medical Services Branch). As a result, the Report of the
Steering Committee Medical Services Branch developed the following definition of mental health which depicts, in part, the Aboriginal concept of mental health:

Among the First Nations and Inuit communities the term mental health is used in a broad sense of describing behaviours which make for harmonious and cohesive community and the relative absence of multiple problem behaviours in the community, such as family violence, substance abuse, juvenile delinquency, and self-destructive behaviour. It is more than the absence of illness, disease or dysfunction-it is the presence of a holistic, psychological wellness which is part of the full circle of the mind, body, emotion and spirit, with respect for tradition, culture and language. This gives rise to creativity, imagination and growth, and enhances the capacity of the community, family group or individual to interact harmoniously and respond to illness and other adversity in healing ways that resolve conflicts constructively, promote improved function and the healthy development of children. (p. 6)

With this definition of mental health, it is incumbent that the multiple problem behaviours surrounding social and mental health dysfunction be explored in relation to First Nation communities.

2.2.2 Indicators of Mental Health

Common indicators of mental health in a community are deaths, suicide, substance abuse, family violence, and childhood/adolescent problems. It is known that low levels of employment and recreation activities can intensify the chronicity and severity of violence and substance abuse among teenagers who perceive life as meaningless and without purpose (Report of the Steering Committee Medical Services Branch, 1991). Because of the possible relationship that exists between socio-economic demographics and mental health indicators, it is necessary, to understand the complexity of the issues facing Aboriginal communities, to examine more fully the indicators of mental health.
2.2.2.1 Mortality

The current mortality rate for Aboriginal populations is much higher than the Canadian average. Although both Indian and Inuit life expectancies have risen over the years, they still remain substantially lower than the national average. At the turn of the century, the average life expectancy for registered Indians of both sexes was only 33 years, later in 1982 to 1985, it was estimated that for the same population, life expectancy had risen to 64 and 72.8 years for males and females, respectively (Norris, 1990). It is expected by the year 2001 the average life expectancy of Native Canadians will be 6 years or less than the national average, at 70 versus 76 for men, and 77 versus 83 for women (Hagey et al., 1989a). In comparison, the Canadian life expectancy, calculated during the period from 1984 to 1986, was 73 and 79.8 years for males and females, respectively. That there should be such a rapid increase in the life expectancy of registered Indians is partially due to lower infant mortality rates. Although infant mortality has been decreasing among Aboriginal populations, it is still higher than the Canadian proportion of the population. As a result, the registered Indian mortality rate is 2.2 times higher than the Canadian rate and for the Inuit, it is 2.6 times the Canadian rate (Muir, 1991). In Saskatchewan, the infant mortality rate has been declining from a high of 45.8 per 1,000 live births to a rate of 15.4 per 1,000 live births in 1986 (Health and Welfare Canada Medical Services Branch Saskatchewan Region, 1989).

The significance of infant mortality is that it is closely linked to socioeconomic status. Because poverty affects one's health, mothers who are afflicted by poverty can have premature and/or babies of lower birth weight due to poor nutrition resulting in higher rates of infant mortality (Muir, 1991). Even though infant mortality rates are decreasing for Canada's Aboriginal population, although still higher than the national rate, the mortality among older ages is
either staying the same or increasing in some age groups. As to the importance of these figures, Norris (1990) explains:

This pattern of relatively little decline in mortality at older ages, compared to the great strides made in infant survival, reflects that the major causes of death for registered Indians are not associated with disease, but rather with “accidents, poisoning and violence,” and many of these deaths are alcohol related. (p. 50)

In fact, between 1986 to 1988, the leading cause of death among the registered Indian population was injury and poisoning at 31.2%, varying between 49.4% for the Yukon and 20.5% for the Atlantic region, with Saskatchewan posting a rate of 36.8% (Muir, 1991). Moreover, when the cause of death statistics are consulted for the total Indian population, injury and poisoning accounts for 86% in the 15 to 24 year age group and 59% in the 25 to 44 year age group and 60% in the 45 to 64 year age grouping (Health and Welfare Canada Medical Services Branch, 1992). In comparison, the leading cause of death in the Canadian population for the same time period was diseases of the circulatory system at 43%, with injury and poisoning ranking fourth at 7.5% (Muir).

Moreover, if age-specific death rates are consulted, it is found that 64.2% of the deaths among children between 1 to 14 years of age, and 87% of the deaths among youth and young adults between 15 to 24 years of age are the result of injury and poisoning, with violence and accidents resulting in death for Indian men under 70 years of age occurring four to five times more frequently than the Canadian average (Report of the Steering Committee Medical Services Branch, 1991).

When suicide rates are examined, it is found that in Northern Saskatchewan which is comprised of a population that is over two-thirds Native, the rate of suicide is four times the provincial rate (Northern Medical Services Research and Development Committee, 1991). In Canada, the rate of suicide among
Indian people, referring to on-reserve status and registered Indians, is five to six times higher than the Canadian rate (Report of the Steering Committee Medical Services Branch, 1991; Kirmayer, 1994b). Moreover, such a death is likely to involve alcohol, be carried out with either a gun or by hanging, and to occur in clusters among Native adolescents (Kirmayer). As to the significance of these figures, regardless of whether one views suicide as a result of individual or familial psychopathology, or viewed from a sociological perspective as the result of political disempowerment, acculturative stress, or low socioeconomic status (Kirmayer), it is a powerful indicator of the mental well being of a community (Report of the Steering Committee Medical Services Branch).

2.2.2.2 Alcohol and substance abuse

When the incidence rates of alcohol related offences for Aboriginal people are examined, they are found to be five times the national average (Northern Medical Services Research and Development Committee, 1991). As well, over 80% of the diagnosed psychopathologies are of addicted people. Moreover, when one compares non-Native and Native homicides, the vast majority of Native homicides are alcohol related showing no evidence of psychosis or sexual deviancy, which are both common among the non-Native population in Canadian penitentiaries (Proceedings of the Canadian Psychiatric Association’s Annual Meeting, 1982). In terms of child psychopathology, it is informally estimated that in Aboriginal communities over 25% of the births are affected with fetal alcohol syndrome, the leading cause of mental retardation today (Report of the Steering Committee Medical Services Branch, 1991).
2.2.2.3 Family violence and child sexual abuse

Society has seen a growing trend to uncover the issues pertaining to family violence and child sexual abuse. Aboriginal people have participated in this process by coming to terms with the abuse experienced in the residential schooling system, religious institutions, and other situations conducive to the promotion of child abuse (Kirmayer, 1994a). Issues surrounding family violence and child abuse continue to be of major concern to many Aboriginal communities (Report of Steering Committee Medical Services Branch, 1991).

As to what factors place a child at risk for abuse, Kirmayer states:

The majority of sexual abuse is initiated when children are less than seven years old; 70% of abuse takes place more than once. Many offenders engage in more than one type of sexual deviancy. For example, up to 50% of fathers referred to a clinic for incest also abused children outside the home. At present, it is not clear what factors increase a child's risk except female gender, separation from mother and poor relationship with mother (these last two may be consequences rather than risk factors). (p. 32)

At present, it is generally conceded the punitive and adversarial nature of the justice system does not deal adequately with cases of abuse and is tearing some communities apart (Report of the Steering Committee Medical Services Branch). Furthermore, the impact of poverty, isolation, and demoralization, coupled with alcohol and substance abuse, appear to contribute to family violence and child abuse in many Aboriginal communities (Kirmayer).

2.2.2.4 Summary

Given the current situation facing the mental health of Aboriginal communities, it is clear that social, economic, and cultural factors do not occur in isolation, but rather impact in conjunction on Aboriginal communities. Because of these conditions, one would necessarily expect that all traditional values and beliefs would have been subverted by Euro-American or Euro-Canadian
culture. Although in many situations the effects of geographic relocation and residential schooling has resulted in the break down of the extended family and traditional values, beliefs, and practises (Report of the Steering Committee Medical Services Branch, 1991), not all cultural processes and structures have been abrogated. Rather, individual coping styles (LaFromboise, 1988; McShane, 1987; McShane and Berry, 1988) and other traditional cultural structures and processes remain, which cause some Aboriginal children and youth to be resilient to disaffected emotional and behavioural engagement thereby, not placing them at risk for failure in life or at school. Thus according to McShane and Berry:

The remaking of the environment contrasts with the enduring of certain cultural structures and processes. These include the maintenance of some aspects of traditional structures of adult-adult and adult-child interactions, and some continuity of traditional forms of relations between mother and child. (p. 404)

If the argument posited by McShane and Berry (1988) is accepted, it must be recognized that Aboriginal culture remains distinct from the North American norm due to the retention of traditional cultural processes and structures. The extent to which these processes and structures play themselves out are questions that researchers, educators, psychologists, and health care professionals must ask themselves when assessing and treating Aboriginal populations. Similarly, historical, economic, and social factors have come to bear on Aboriginal communities such that these environmental or external factors have profoundly affected mental health in Aboriginal communities (Report of the Steering Committee Medical Services Branch, 1991).

The Steering Committee for the Medical Services Branch in their 1991 report concluded Native people were no more prone to diagnosable psychiatric disorders even though there exists a disproportionate number of Native people diagnosed as schizophrenic. Although the effects of alcohol and substance
abuse were fairly wide ranging, the Steering Committee concluded the uses of such substances concealed deeper social psychopathologies and where alcohol had been controlled, other problem behaviours previously not present, began to emerge (Report of the Steering Committee Medical Services Branch, 1991).

It was also noted there exists higher rates of depression and failure to thrive among children. Even though indicators of mental health predict higher rates of psychopathology among children, under identification among behaviourally disordered youth continues to occur (Schwean & Greenough-Olsen, 1991). It is not surprising then that Aboriginal communities in Canada are demanding better services which translate into a more adequate share of resources as based on need.

It is important to remember the statistics for mental and social health in Aboriginal communities are based on overall prevalence rates and not all Aboriginal communities have a high prevalence of emotional and behavioural problems demanding immediate care. Given this situation, it is clear some Aboriginal communities are worse off than others, if prevalence indicators for mental and social health are articulated on a community by community basis. It is implicit then that culturally fair assessment practices be adopted so as to accurately identify the needs and subsequent resource allocation within Aboriginal communities, schools, and health facilities.

2.2.3 Epidemiological Studies

The most comprehensive epidemiological study of childhood and adolescent disorders in Canada was the Ontario Child Health Study (OCHS) conducted in 1983 in the province of Ontario. The purpose of the OCHS was to survey and estimate the prevalence of the "four childhood psychiatric disorders:
conduct disorder, hyperactivity, and emotional disorders (neurosis) in children, 4-16; and somatization in adolescents 12-16 years of age" (Offord et al., 1991, p. 31). The OCHS is found wanting in its applicability to Aboriginal child and youth populations in Canada, however, because Aboriginal children and adolescents living on-reserve were excluded from the sample (Boyle et al., 1987). Since Aboriginal children were not included in the subject sample the generalizability and the ecological validity of OCHS findings as applied to Aboriginal groupings is questionable. The strength of this point is made apparent when it is recognized the authors of the OCHS did not intend their study to be representative of Aboriginal populations due to the lack of instrument standardization (Armstrong, 1993).

Because of this, prevalence rates for specific disorders might vary across cultures as a factor of psychopathology. Nevertheless, the OCHS provides valuable information about the correlates of childhood psychiatric disorders which can be used for comparative purposes with Aboriginal populations. To address the shortcomings of the OCHS epidemiological survey, it will be necessary to draw on research conducted in the United States on the American Aboriginal youth population. Further research in Canada should focus on the deficiency in the epidemiological literature and provide a more comprehensive picture of child and adolescent psychopathology in Canada's Aboriginal population.

2.2.3.1 Ontario Child Health Study

The OCHS was commissioned by the Province of Ontario's Ministry of Community and Social Services (MCSS) so as to better plan and design the dispensation of services (Boyle et al., 1987). Having recognized the purposefulness of such a study and the need for appropriate resource
allocation, the MCSS according to Boyle et al.:

...wished to obtain estimates of the prevalence of emotional and behavioural disorders among children 4 to 16 years and information on the use of mental health, social, correctional, special education services, and medical care by Ontario's children. (p. 826)

Even though the ecological validity of the OCHS for the Aboriginal population is circumspect, it is important the findings be considered not only for their concordance but also for their possible variation, which in part could be explained by socio-economic demographics, social and mental health indicators, cultural differences, and assessment practices. Given these considerations, it would be expected that research in Aboriginal child and adolescent psychopathology should yield findings which are discrepant from the total population. Moreover, the causal factors delineated would need to be sensitive to the characteristics of the Aboriginal grouping under study, as it is known that variations exist economically, socially, and culturally among the various Aboriginal groupings.

2.2.3.2 Ontario Child Health Study: Findings and limitations

According to Boyle et al. (1987), a number of limitations apply to the OCHS methodology. The use of clinical diagnosis for the confirmation of a disorder is problematic since diagnosis was not standardized and left to the vagrancies of the clinicians, thus allowing for differences in information gathering and criteria invoked in the assessment process; secondly, emotional disorders were derived through the collapsing of anxiety and depressive disorders into one category as was done in the Isle of Wright epidemiological study by Rutter (1989) making the measurement of child and adolescent depressive and anxiety disorders not possible; thirdly, even though multiple perspectives were used in the assessment process (i.e. teacher, student, and parent ratings), little
is known on how to integrate the data collected. On the other hand, the strengths of the OCHS were the very high participation rates at 91.1%, and low refusal rates at 3.9% (Boyle et al.), which due to the low attrition, supports the internal validity of the study.

The four psychiatric disorders assessed in the OCHS (Boyle et al., 1987) were determined through checklists which were converted to a binary scale. The binary scale then reflected either the presence or absence of a disorder. An individual was then classified as disordered based on a positive rating by one or both of the informants, teacher or parent in the 4 to 11 year age group and youth or parent in the 12 to 16 year old age group.

The correlates of the disorders examined by Offord et al. (1989, 1991) were low income, rural/urban residency, family dysfunction, parent treated for nerves, parent arrested, child’s age, child’s sex, whether the child repeated a grade, and chronic medical illness. The correlates defined by Offord et al., (1989) are as follows:

Low income: Total family income in the preceding year (1982) was <$10,000.
Urban/rural: Urban areas are those with a population of >25,000. Rural areas include both small urban areas (population 3,000 to 25,000) and rural areas (population <3,000).
Family dysfunction: A score above 26, on a range of 12 to 48, on the 12-item General Functioning subscale....
Parent treated for nerves: Parent reports that self or partner was treated at some time for nerves or a nervous condition.
Parent arrested: Parent reports that self or partner was at some time arrested or charged with an offence other than a traffic violation.
Failed a grade: Parent reports that child failed or repeated a grade at some time during his or her school career.
Chronic medical illness: Parent reports that child has one or more illness or conditions which are usually chronic in duration (>6 months). (p. 196)

The major finding of the analyses was the difference informants made in determining the strength of the relationship between the correlates and a specific disorder. In this respect, it should be noted that parents completed
questionnaires for both the 4 to 11 and 12 to 16 year age groups, teachers completed questionnaires only for the 4 to 11 year age group, and due to the unreliability of administering self-report questionnaires to the 4 to 11 year age group, only youth completed questionnaires for the 12 to 16 year age group. Given the questionnaires completed by the informants for the age groups specified, it was found that child self-reports, youth self-reports, parent-reports, and teacher-reports varied significantly in the identification of a disorder as a function of the informant (Offord et al., 1989). For instance, in the 4 to 11 age group, teacher- and parent-identified conduct disorder and hyperactivity varied differentially with teachers evidencing higher prevalence rates in their identification. There was, however, agreement between teacher and parent ratings as to the elevated prevalence of both externalizing disorders in the male population sample. When internalizing emotional disorders were considered, it was found that parents identified the females more often than the males, the reverse of the teacher identification rates (Offord et al., 1989).

Again there were differential rates of identification in the 12 to 16 year age group. In this group, a youth self-report form and parent checklist was completed. It was found the youth-identified higher prevalence rates of conduct disorder among males and higher prevalence rates of emotional disorders and somatization among females than parent-identified cases. Both parents and youth-identified conduct disorder as being more common in males, with emotional disorders and somatization more common in females for the same age group (Offord et al., 1989).

When the patterns of correlates were examined, it was also found to vary among informants and the disorder identified. For example, the relationship between low income, parent arrested, and age 12-16 years and parent-identified conduct disorder was significant (Offord et al., 1989). Conversely, a
significant relationship did not exist in the case of parent-identified hyperactivity and low income, but did exist for family dysfunction and failed a grade (Offord et al.). For emotional disorders identified by the parent, family dysfunction, parent treated for nerves, and chronic medical illness were significantly related (Offord et al.). Finally for parent-identified somatization, family dysfunction and chronic medical illness were significant (Offord et al.). For teacher/youth-identified conduct disorder, family dysfunction, being male, and failing a grade were significantly related (Offord et al.). For hyperactivity identified by the teacher or youth, medical illness, low income, family dysfunction, and being male were significantly related (Offord et al.). Furthermore, for teacher/youth-identified emotional disorder, urban residence and family dysfunction were significantly related whereas for teacher/youth-identified somatization, only family dysfunction was significantly related (Offord et al.). As well, low income was strongly related to teacher-identified conduct disorder in the 4 to 11 age group, whereas it was not in parent- and youth-identified conduct disorder (Offord et al.).

Although familial dysfunction continued to have a significant relationship between individual disorders, it should be noted for both the disorder and correlate familial dysfunction, parental identification was necessary. Because the parent was identifying the disorder, and in this case the correlate family dysfunction, it would not be unexpected to find concurrence or a positive relationship to exist between the disorder and the correlate. Mitigating this finding is the fact family dysfunction continued to be highly correlated with individual disorders, regardless of informant.

Further to the issue of interrater agreement is another aspect of the OCHS study conducted by Sanford, Offord, Boyle, Peace, and Racine (1992) on social and school impairments. The purpose of Sanford et al.'s research was to
determine the relationship between the four psychiatric disorders previously outlined and social and school impairments. Social and school impairments were defined "as a nonphysical limitation in functioning in a usual social role or relationship" (Sanford et al., p. 60). Impairment measures included: difficulties in getting along with peers, teachers, and family; poor school work, student performance, and below grade level functioning (Sanford et al.). According to Sanford et al., the findings indicated that: children deemed as disordered were also more likely to be identified as impaired by all informants; parent-identified disorder and parent-identified impairment were more highly correlated than teacher-identified impairment and parent-identified disorder; teacher-identified impairment and teacher-identified disorder demonstrated the highest correlation; overall ratings of impairment among parents was significantly lower than teacher or youth ratings; the relationship between youth-identified disorder and impairment was the lowest; and there was little agreement among informants as to whom was impaired.

Subsequently, Sanford et al. (1992) concluded it would be inappropriate to base a community wide epidemiology study solely on parent reports; rather it is believed a teacher has the most uniform view of the child, although variances in informant rating of the prevalence of specific disorders have already been demonstrated (Offord et al., 1989). The limitations of the study, as it relates to variances between informants, is the lack of data differentiating mother and father responses and lack of self-report measures in the under 12 year old age group due to the unreliability of the replies. As to why youths would identify themselves more often as disordered than either their parents or teachers is probably due to the more discriminating perception youth have of themselves compared with to the nonspecific view parents and teachers have of the same youth. It was also found children identified as disordered were more
symptomatic when identified as impaired either socially or scholastically than those children who were disordered but not identified as impaired (Sanford et al.).

2.2.4 Native American Child and Adolescent Mental Health

As mentioned before, there is a lack of epidemiological data as it relates to Aboriginal children and adolescents in Canada. To partially alleviate this concern, a review of a study undertaken in the United States on the mental and social health of American Indian children and adolescents was conducted. It should be noted that there are obvious similarities between the socio-economic demographics of the American Aboriginal population and the Canadian Aboriginal population and that cultural boundaries are not the same as national boarders. Furthermore, when indicators of mental and social health are explored, elevated prevalence rates are found to exist in the American Aboriginal population, like their Canadian counterparts.

Although the American study focused on Aboriginal children and youth residing in the United States, the only participants were Native American youth in grades 7 to 12 (Blum, Harmon, Harris, Bergeisen, & Resnick, 1992). Even though the sample is not representative of the Native American child and youth population, it would not be surprising to find prevalence rates which confirm the finding that Indian adolescents are approximately at five times greater risk for emotional disorder in comparison to the same age American population (Beiser & Attneave, 1982; LaFromboise, 1988). Finally, the instrument used to collect the data in the American survey is a revised version of the Adolescent Health Survey, with 162 items addressing dimensions of health.
2.2.4.1 Statistical overview

Having recognized the limitations of the survey, it will be necessary to analyze the statistical trends to see if similar indicators of mental health are consistent across national boundaries. Like their Canadian counterparts, American Indians have: higher infant mortality rates at 62.7 deaths per 1,000 live births compared with the U.S. average of 10.1 deaths per 1,000 live births; mortality rates among 1 to 14 year olds which are 1.8 times the U.S. average, with accidental deaths the leading cause of death at 27%; a higher suicide rate of 14.5 per 100,000 compared with the U.S. average of 11.4 per 100,000; a combined life expectancy for both sexes at 71.1 years of age which is 3.3 years less than for the U.S. white population; a younger population with the proportion of the population represented by 15 year olds or less at 32% compared with 23% for the national average; a declining elderly proportion of the population, represented by those who are 64 years of age or older, at 5%, compared with the U.S. average of 11%; over 28.2% of their population living below the poverty level compared with 12.4% for the total U.S. population; 13% of their labour force unemployed, compared with the U.S. average of 6.5%; lower levels of education with 55.4% graduating from high school compared with the U.S. average of 66.5% (Indian Health Service, 1992).

It is clear from an examination of the socio-economic demographics and indicators of social and mental collected by the Indian Health Centre that American Indians find themselves in a less advantageous situation than the American population as whole. Even though the rates of incidence and the actual percentages vary, it is clear that similarities between the social conditions facing American and Canadian Indians obscure national identity and lend commonality to the social and cultural milieu of Native North Americans.
2.2.4.2 American Indian Health Survey

Within the socio-economic and cultural milieu described, the American Indian-Alaskan Native youth health survey was conducted in 1989 on American Indian teenagers. The purpose of the study was to "assess risk behaviors, health problems, worries and concerns and resiliency-promoting factors among American Indian-Alaskan Native adolescents" (Blum et al., 1992. p.1637). With these objectives in mind, the survey was administered to nonurban schools encompassing eight Indian Health centres to a total sample population of 13,454 American Aboriginal youth in grades 7 to 12. The categories the study explored were the school environment, physical health, abuse, emotional health, and sexual behaviours. It was found that like mainstream American youth, the majority of Aboriginal American youth are not faced with significant health risks, enjoy school, don't report high rates of substance abuse, are not suicidal, and do not report high levels of abuse (Blum et al.).

What is significant about the results of the survey, as administered to this special population, is while the majority of the youth and adolescents surveyed are not at-risk, a sizable portion are at-risk, and this portion is greater than the U.S. national average. Higher rates of emotional distress are evident among the at-risk group where there is a growing sense of hopelessness, a general perception of poor health among those who are deemed at-risk, and an increase in drug and alcohol consumption among Aboriginal males in the survey group (Blum et al., 1992). Regarding the limitations of the study, Blum et al. state the estimations provided are conservative at best, as the sample population was drawn from a school based setting where those who are non-attenders, and perhaps most at-risk, are not represented. As well, the sample population did not include urban areas or rural schools where the Aboriginal population is below fifty percent (Blum et al.).
In order to address these problems, Blum et al. (1992) suggest the development of culturally appropriate health promotion efforts within the context of community development. Thus according to Blum et al.:

Culturally appropriate not only refers to cultural considerations that emanate from Indian-white differences, but also variations in health concerns and health promotion strategies at the tribal level. Strategies that build on the strengths of community identity and culture are more likely to succeed than those imposed externally. (p. 1643)

In a similar vein, the current state of American Indian mental and social health conditions has led LaFromboise (1988) to conclude the causes of elevated prevalence rates in American Aboriginal populations are stress related due to the forced acculturation of American Indian people resulting in the unsatisfactory adjustment to the social psychological conditions present. Thus according to LaFromboise, research on Aboriginal American populations needs to redress:

...[the] severe imbalance in favour of studies that focus on pathological disorders of American Indians to the neglect of investigations of milder transient problems and of research on familial or sociocultural antecedents of psychopathology. The most glaring gap, however, is the failure to examine the effective strategies currently employed by American Indians for coping with numerous stressors. (p. 388)

Given the conclusions drawn by Blum et al. (1992) and LaFromboise (1988), it should be realized epidemiological studies in themselves are insufficient to explain psychopathology within a school age population if they do not concern themselves with other aspects of the child's development as it relates to their intellectual and academic growth. In this respect, the OCHS and the American Indian Health Survey are lacking, as the cognitive, intellectual, and academic functioning of the child were not considered in the studies' design. Although some very valuable information from the OCHS and the American Indian Health Survey was garnered, as it relates to prevalence of psychiatric disorders,
social/school impairments, social/mental health, and the correlates of the disorders, no information was provided about the relationship between the intellectual, cognitive, and academic functioning of children with diagnosed psychiatric disorders or behavioural and emotional disaffection. For the purposes of this study, it will be necessary to consult the literature to determine what if any relationship exists between the aforementioned factors and behavioural and emotional problems in children and adolescents. In so doing, a better understanding of the at-risk factors which predict failure in life and in school will be obtained.

2.3 Variables Affecting Behaviour in Children and Adolescents

Children and adolescents demonstrate many different kinds of behaviours. The magnitude and the chronicity of these behaviours differ from child to child. Many of the terms used to describe emotionally disturbed (EM) or behaviourally disordered (BD) children by educators are also used to describe students who are either learning disabled (LD) or mentally retarded (MR) (Ysseldyke & Algozzine, 1990). It is also generally agreed that students who are behaviourally or emotionally disordered score lower on intelligence tests and do not do as well academically, although their abilities do span the entire range (Hallahan & Kaufmann, 1994; Goldstein, 1986; Tramontana, Hooper, Curley, & Nardolillo, 1990; White, Moffitt, & Silva, 1989; Worland, Weeks, Janes, & Strock, 1984; Ysseldyke & Algozzine, 1990). In terms of the present study, it is important to understand what if any casual relationship exists between the previously described variables. Are students manifesting problem behaviours in the school more at risk for school or academic failure than their peers? If so, then the role of educational programming is paramount for the delivery of services to address the needs of the school age populations served.
2.3.1 Special Education Students and Delinquency

In a study conducted by Fink (1990), delinquency was defined as problem behaviours which were described as encompassing disciplinary infractions in school and serious delinquent activities. Disciplinary infractions in school included measures of tardiness, skipping class, not completing work, being unprepared for classes, fighting and stealing, plus delinquent activities which included criminal acts, drug involvement, and court contacts. Although Fink's definition of delinquency encompasses problem behaviours outside of the classroom and school setting, valuable insight into the predictive path of delinquency can be ascertained. Fink, in consulting the literature to determine what models or predictive paths have been developed, determined that three theories or models have been seen to dominate the research literature. These models are: the school failure theory, the susceptibility theory, and the differential treatment theory. The three models are described by Fink in accordance with her own research on a special education subject sample.

According to the susceptibility theory, the characteristics of the exceptionality, behavioural or emotional problem, cognitive deficit, or attention deficit leads directly to juvenile delinquency. In the school failure model, the characteristics of the learning disabled student lead to school failure which in turn results in juvenile delinquency. The differential treatment theory suggests the characteristics of the learning disabled child lead to school failure with the labelling of the child or adolescent by the criminal justice and/or educational systems resulting in discriminative responses and more punitive punishment being directed towards the child or adolescent (Fink, 1990).

Although Fink's (1990) research does not demonstrate the relative effects of the mechanisms hypothesized in the different models, the findings of Fink's study can be interpreted in relation to the school failure model. What Fink did
confirm is that special education students are more at risk for delinquency, as defined by problem behaviours, than non-special education students. Furthermore, learning disabled students reported less interpersonal competency and more negative peer influence, but did not yield higher scores on impulsivity than regular education students (Fink). Fink concluded the school failure model best describes her research because:

Analyses indicate significant differences between LD and non-disabled students on serious delinquent behavior and on in-school referrals for troublesome behavior. Both MR and LD students differed from non-special education students on measures of school punishment, personal and social development, social bonding, and school performance. (p. 71)

For the purposes of this study, Fink’s findings are significant. Because teachers view LD students as being more troublesome in the school, it would follow that teacher-completed ratings of student behaviour should be indicative of higher rates of in-school problem behaviours associated with the LD student.

2.3.2 Protective Effects of Intelligence on Delinquency

Further corroboration of Fink’s (1990) study is provided by White et al.’s (1989) research in which the protective effects of IQ, as measured by the Wechsler Intelligence Scale for Children-Revised edition (WISC-R; Wechsler, 1974), were explored in relation to high risk for juvenile delinquency. In White et al.’s (1989) study, delinquent status was assessed at age 13 using the child completed Self-Report Early Delinquency (SRED; Moffit & Silva, 1988), the parent’s report of socialized aggression on the Revised Problem Behavior Checklist (RPBC; Quay & Peterson, 1983), the teacher’s report on the antisocial subscale of Rutter’s Child Scales (Rutter, Tizard, & Whitmore, 1970), combined with police contacts which were used to corroborate and compliment the youth self-reports.

In this investigation, students were randomly selected and observed...
longitudinally and grouped according to the following four categories: group 1 were classified as high risk with a delinquent outcome; group 2 were classified as high risk with a non-delinquent outcome; group 3 were classified as low risk with a delinquent outcome; group 4 were classified as low risk with a non-delinquent outcome (White et al., 1989). Children's antisocial behaviour was rated by both teachers and parents at 5 years of age, with high-risk students determined through the use of local norms, meaning the top third of the distribution for their respective gender (White et al.). Delinquency and its ensuing chronicity, "was defined as continuous involvement in delinquent behavior across ages 13 and 15" (White et al., p. 720). As a result of White et al.'s research to test the replicability of the protective effect of IQ against future criminality, it was found:

...in both low-risk and high-risk groups of girls and boys, an average or better IQ is associated with failure to demonstrate relatively serious and stable delinquent behavior in adolescence....Although some support existed for the hypothesis that delinquent girls would have significantly lower IQs than non-delinquent girls, it did not appear that the delinquency main effect was as marked in girls as it was in boys. One possibility is that girls may be generally more intellectually resilient to deviance (e.g., they have fewer learning disabilities), but other factors such as family disadvantage or discord may be more important for girl's delinquency. (p. 723)

The protective effect of IQ is apparent in both low-risk and high-risk children in that an IQ which is average or above average is not associated with serious and stable delinquent behaviour in adulthood, with a very high IQ in boys, even those at-risk, helping them avoid becoming delinquent and experiencing failure in life or at school (White et al.). However, White et al. reach an important conclusion regarding future research on delinquency and intelligence as it relates to females, in that familial factors, like family disadvantage and/or discord, may indeed prove to be better predictors of deviant behaviour than intelligence among female children and adolescents.
2.3.3 Familial Processes

There is left little doubt, as evidenced in current research, that the family is the primary socialization agent for children from 3 to 5 years of age (Snyder & Huntley, 1990). According to Patterson, Capaldi, and Bank (1991), children learn antisocial acts through the family prior to contact with the deviant peer group with antisocial behaviours including noncompliance, physical and verbal aggression, lying, truancy, stealing, setting fires and running away from home. Furthermore, it is argued the delinquent peer group’s emergence during preadolescence does not preclude antisocial behaviour in early adolescence (Patterson et al.). It is also known that processes leading to antisocial behaviour in early childhood can continue to operate into adolescence and late adulthood (Snyder & Huntley).

Because of this, the family is the primary agent in coercive training. In these dysfunctional families, it is usually poor parental discipline practices that lead to the development of noncompliance and antisocial behaviour in the child (Patterson et al., 1991). As the child is socialized in this type of environment, it has been found the antisocial behaviours of the child begin to escalate and move from noncompliance to higher amplitude behaviours like hitting and temper tantrums (Patterson et al.). But not all children develop antisocial behaviour and there are a number of familial factors which have been identified as causal in the development of coercive behaviour in the child (Snyder & Huntley, 1990):

Early development of antisocial behavior primarily occurs in family interaction. A number of converging factors interfere with family interactional processes requisite to the development of self-regulation and cognitive and social skills: difficult child temperament, unskilled/irritable parents, socio-economic disadvantage, parental stress and marital discord. Although not all antisocial children go on to become antisocial adolescents, the products of this early training (parental and peer rejection, school failure, association with antisocial peers) put children at risk for a continued drift into deviance. (p. 205)
Although familial processes are implicated in the development of antisocial behavior, they alone are not sufficient for its advancement. Moreover, there is evidence the factors involved in the development and chronicity of antisocial behavior, in adolescence and childhood, are not necessarily the same. Recently, Patterson et al. (1991) have advanced the early starter model which correlates childhood coercive training practices, initiated in the family, with later social and academic failure resulting in delinquency and possible adult criminal behaviour. According to Patterson et al., as the child develops, it is assumed that coercive exchanges between the parent and child are the key ingredient in setting the early starter process in motion. Once this begins, it seems to move through a sequence of three stages: a) the child shows clearly identifiable antisocial behaviours; b) the child is rejected by the normal peer group; c) the child fails in school (Patterson et al.).

Supporting Patterson et al. ’s (1991) findings is longitudinal research conducted by Farrington (1991) on childhood aggression and later adult violence. Part of Farrington’s study relied on teacher questionnaires and it was found that those students, 8 and 10 years of age, defined as aggressive by their teachers, were so because they were difficult to discipline. However, the older students, 12 and 14 years of age, defined as aggressive by their teachers, were so because they were disobedient, rough at play, undisciplined, quarrelsome, and aggressive (Farrington). This led Farrington to conclude that aggression as simply measured by teacher observation when the child is 8 to 10 years of age is not a direct measure. According to Farrington:

“...the causes of aggression and violence must be essentially the same as the causes of persistent and extreme antisocial, delinquent, and criminal behaviour. A great deal is known about these causes, which certainly include economic deprivation, family criminality, poor parental child-rearing behaviour, and school failure...[Moreover], violent and nonviolent frequent offenders tended to be drawn from low-income large sized families, in poor housing; that they tended to have convicted parents and delinquent siblings; and that they were exposed to harsh parental
 discipline, parental disharmony, and separations from parents; and that they had low intelligence [non-verbal IQ assessed at 8-10 years of age], high impulsivity, poor concentration, and high daring. (p. 25)

As well, Farrington's findings confirm the significance of non-verbal reasoning as a variable which correlates with future antisocial, delinquent, and criminal behaviour. For those adolescents not identified as antisocial during elementary grades, Patterson et al. found that they tended not to develop into chronic antisocial adult offenders due to higher levels of social skills. Nevertheless, these adolescents can still develop antisocial behaviour, and even though familial processes were not coercive during childhood, parental stressors, later in life, can affect the development of antisocial behaviour during adolescence (Patterson et al.). Moreover, Snyder and Huntley (1990) contend that:

Changes in marital, social, vocational and emotional functioning or transient stressors that constitute the parents' own developmental context, may diminish the consistency and skill with which they monitor and discipline their children, and constructively engage them in problem solving and mutually satisfying activities. (p. 209)

Subsequently, it is recommended the earlier remediation occur for the late starter delinquent, the greater likelihood of success (Snyder & Huntley, 1990). Likewise, it has been suggested early starter delinquents be also targeted in adolescence for remediation so as to reduce the possibility of becoming chronic offenders (Patterson et al., 1991). Clearly, familial processes are causal in the development of antisocial behaviour in childhood and adolescence and are an important component in assessment and intervention programs. What needs to be determined then is how assessment can delineate those elements deemed as causal, which in turn, can be linked to the appropriate intervention program.
2.3.4 Familial Factors, School Behaviour, and Learning Disabled Students

Toro, Weissberg, Guare, and Liebenstein (1990) conducted a research project which was a comparative study of LD children and children without learning disabilities (NLD) along the variables of social problem solving skill, school behaviour, and family background. Social problem solving was determined through the Open Middle Interview (OMI; Polifka, Weissberg, Geston, Flores de Apodaca, & Picolli, 1988) scored along the factors of alternative solutions, solution variants, and irrelevant responses. School behaviour was determined through the Child Behavior Rating Scale (CRBS; Weissberg et al., 1981) which yielded factor scores on acting out problems, shy-anxious problems, learning problems, frustration tolerance, adaptive assertiveness, peer sociability, and both overall and global adjustment (Toro et al., 1990). Limitations of the study as recognized by Toro et al. relate to the selection of LD students, as defined by school placement, and the use of teacher ratings for the determination of school behaviour and family background. Toro et al. suggested teachers, who were not blind to student's status (LD or NLD), might have provided responses based on assumptions regarding the LD's familial background.

However, what the research results do indicate is that deficits in the cognitive and academic domain as well as social and behavioural areas was in part due to inadequacies in the home environment (Toro et al., 1990). Specifically, economic difficulties, lack of educational stimulation, and familial problems were all significantly related to LD students, with LD students not being necessarily over disruptive but rather deficient in less visible social skills (Toro et al.). It is clear from Toro et al's findings greater attention needs to be placed on the role of the family. Where previous research seems to indicate that social and behavioural differences are the result of cognitive deficits, "it is also
possible that the cognitive deficits could be the result of the social deficits, or of poor early environmental conditions” (Toro et al., p. 118).

2.3.5 Socio-economic Status, Behaviour, and Intelligence

Further to the issue of environmental effects and their relation to behaviour is a British study conducted by Kniveton (1987) on imitative misbehaviour in the classroom. In this study, imitative behaviour was determined through behavioural observations of students who had previously viewed a video tape of a peer model displaying mischievous and naughty behaviour. According to Kniveton:

The peer model was shown to throw and kick and stamp on a pile of paper cups; to hit some balloons and then stamp on them bursting a number of them; to punch a large toy panda and throw it at the wall; to shoot a gun with ‘bullets’ at a picture of a man on the wall; and to knead Playplex viciously. Basically the ‘misbehaviour’ shown was of the type which could be expected of a boy being naughty during unsupervised play periods. (p. 164)

In Kniveton’s study, it was found that students of low socio-economic status (SES) were more likely to imitate aggressive behaviour after viewing the videotape of the peer model than those students of middle income. The students were also tested for intelligence using the Wechsler Intelligence Scale for Children (WISC; Wechsler, 1965a) and no significant relationship was found to exist between imitative misbehaviour and intelligence (Kniveton). This study then does not discount the relationship between intelligence and classroom behaviour, but rather states that intelligence is not significantly related to imitative misbehaviour, while low SES is strongly related. A possible explanation as to why SES is significantly related to imitative misbehaviour is the subordinate status afforded the low SES child in the classroom by peers of higher SES; hence the low SES child acts out to gain attention and win favour among their classmates.
Low SES has also been confirmed as significantly impacting the development and subsequent intelligence and behaviour of students (Dumaret, 1985). A study conducted by Dumaret involved siblings raised in contrasting environments due to adoption and examined both the long and medium term effects of social environment on intelligence and behaviour. The instruments used to collect the data on intelligence included the Collective Scale of Intellectual Level (ECNI; INED, 1973) and the WISC. Behaviour was determined through the transcribing of all school records, the behaviour “B” scale developed by Rutter (1967), and a questionnaire designed by the research team to measure school adjustment and behaviours. The questionnaire included factor scores for school failure, school failure and serious problems, school failure at the third primary level, gifted, and well adjusted (Dumaret). The results of the study led Dumaret to conclude:

[an] increase in IQ and diminution of scholastic failures for the adopted children, diminution of IQ and increase in scholastic failure for the others-show that environment has important effects. Adoption played a dynamic role, permitting these children to develop their intellectual resources thanks to a favourable social, cultural and familial environment....

[However], the accumulation for failures is the greatest for children raised in a poor environment under conditions which have led to their being abandoned to institutions or foster homes. (p. 573)

Dumaret’s findings underscores the role in which environment can affect children and youth placing them at-risk. To further understand the relationship between SES, intelligence, academic achievement, school behaviour, and psychopathological risk, Worland et al.’s (1984) path analysis will be discussed as a model was delineated to explain the degree of association between the aforementioned variables.

In Worland et al.’s (1984) inquiry, the measures used to determine intelligence were either the WISC-R or the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955). Classroom behaviour was assessed by the Pupil
Rating Form (PRF; Watt, Grubb, & Erlenmeyer-Kimling, 1982) composed of twenty eight items which provide factor scores for scholastic motivation, extroversion, harmony, and emotional stability. Academic achievement was assessed using the Wide Range Achievement Test (WRAT; Jastak & Jastak, 1978). The sample was chosen from a longitudinal study being conducted by the authors and involved children whose mean grade was between Grades 7 and 8 and defined as low, moderate, or high risk status for psychopathology. In path analysis, a causal model cannot be proved, rather a model is specified in mathematical terms and then the data are used to either verify or dispute the model's design. In so doing Worland et al. developed:

"...a model in which the casual relationships were from intelligence, through academic achievement, to classroom behavior...The direction of the relationship suggests that the behavior these children exhibited in school was the result of academic achievement rather than a cause." (p. 449)

When SES and risk of psychopathology, as determined by parental psychopathology, were factored in, it was found "both SES and Risk were correlated independent variables that simultaneously and similarly affected intelligence and (through intelligence) the other variables [academic achievement and school behaviour]" (Worland et al., p. 448). It should be noted, that for the purposes of our discussion, classroom behaviour in the Grade 7 to 8 sample described is an effect of academic achievement rather than the cause.

2.3.6 Summary

What demographics, mental health indicators, and epidemiological studies do is provide a descriptive picture of the society and/or population under study. Research uncovering the relationships between IQ, behaviour, academic performance, and SES lend support to predictive models which articulate what places children and adolescents at-risk. However, both these type of studies are
somewhat limited in their value, unless combined with the theoretical underpinnings of psychopathology across cultures which can assist the caregiver, clinician, and educator in delineating the cultural factors which interact not in isolation, but in concert with the social, economic, behavioural, intellectual, and cognitive indicators outlined. The review of literature then, will examine issues pertaining to psychopathology across cultures in an attempt to explore the variances in culture which might complicate the assessment process.

2.4 Psychopathology Across Cultures

It is known that cultures vary worldwide and every culture is composed of beliefs, values, attitudes, and behaviours, to a greater or lesser degree, intrinsic to itself (Ramirez & Castaneda, 1974). When discussing culture, according to Berry, Poortinga, Segall, and Dasen (1992), it is important to realize that culture is not civilization, as all groups of people have culture and therefore, the civilized, primitive debate is one which is to be avoided; secondly, culture is not ‘high culture’ referring only to the arts, but rather it is all products of human evolution; thirdly, culture is not to be equated with society, as society refers to people whereas culture refers to a way of life; and finally, there is a distinction to be made between explicit culture, the observable behaviours and products found in a group, and implicit culture, which “refers to the organizing principles that are inferred to lie behind these regularities on the basis of consistent patterns of explicit culture” (p. 168).

When examining cognition and cognitive processes and how they intertwine with personality, it should be noted the behaviours manifested by an individual are part of a triadic relationship between an individual’s cognition in development, their behaviours, and the environment (Kaufmann & Kneedler,
1981). Seen in this context, the influence of culture on the normative behaviour and cognitions of a group can be distinct to the society in which they occur, depending on the forces operating within and between cultures in contact. As if the issue of assessment was not complex enough, it should be realized that fundamental to the discussion surrounding culture and the assessment of disorders is one of definition. Variations in the expression of a disorder or behaviour can be culturally induced, specific to the culture in question, or a result of acculturation leading to psychological change.

2.4.1 Culture Bound Syndromes

According to Simons and Hughes (1993), Greenlandic Inuit have a syndrome specific to their culture labelled as kayak angst, which is described as an intense fear of capsizing and drowning on the ocean while in a kayak. Berry, Poortinga et al. (1992) use the term culture bound syndromes to describe disorders which are culturally induced, like kayak angst:

The hallmark of all these syndromes is their exotic (to Western observers) qualities; each is usually given an interpretation within terms of their own culture. The issue for cultural psychiatry is whether they are also comprehensible within a universal framework of psychopathology. (p. 364)

The question researchers are now exploring is the extent to which culture bound syndromes are unique expressions of a syndrome specific to a culture, and the degree to which the expression of a culture bound syndrome is not a local expression of a particular universal psychosis but rather an indigenous expression of a more commonly understood psychological principle. Of course the limiting aspect of such research is the degree to which the evaluation occurs within the framework of Western psychiatric nosology, jeopardizing the ecological validity of the study.
2.4.2 Psychological Change and Acculturation

Psychological change in the behaviour of the individual and the group cannot be understood unless the effects of acculturation are also realized (Berry, Poortinga et al., 1992). Within the context of First Nations, it is important to remember that the intensity of the cultural confrontation was usually dictated by outside forces (Adams, 1989; Eccles, 1988; Kirmayer, 1994b). There are essentially six factors involved in how acculturation might affect the group: (a) environmental alterations, including urbanization, relocation, and pollution; (b) biological changes in diet and disease; (c) political structure changes, in terms of dominant and subordinate power structures; (d) changes in the economic system, including subsistence and labour market economies; (e) cultural changes referring to religion, language, way of life, and institutions; and (f) social structure changes, meaning between and within group changes (Berry, Poortinga et al.; Kirmayer).

Factors identified as influencing psychological change as a function of acculturation include; perception and cognition, personality, identity, attitudes, and acculturative stress (Berry, 1980). Thus psychological acculturation is the result of individual changes due to contact with another culture and occurs when one participates in the acculturation process (Berry, Poortinga et al., 1992). The distinction between group acculturation and individual psychological change is an important one for two reasons. Changes which occur at the group level in a population can result in economic, social, or political change and effect the individual in terms of their values, attitudes, and beliefs (Berry, Poortinga et al.). Secondly, because not everyone reacts in the same way to the processes acting on the larger group or population, individual psychologies need to be considered.

According to Berry (1980), the degree to which the individual will experience
psychological change is a function of the degree of acculturation which has taken place. For our purposes, issues relating to personality, attitudes, and acculturative stress are relevant. In terms of personality, identity, and attitudes, a crisis or conflict arises within the individual which causes one to reach a critical point during the medium or transitional phase in acculturation, causing a shift in personality, identity, and attitude. Consequently, the individual will either return to their traditional identity, rejecting the attitudes of the dominant culture and maintaining a personality which is quasi-traditional in composition (Berry; Berry, Poortinga et al., 1992). Similarly, an individual may become assimilated, rejecting the attitudes of their traditional culture, developing a new cultural identity and thereby, taking on a personality which is similar to the personality traits reinforced in the new culture (Berry; Berry, Poortinga et al.).

2.4.3 Acculturative Stress

Behaviour change as a result of acculturation can either result in behavioural shifts or acculturative stress (Berry, Poortinga et al., 1992). When behavioural shifts occur, there is qualitative continuity in the change. Within the parameters of behavioural shifts are changes in personality, identity, and attitudes. Acculturative stress is more debilitative and is similar in notion to culture shock and cultural disintegration (Berry, 1980; McShane & Berry, 1988; Berry, Poortinga et al.). Acculturative stress has also become the term used to describe behaviours which are pathological and disruptive in nature. Thus according to Berry, Poortinga et al.:

... [acculturative stress] refers to new phenomena that often accompany acculturation, which appear to result from psychological conflict and social disintegration such as an increase in homicide, spouse abuse, or a decline in mental health status; this type of consequence has been termed acculturative stress and is characterized by a qualitative change in the life of an individual or community. Once again it is possible to challenge the distinction; after all, homicide, aggression and neglect are present in most societies prior to acculturation, but we frequently
encounter new forms as well as new rates, such that rather than being regarded as deviant and negatively sanctioned in the group they become common. (p. 280)

Factors identified as affecting acculturative stress are the mode of acculturation, phase of acculturation, nature of the larger society, characteristics of the larger group, and characteristics of the acculturating individual (Berry, Kim, Minde, & Mok, 1987). Because the degree of acculturating experience can vary among individuals, with the number of stressors varying from a few to many, the degree of acculturative stress experienced can either be high or low (Berry, Poortinga et al., 1992). It is important to realize then that not always do negative effects in terms of disorganization and disintegration occur during acculturation; rather this process is determined by the quality and features of the relationship between the cultures in question (Berry, Wintrob, Sindell, & Mawhinney, 1982).

Nevertheless, nomadic people, who were hunters and gatherers, such as Aboriginal people in pre contact North America, usually suffered more negative consequences as a result of acculturation than those who were sedentary prior to contact (Berry, Poortinga et al., 1992). Changes in status, relative to the new entry status one receives when being acculturated, and one's age and gender have also been documented as factors affecting the degree of acculturative stress one will experience (Berry, Poortinga et al.). As well, since psychological variables may effect the mental health of individuals experiencing acculturation, it is necessary to determine prior intercultural knowledge, whether previous contact was voluntary or not and the initial attitudes of those about to become involved in the process towards acculturation (Berry, Poortinga et al.).
2.4.4 Somatization and Social Response to Distress

Among indigenous cultures, there is a tendency for disorders to be expressed in somatic presentations (Kirmayer, 1989). In Westermeyer's (1993) opinion, this is probably so because some cultures endorse somatic presentations and a patient may be reluctant to trust a clinician with personal information other than somatic symptomatology, especially if the assessment is not occurring in the culture of the patient.

But somatization is not just common to indigenous cultures. The DSM IV (American Psychiatric Association, 1994) has a specific classification for a syndrome described as somatization, that is designated as exhibiting symptoms concerning bodily affect. There is also evidence to suggest that the presentation of somatic symptoms occurs more frequently in indigenous cultures when anxiety and depression co-occur (Kirmayer, 1989).

During social change, acculturative stress occurs and has been used "as a general term to refer to those individual states and behaviours that are mildly pathological and disruptive, including those problems of mental health and psychosomatic symptoms" (Berry, 1980, p. 261). Kirmayer (1989) further explains that more traditional cultures have a wholistic world view where the dualistic separation of mind and body, common to Western civilization, has not occurred. Western civilization's concept of the self is one of individuality and autonomy, in which independence and separateness are sought (Berry, Poortinga et al., 1992). As a result, traditional cultural values have been supplanted in favour of a dualistic approach to one's concept of self, which discriminates between disorders in terms of bodily and mental affect. Rather than attempt to explain distress as an interpersonal or intrapsychic conflict, traditional cultures will refer to the same distress in terms of bodily functions (Kirmayer).
2.4.5 Deviance

Labelling theory argues, in both its weak and strong forms, that the presentation of distress in an indigenous culture can either be exacerbated or mitigated through the labelling of deviance. Subsequently, it is recognized that there are three processes which can be studied independently but should be regarded as representative of a whole when studying deviance. The determinants, as to whether or not an expression of distress will be labelled deviant, are dependent on the cultural norms of the society, the size and integration apparent within the society, and the degree to which stigmatization will or will not occur (Kirmayer, 1989).

2.4.5.1 Culturally labelled deviance

Having alluded to the concept of culturally inappropriate behaviour being labelled deviant, it is now time to examine deviancy and its relationship to culture. Simply stated, distress, in order to be labelled deviant and therefore, ascribed a descriptive category within a culture, has to violate the normative standards of the culture's world view (Kirmayer, 1989). As well, clinical diagnosis and intervention surrounding a particular distress is reliant on the culture's implicit recognition that a disorder exists (Kirmayer; Robin & Spires, 1983). A disorder would not be able to present itself if there were not a culturally defined label for it and, therefore, if it is not labelled or recognized from within a culture, any attempt to assess or remedy the disorder might meet with frustration and failure due to the lack of culturally relevant definitional criteria.
2.4.5.2 Societal integration and deviance

The second issue raised as having a significant impact on the labelling of distress has to do with the degree of integration characteristic in any culture. Kirmayer (1989) claims that social cohesiveness in small scale societies translates itself into a fairly egalitarian world view where nominal deviance is accepted, whereas gross deviant behaviour is mitigated due to the high levels of cooperation in such societies resulting in strong pressures on the individual to conform. Brody (1987) in his discussion of northern arctic hunting culture's mechanisms of authority addresses the issue of social control and the presentation of deviant behaviour rather succinctly:

Part of the answer to this question [of the presentation of deviance] lies with the hunter's mobility. Individuals or groups that cause trouble are avoided. This means that they will find themselves alone in a world where survival depends on a network of interdependence. The threat hanging over the head of all trouble-makers, therefore, is that their friends and relations will move away from them. In fact, northern hunting peoples are tolerant and generous to their fellows. A man who refuses to work, for example, will be fed: the sharing of meat is unconditional. But persons whose refusal to work begins to constitute a liability, and so jeopardizes others' success, are left to their own devices. In this way, the hunter's preparedness to shift camp establishes a strong deterrent as well as an actual, if indirect reprisal. By this mechanism deviance is rendered uncommon and, at the same time, can be easily dealt with. (p. 125)

However, there has been rapid acculturation in the arctic, and as a result, the traditional mechanisms of social control are no longer as viable. In their place, the Canadian criminal justice system has become the dominant means of social control by which deviant behaviour is defined and dealt with. This does not mean the higher rates of violence, incarceration, homicide, suicide, and substance abuse (Report of the Steering Committee Medical Services Branch, 1991) are solely attributable to the lack of traditional social control, but rather that it is one of many factors which contribute to the current malaise facing Aboriginal communities in the Canada.
2.4.5.3 Stigmatization

The third issue regarding the presentation of deviant behaviour in the cross-cultural context has to do with stigmatization. When behaviour is labelled as deviant, negative effects in the form of stigmatization become present. Further to this discussion, stigmatization can manifest itself in various ways including job loss, social isolation, and loss of social status, resulting in an exacerbation of the emotional disorder in question and reduced prognosis for cure (Kirmayer, 1989). Thompson, Walker, and Silk-Walker (1993) raise the issue of stigmatization as it relates to American Indians and Alaska Natives, and they are careful to caution about making generalizations which are applicable to all Aboriginal populations regarding its prevalence. According to Thompson et al., the extent to which stigmatization presents itself in Aboriginal cultures is dependent on the following casual factors: the distinction made in the culture between mental and physical disorders (somatization); the degree to which acculturation and the subsequent learning of the dominant belief system has taken place; and the degree to which the society has urbanized. Regardless of what casual factors are attributable to the stigmatization of deviant behaviour, it is Thompson et al.’s thesis that the clinician needs to have knowledge of the patient’s culture, the patient’s attitude towards mental illness, and the patient’s attitude towards the delivery of mental health services in his/her community in order for assessment to be culturally fair. Similarly, it is Kirmayer’s contention that the culturally induced concept of the self is the mediating factor involved in stigmatization:

Where the person is conceived of in terms of the family or larger social unit, rather than an isolated individual, the stigma of illness affects the entire unit and demands a collective response to reintegrate or expel the deviant member. Where the person is defined in terms of an autonomous rationale agency, as in the West, stigma may be less a shared social problem and various forms of marginality, short of complete extrusion, can evolve. It is in this context that biomedicine has developed diagnosis for deviant behaviour.... (p. 334)
Therefore, in order to define a disorder, it is necessary to view the patient in terms of how the culture defines the concept of self and the subsequent degree to which the disorder is suppressed, punished, or made not plausible by the culture in question (Kirmayer).

2.4.6 Schizophrenia

It is generally agreed that there is some casual evidence implicating a relationship between schizophrenia and heredity. It has also been recognized though, that schizophrenia can be induced by cultural experiences. Likewise, the risk of developing schizophrenia is exacerbated through cultural factors such as the processing of information, complexity of messages received, and delineation of ambiguity (Kirmayer, 1989). Culture is implicated in the definition, recognition, acceptance, and symptomatology of the disorder, including its course and prognosis (Kirmayer). Kirmayer purposes the factors effecting the course and prognosis of schizophrenia vary across cultures and where the disorder is not stigmatized, support mechanisms within the society and family tend to mitigate the disorder and allow a greater prognosis for cure, while “cultures that ascribe moral blame to the psychotic person with no opportunity for redress, may promote chronic disability” (p. 334).

However, caution should be exercised in ascribing schizophrenia as a universal disorder with prevalence rates and modes of expression culturally induced. This is because any and all cross-cultural research into the psychopathology of schizophrenia has been bound by Western psychiatric nosology and sampling techniques that have not been representative (Berry, Poortinga et al., 1992). Furthermore, according to the Report of the Steering Committee Medical Services Branch (1991):

It is generally suspected that a significant number of Aboriginal people are misdiagnosed for reasons such as a proneness to interpret cultural behaviour as schizophrenic symptomatology, or to miss a dual diagnosis.
This, together with long-term holding of Indian patients in psychiatric hospitals because no community care is available for them, contributes to a disproportionately high number of Indian patients in lengthy psychiatric hospitalization. (p. 12)

2.4.7 Depression

Depression has been the subject of a number of studies in cross-cultural psychopathology. It is known, that like schizophrenia, both family and societal response can either mitigate or exacerbate the disorder (Berry, Poortinga et al., 1992; Kirmayer, 1989; Marsella, 1980). As a result, when the epidemiology of depression is considered cross-culturally, prevalence rates have been found to vary. The research strategies used to uncover both treated and untreated prevalence rates, corresponding to the manifestation of depression within a culture include; culture bound syndromes, clinical diagnosis, surveys, factor analysis, matched samples, and matched diagnosis (Marsella). Research in objective versus subjective cultures has found that in objective cultures, which are characterized by an abstract language and individualization, depression is primarily affective and cognitive in form. On the other hand, cultures which are considered subjective, where language is metaphorical and living is communal, the manifestation of depression is primarily somatic in nature (Berry, Poortinga et al.). At the same time, Marsella concludes:

The more Westernized a culture, the more one can expect a picture that includes both somatic and psychological components. In contrast, depression in less Westernized cultures often does not involve psychological components. Among the major differences in depression between Westernized and many non-Westernized cultures are the absence of guilt and self-deprecation. Suicidal attempts and suicide ideation are also rare in many non-Western cultures. Given these differences, it is questionable whether Western depression can be considered a universal disorder. (p. 276)
2.5 Cross-Cultural Assessment

There is a growing movement among psychologists, caregivers, and educators in Canada today to develop culturally sensitive psychological instruments for the testing of minorities. This movement is partially fuelled by controversies in the United States surrounding ability and aptitude measurement. Some strategies have been suggested for improving cross cultural measurement in the behavioural and personality domains, as well as in the intelligence and aptitude domains. Research questions pertaining to the measurement of abilities and behaviour in disparate groups and whether a test measures the same “thing” in both groups have been guiding research (Irvine, 1985).

However, the field of assessment has been wrought with controversy. There are those who would advocate less use of formal assessment procedures and in the extreme, eliminate testing or quantitative measurement. If this were the case, subjective human judgment would prevail. From the other perspective, inappropriately norm referenced standardized testing is the guiding dogma. Between these two positions lies a middle ground supported by scientific research. This controversy has partially evolved because “scientific truths and the power to change people’s lives are uneasy bedfellows, and in the use of test results cohabitation becomes inevitable” (Irvine, 1985, p. 166). What Irvine advocates then is the need for greater cross cultural research in the field of testing so culturally fair assessment practices can be used with minority or culturally diverse groups.

The review of the literature then, will examine the field of cross cultural measurement. Research as it relates to cultural, linguistic, and ethnic minorities will be reviewed with specific reference to Aboriginal North Americans. Within this rubric, formal assessment practises will be discussed including the
ability/aptitude discrepancy debate and behavioural/personality measurement in Aboriginal populations. Concurrently, the efficacy of formal assessment procedures within cultural, linguistic, and ethnic minorities will be critiqued. From this body of knowledge, recommendations for best assessment practices with Aboriginal North Americans will be drawn incorporating both formal and informal assessment methods.

2.5.1 Formal Assessment

Research in cross cultural testing has evolved along three distinct paradigms. One direction research in testing has developed is construct referenced meaning. In construct referenced meaning, the degree to which cultural constructs pervade and are unique to a specific culture and the extent to which the environment has shaped individual personality and has had an effect on group psychology are studied.

The second area of research development in cross cultural testing relates to criterion referenced meaning. In criterion referenced meaning, the researcher or experimenter is trying to determine the extent to which a test made in one culture can be used with validity in another culture. This is especially relevant for intelligence testing as it questions the knowledge which is required of an individual to score well on a culturally biased test. The operationalization of a test and its use is the research question posited, and what one should be able to do is determine the cultural distance between groups and the degree of acculturation that has affected the individual or larger group being tested.

The third area of investigation that has influenced research in cross cultural testing has seen the development of tests within a specific culture for use only in that culture. This implies different tests are developed for different cultures and are specific to the culture in which they are developed. To this end, there have
been experimentations in behavioural testing in which translations of an
English language assessment instrument have been developed for use in a
culturally different linguistic group (Frontera-Benvenutti, 1991).

Research in personality assessment has been fraught with more difficulties
and contradictions than ability measurement. Irvine and Carroll (1980) make
this point in their discussion on testing and assessment across cultures:

There is as little, or as much, scientific support for the positive view
that personalities and cultures vary together as there is for asserting that
there are no co-varying differences in cognitive style or structure across
cultures, or educational levels. In fact, to hold the first position is even
more difficult, scientifically, than to hold the second, because theories,
and consequently methods of personality research, are as diverse as the
whole of psychology itself. Hence, although the quest for personality
assessment across cultures may not be fraught with all the social
opprobrium that greets assessment of abilities across cultures, it is even
more complicated in that many different theoretical strands intertwine in
the material presented in self-report tests and in other kinds of
personality assessment. The risk of social censure is smaller, but the risk
of scientific opprobrium is greater. (p. 226)

2.5.2 Emics and Etics

As has been alluded to, there are essentially two major research traditions
guiding cross-cultural psychology. The first intends to explore indigenous
psychological phenomena and the extent they are related to the culture in
question. The emphasis is on the singular culture and the cultural context of
psychological processes. The second major research tradition guiding cross-
cultural psychology, and perhaps the more common within the field of
psychology itself, is the attempt to understand patterns of behaviour and
relationships across cultures so as to delineate universal patterns of behaviour
or psychological processes. Pike (1967) was one of the first to articulate this
distinction and he did so by conceptualizing the two research paradigms as
follows:
It proves convenient—though partially arbitrary—to describe behavior from two different standpoints, which lead to results which shade into one another. The etic viewpoint studies behavior as from outside of a particular system, and as an initial approach to an alien system. The emic viewpoint results from studying behavior as from inside the system. (I coined the words etic and emic from the words phonetic and phonemic, following the conventional linguistic usage of these latter terms. The short terms are used in an analogous manner, but for more general purposes.) (p. 37)

In making the emic-etic distinction, Pike (1967) outlined a series of principles to explain their difference in relation to language and culture. The principles outlined by Pike, and paraphrased by Berry (1989), are: (a) the etic researcher examines all cultures and languages simultaneously, as opposed to the emic research whose singular focus is on a specific culture or linguistic group; (b) etic variables under study are discovered or known in advance, whereas emic classifications need to be discovered; (c) etic systems can be based and organized on a universal schema created by the researcher while emic systems are defined and/or discovered outside of the particular system or universe of the researcher; (d) etic descriptions are criteria formed external to the system while emic descriptions are based on views garnered from participants who can function in the system under study; (e) etic criteria can be absolute and are external in relation to the system under study while emic criteria are relative to the internal functioning of the system; (f) etic analyses are parts specific while emic analyses are more holistic; (g) in etic studies, significant differences are based on instrument measurements while in emic studies, variables are different when they elicit different responses; (h) and in the final presentation of data, etic analyses, which are the starting point, through redefinition, are gradually described as principles which are emic in nature.
2.5.2.1 The combined emic-etic approach

It is not argued that one approach is more favourable than the other when conducting cross-cultural research. Rather it should be remembered that both have benefits and limitations, and the whole emic-etic distinction is best viewed along a continuum. Rather than dichotomizing the distinction, and be 'blind in one eye', the emic/etic approach allows the researcher use of both eyes. Even so, psychology as a tradition attempts to explain psychological phenomena using generalization and a comparative approach. In contrast, the anthropology views the comparison of phenomena from different settings as a false enterprise. To resolve this debate, in order for cross-cultural comparisons to be valid, functional equivalence must be demonstrated. Berry (1989) summarizes the inherent discrepancy by concluding:

> When aspects of behaviour occurring in differing behavior settings are functionally equivalent, then a comparative descriptive framework, valid for both behaviour settings can be generated from an internal description of behavior within each setting. Only when both these conditions are met, may one attempt to use concepts and develop instruments to gauge behaviour within each setting. Any such attempt leads to further requirements that have to be satisfied: the instruments have to be conceptually equivalent in individuals in the two settings and the data obtained have to be metrically equivalent. (p. 726)

Although Berry uses behaviour to explain his point, it should be remembered that similar conclusions can be drawn surrounding the psychological constructs and processes which are tapped in the measurement of ability and achievement cross-culturally. In Figure 2.13, the operationalization of emics and etics are conceptualized. Unfortunately, precise operationalization of emic and etic terms is unlikely to occur as it would in the physical sciences, nevertheless, the guides to cross-cultural research, as they relate to equivalence and operationalizing emics and etics, provide a basis by which studies can be subject to both scrutiny and scientific discussion (Berry).
2.5.3 Psychometric Equivalence and Cross-Cultural Measurement Strategies

2.5.3.1 Direct comparison and crude translation

According to Hui and Triandis (1985), direct comparison and crude translation are probably the simplest and most popular methods for demonstrating equivalence in cross-cultural research. Simple comparisons between culturally different populations/samples administered the same instrument can be accomplished using t-tests or MANOVA. The underlying assumption is that the construct being measured exists and is operationalized the same way in both cultures. Furthermore, it is assumed that scalar equivalence is being met with the instrumentation, leading critics to question the legitimacy of assuming that all the assumptions made are being met.
2.5.3.2 Regression methods

Poortinga (1975) has used regression analysis to demonstrate scalar equivalence. Essentially, regression analysis undertakes to determine if the parameters of the criteria or construct being measured and scored are the same for the populations being studied. Thus if scalar equivalence is said to exist between two test scores, then the construct being measured must be related to an external criteria (Hui & Triandis, 1985).

2.5.3.3 Co-scoring methods

The underlying assumption made when attempting to demonstrate or improve equivalence using the co-scoring method is the presupposition that items, and subsequently factors, have conceptual or functional equivalence. It is argued that unless there is a strong theoretical basis for assuming the equivalence of a construct cross-culturally, then co-scoring should not be used as factors will always be evident, unless the variance in the data is negligible (Hui & Triandis, 1985).

2.5.3.4 Response pattern method

The response pattern method is advocated by Irvine and Carroll (1980) to determine if item equivalence in aptitude and ability testing exists. By ordering the correlated rankings of item difficulty, it is maintained that items which are more difficult for subjects in culture A, as opposed to subjects in culture B, are made evident. Although the response pattern method is suitable for demonstrating item equivalence, it does not prove or disprove that scalar equivalence exists. However, to extend the analysis beyond the realm of aptitude and achievement testing into behavioural or psychosocial measurement can be problematic (Hui & Triandis, 1985). According to Hui and Triandis:
the mean degree or frequency of endorsement of items (in personality or social psychological measurement) can be ordered for the same analysis. Unfortunately, there is no commonly held objective standard by which we can determine whether a correlation coefficient is sufficiently high so that item equivalence can be safely assumed. Moreover, the coefficient is only an indication of overall similarity in the relative endorsement frequency of each item. Therefore, it can be misleading if all items are higher or lower in the frequency of one culture than for another. (p.140)

2.5.3.5 Translation techniques

If there is a lack of item equivalence, then it is suggested that it may be corrected through the use of translation techniques. Presently, the translation methods offered are the back, committee, and decentering approaches (Hui & Triandis, 1985). The most common and frequently used translation method is the back technique, where the researcher translates the items, questions, or passages into his/her mother tongue. In conducting back translation, two bilingual translators are employed. One translates the items from the language of the instrument into the mother tongue, the other, blindly, translates the items from the mother tongue into the language in which the test was originally written. The researcher's responsibility is now to determine if the two versions of the test in the original language are identical, and if not, then corrections need be made for the items in question. Although translation will ensure linguistically, that items, questions, or passages are equivalent, it would be wrong to assume that this method proves that the constructs are equivalent.

2.5.3.6 Internal structure congruence

As the name implies, internal structure congruence analysis, as applied to cross-cultural research and equivalence, is based on the premise that if a construct is similar across cultures and therefore, approaches universality, it should have the same or similar internal structures. Essentially there are four
distinct methods which can be used to determine internal structure congruence, and they are factor analysis, multidimensional scaling, maximum likelihood factor analysis, and comparison of correlation matrices. Of these four methods, factor analysis appears to be the most popular (Hui & Triandis, 1985).

Multidimensional scaling can be applied when there is a sample from each culture who judge the appropriateness or similarity in meaning of an instrument's item pairs (Hui & Triandis). Statistically, multidimensional scaling can be used to explain what if any similarity, or variance, exists in the judges' responses. Within the Canadian context, Berry and Bennett (1992) completed a study where Cree conceptualizations of intelligence and well being were described using multidimensional scaling analysis.

To prove maximum likelihood factor analysis, confirmatory factor analysis is being used more frequently. Using LISREL, a chi-square test of goodness of fit is applied to determine if the data garnered from different groups is sufficiently similar to be described by a unique factor model (Hui & Triandis, 1985). This goodness of fit procedure has been termed the maximum likelihood estimation and it differs from traditional factor analysis in that additional information is provided through the construction of variance-covariance matrices.

If the researcher does not want to test if the factor structures are similar in both cultures, then intercorrelation matrices can be constructed. Essentially an "asymptomatic chi-square test can be used to test the null hypothesis that the two sample covariance matrices are drawn from the same population matrix" (Hui & Triandis, 1985; p. 143). Again, even though internal equivalence might be demonstrated, it would be wrong to assume that scalar equivalence exists.
2.5.3.7 Nomological network and validation

Cronbach and Meehl's (1955) definition of construct validation was the impetus behind the concept of validation by nomological network. Nomological network validation determines if the construct is embodied in the nomothetic network in one culture as it is in another. Thus if constructs are valid cross-culturally, it follows that they should enter into the same empirical relationship (Hui & Triandis, 1985). Problematic with this procedure is the assumption that equivalence is met even though item and scalar equivalence have not been proven. Furthermore, in order to meet criteria for construct validation, it is necessary that the criteria or structures of other networks are similar. Thus by itself, nomological network validation is incomplete; rather a researcher needs to incorporate a number of strategies to improve the cross-cultural validity of measurements.

2.5.3.8 Multi strategy approach

Because each strategy for demonstrating equivalence varies along a concrete to abstract continuum, it is implicit that researchers develop a multi strategy approach to proving cross-cultural equivalence in measurement. Although this might seem an onerous task, Hui and Triandis (1985) assure it is not:

...one can improve an instrument by proper translation techniques and then establish conceptual/functional equivalence as well as instrument (constructs as operationalized) equivalence by the nomological network method and by examination of internal structure congruence. After that, the response pattern method and regression methods can be used to test item equivalence and scalar equivalence. Improvement can sometimes be made by modification of the format or contents of the instruments. (p. 149)

What is important to remember is that single method strategies for improving or demonstrating equivalence are rarely adequate; rather, the researcher must
prove equivalence at all levels of abstraction before precise quantitative generalizations can be made.

2.5.4 Assessment and Aboriginal North Americans

Assessment of Aboriginal people can be problematic. On the one hand, communities and their members appear very much like North American culture, be it Canadian or American. On the other hand, however, Aboriginal cultures are distinct in many ways from the North American cultural milieu. As well, not all Aboriginal communities are alike and there are tribal or local differences made manifest by cultural diversity, language, environment, and acculturative influences. It is thus difficult to assume a particular stereotype for the concept “Indian culture” (Neeley & Shaughnessy, 1984).

In discussing issues related to the assessment of Aboriginal North Americans and divergence from Euroamerican norms and from norms established within any one Aboriginal group, a number of explanations have been offered for the apparent discrepancies. Ecological variations due to the impact of the environment on a particular cultural area in the form of deficit and developmental theories have been used to explain deviations in Aboriginal norms from Euroamerican norms.

2.5.4.1 Developmental change and assessment

The culturally different patterns of raising children and the anxiety-laden learning conditions that some students encounter when entering a culturally unfamiliar environment, such as the school, have been offered as a developmental explanation for discrepancies between Indian and non-Indian children to exist in assessment data collected (McShane & Berry, 1988). As McShane and Berry explain:
The whole picture is one of a developmental pattern in which Indian children, reared in nurturant surroundings, enter schools that expose them to cultural discrepancies. Under culture-alien conditions they exhibit, by maturity, behavior that is perceived by the majority culture as either shy, withdrawn, and nonearning or, at the opposite pole of the flight-fight continuum, as rude, aggressive, and destructive to self and others. (p. 414)

Certainly this developmental framework posited is one possible explanation that would take into account the manifestation and prevalence of extreme behaviours in Aboriginal child and adolescence populations.

2.5.4.2 Deficit and assessment

Within the rubric of deficit and assessment are the concepts of genetic and physiological deficit. In terms of physiological deficit, it has been suggested that higher levels of alcohol abuse in some Aboriginal communities can lead to increased prevalence rates of Fetal Alcohol Syndrome (FAS) and its ensuing symptoms of hyperactivity and lower cognitive functioning (Report of the Steering Committee Medical Services Branch, 1991). Other physiological deficits which have higher prevalence rates in Aboriginal children and adolescents are otitis media and poor vision resulting in learning problems (McShane & Berry, 1988). Fink’s (1990) research demonstrates social bonding, school failure, and susceptibility, defined as social awkwardness, low self esteem, and lack of social skills, as causing learning disabled students to be more at risk for delinquent behaviour and a negative psychosocial outcome than those students who are not identified as needing special education services. If the deficit argument posited is accepted, then a possible explanation could be offered for higher rates of delinquent behaviour and a negative psychosocial outcome in Aboriginal communities as a result of physiological factors. However, further research into this hypothesis would need to be undertaken before a definitive conclusion is reached.
Because of the differing perspectives offered, it is important that researchers ask themselves which hypothesis or combination thereof compliments the understanding and explanation of a given collected data base. Once this has been accomplished, then perhaps it will be possible to determine which factor accounts for the greater degree of variance within the population. Unfortunately, much of the research surrounding Aboriginal North American populations is circumspect and in order to further understand one’s data, it will be necessary to examine common criticisms of cross-cultural studies and the ensuing design faults in research involving Aboriginal populations.

2.5.5 Testing and Aboriginal Students

Over the years, a variety of tests have been administered to Aboriginal North American populations. Some of the tests used are: screening tests; intelligence tests; placement diagnostic tests; achievement tests; attitude tests; language ability tests; college entrance tests; reading tests; professional licensing tests; personality tests; and competency tests (Chavers & Locke, 1989). Because the literature is extensive and in some cases irrelevant, it will be necessary to focus only on those studies recently published in the field of personality, behaviour, attitude, and achievement testing.

In a recent review of dissertations written on Indian education in the United States, Chavers and Locke (1989) reported that out of the twelve dissertations examined, seven were related to theory testing and explanatory research, while the others were related to “such things as applying the WISC-R to Native students” (p. 10). Although numerous studies question the applicability of the WISC-R in Aboriginal populations, it should be remembered that validating existing scales is more efficacious than the development of new tests and instrumentation (Kirmayer, 1994a). Much of the debate surrounding the testing
of abilities, achievement, behaviour, and personality in Aboriginal populations is centered on what instrumentation is best suited for a particular task. However, before conclusions are drawn regarding the efficacy of instrumentation, studies need to be free of design faults. Unfortunately, a variety of researchers have admitted to severe structural faults in the testing of Aboriginal students (McShane & Berry, 1988). As a result, it is difficult to make recommendations and draw valid conclusions regarding a test’s applicability. Recognizing some of the inherent difficulties in interpreting test results, the review of the literature will include recent studies in the field of assessment among Aboriginal populations.

2.5.5.1 Ability and achievement measurement in Aboriginal populations

Research into ability and achievement testing among Aboriginal populations has been ongoing since the 1930's. Early studies conducted among Central Indians were undertaken by Telford in 1932, when he administered the Goodenough Intelligence Test to 225 Sioux pupils. Telford (cited in McShane & Berry, 1988) found mean scores of the students to be below that of American White and Black means. In a subsequent study using the same cohort conducted by Garth and Smith in 1937, it was reported that Indian children consistently achieved higher scores on the performance test than on the verbal test (cited in McShane & Berry, 1988). Similar verbal and performance discrepancies have been confirmed by Sattler (1974) and later by McShane and Plas (1984a; 1988). In a review of the literature conducted by McShane and Plas (1984a) on the cognitive functioning of American Indian children, the author's reported research with the Wechsler Intelligence Scale for Children (WISC), the Wechsler Intelligence Scale for Children-Revised edition (WISC-R), the Wechsler Adult Intelligence Scale (WAIS), and the Wechsler Preschool and
Primary Scale of Intelligence (WPPSI; Wechsler, 1965b). It was found that all instruments supported the hypothesis that a discrepancy existed between verbal and performance IQ’s for American Indian children (McShane & Plas, 1984a). Criticism of McShane and Plas’s review of the literature has focused on the lack of critical evaluation of the theoretical and methodological problems in the studies cited (Brandt, 1984). Thus Brandt concluded:

They [McShane & Plas] do not critically examine the methodological or theoretical problems in the studies they cite. This leads to two problems. They over generalize a few studies so that they appear to characterize all Native Americans, and they fail to draw obvious conclusions from other studies. They fail to consider the extreme heterogeneity of the Native American population. Their uncritical examination of sources leads them to build a profile for Native North American performance that does not control for English language fluency or for normal versus handicapped Indian populations. (p. 80)

In response, McShane and Plas (1984b) argue the purpose of their study was not to endorse the WISC-R for use with Indian children. Rather, because the WISC-R is being used by educators, psychologists, and clinicians with Aboriginal children: how then can the instrument be better understood in light of the cultural change Aboriginal people are experiencing; and how better might their cognitive strengths and weaknesses be evaluated (McShane & Plas, 1984b)?

Similar findings regarding the Verbal-Performance IQ discrepancy among Aboriginal children has been corroborated in research conducted with the WISC-R (Goldstein, 1988; McShane & Plas, 1988; Seyfort, Spreen, & Lamer, 1980). Seyfort et al. reported findings which indicated a number of the items on the verbal subtest did not contribute significantly to the total test variance. In their research, Seyfort et al. attempted to restandardize the WISC-R for Aboriginal Indian children living on Vancouver Island based on the raw scores derived from the sample, N=177. The rationale behind this approach can be found in the explanation offered by Seyfort et al. that although an ethnic group
might be part of the larger standardization sample, interpretation of the scores for a particular group are not possible because intra group variance is submerged within the overall variance for the population. Furthermore, Seyfort et al. recognized that Indian children living on reserve have a cultural background which is at odds with the competitive, academic, and performance aspects of the WISC-R. As well, Seyfort et al. suggested the lower socio-economic status and seasonal work characteristics of the Bands from which the sample was derived are not reflected on the verbal subtests of the WISC-R which are more geared towards white middle class values. This led Seyfort et al. to conclude:

...that clinicians using the WISC-R with Native children should interpret their findings with extreme caution. The norms developed from the present sample are based on small numbers and a limited geographical region (North Vancouver Island). They should therefore, be used with these factors and the previously discussed findings in mind. Because of the poor item validities reported, especially on verbal subtests, individual profile analysis as a tool of clinical inference should be avoided. (p. 23)

What Seyfort et al. (1980) and other researchers using the WISC-R or other cognitive measures with Aboriginal children neglected to consider were the methodological recommendations offered for the testing of minorities (Berry, Poortinga et al. 1992; Irvine 1985; Irvine & Carroll, 1980; Massey, 1988). To address this inadequacy, Chrisjohn, Townsend, Pace, and Peters (1987) conducted an internal and external analysis of the WISC-R with the Kainai in southern Alberta. Chrisjohn et al., in structuring their methodology to reflect the research on the testing of minorities (Irvine; Irvine & Carroll), reported WISC-R results which are not at variance with the non-Native population. Because of the discrepancy with previous research findings, Chrisjohn et al. concluded that studies which do not follow recommended procedures for the testing of minorities are circumspect. In addition, Chrisjohn et al. stated their own study is
inconclusive, as methodological deficiencies such as "small n's, collapsed across age groups" (p. 282), require the need for further research to enhance the study's validity and reliability.

2.5.5.2 Behaviour and personality measurement in Aboriginal populations

The literature surrounding behaviour and personality assessment in Aboriginal populations is not as extensive as that found when discussing aptitude and abilities. Although behaviour and personality testing is not as controversial as the testing of abilities and aptitude in Aboriginal populations, it is at even greater risk for scientific opprobrium (Irvine & Carroll, 1980). Part of the problem lies in the extensive and varied research into personality and behaviour, resulting in various theoretical strands and subsequent interpretations. Given these variances, it is important to remember that the majority of instruments used and developed for the assessment of behaviour and personality are based on Western psychiatric nosology.

Currently, the Diagnostic and Statistical Manual-4th Edition (DSM IV; American Psychiatric Association, 1994) is the clinical diagnostic manual for practising psychologists and psychiatrists in North America. However, is it not true that the DSM IV is representative of Western psychiatric and psychological nosology and thus is culture bound in its' interpretation of distress and disorder (Kirmayer, 1989)? This is a significant point when it is acknowledged that Western psychiatric and psychological nosology is based on the traditions of the American Psychiatric Association which have influenced the development of behavioural constructs in many of the behavioural and personality assessment instruments created. In attempting to understand the conflict which results when professional definitions of disorders, said to be objective and scientific, do not take into account the social context and are therefore, not culture dependent or
culture specific, Rubenstein and Perloff (1986) advise:

...in psychosocial work it is particularly important to recognize that there are many coexisting constructs of health and illness. Behavior deemed appropriate by some groups of lay-people may be defined as unhealthy by both professionals and by other groups of lay-people. Similarly healthy behavior, as professionally defined, may be seen as unhealthy by some nonprofessionals. This has led some researchers to claim that much of what is now called psychosocial disorder really reflects only culturally patterned variations of lifestyle and social relations. The fact that health care providers see many of the psychosocial disorders as being most prevalent in poor and minority populations has reinforced this social and cultural interpretation, and led to the further argument that these phenomena are not really disorders. (pp. 321-322)

McShane (1987) also recognizes tribal diversity as problematic in the development of culturally fair assessment instruments due to the variance in tribal conceptions of disorders such as depression. Because of the research involving the Minnesota Multiphasic Personality Inventory (MMPI; Greene, 1978) and Aboriginal populations, it has been recommended that only with the development of local norms will assessment of behavior and personality be clarified and equalized across responses (Butcher, Braswell, & Raney, 1983; Dana, 1986; Hoffmann, Dana, & Bolton, 1985). Since the role of acculturation in assessment is problematic, as it differs both between and within groups, awareness of cultural issues needs consideration in the interpretation of test scores (Butcher et al.; Hoffmann et al.).

2.5.6 Culturally Appropriate Assessment Practices

In reviewing the literature as it relates to testing and assessment across cultures, Irvine and Carroll (1980) noted that methods of administering tests and the subsequent interpretations of tests scores were the guiding questions posited by researchers. Irvine and Carroll's work was a review of research since the 1960's and was subsequently used as a basis for the testing and assessment of minorities (Berry, Poortinga et al., 1992; Chrisjohn et al., 1987;
Irvine 1985; Massey, 1988). Recommendations articulated by Irvine (1973), and developed on in Irvine and Carroll, became the guiding principles for researchers as to the methods by which test conditions can be manipulated for experimental purposes. The seven guiding principles outlined by Irvine (1973) are:

1. Every test response must be learned. No assumption should be made about a person's ability to respond in the manner required by the test. Both test materials and methods of recording answers must be fully understood.

2. Often, in other cultures, the instruction to not turn back to previous tests is often bewildering and distressing to the people taking the test. Hence, omnibus tests booklets are undesirable. Each test should be separate from every other and should be accompanied by its own instructions.

3. Instructions should be oral, not written, since the ability to read instructions is not part of the test situation. Flexible, visual aids should demonstrate each type of test item and response, preferably by building up the components through the use of plastigraph or flannel graph techniques that allow cut-outs to be stuck to boards so that a large class can see.

4. If translations for test instructions are necessary, these should be literal. They should be idiomatic expressions of the intent of the test demonstrator, who ideally should be from the same ethnic group as those taking the test. This will reduce the possibility of extraneous motivational influences on test scores.

5. Supervised practice for each test is essential to make certain that the test instructions are understood.

6. Familiar test material should be given first, so that early attempts at recording answers becomes more automatic, unusual or abstract materials can then be presented.

7. The climate of testing must be convivial and dramatic and enjoyable as possible. Fully trained testers should employ every strategy to make the situation positively reinforcing and enjoyable. (p. 462-463)

The rationale for adopting one or several of the principles outlined is for the determination, through multivariate statistical techniques, of whether or not the
test measures what it proports to measure in a given culture (Irvine & Carroll). However, interpretation of the tests for clinical purposes is hazardous, as test interpretation is based on standardization principles which specify administration protocol.

Kirmayer (1994a), in reviewing mental health research on Aboriginal Canadians, attempted to resolve the emic-etic debate as it relates to behavioural and personality testing among Aboriginal populations. Kirmayer recommended that both emic, indigenous expressions of distress and disorder, and etic, heterogeneous standardized measures which allow for comparison in research, be incorporated in a given study. Although emic measures are more likely to be reliable and valid, they are specific to the culture or community in which they are developed and do not allow for comparisons to be made with other research findings (Kirmayer). Rather than attempt to develop instruments specific to a particular community, which is both time consuming, too difficult, intrusive, and idiosyncratic, it is recommended further research examine the modification and validation of scales used in culturally appropriate instruments (Kirmayer).

In assessing culturally different exceptional children, Olion and Gillis-Olion (1984) have noted that at times tests and outdated assessment practices have restricted the educational opportunities of children from different cultures. To rectify the problematic nature of assessment with culturally diverse children, it is suggested that assessment must involve both teachers and parents, be ongoing, multifaceted, and indicative of both the child's strengths and weaknesses to allow for culturally fair early detection (Olion & Gillis-Olion). By so doing, Olion and Gillis-Olion conclude that nondiscriminatory assessment practices are developed for the assessment of culturally diverse children.

Sugai (1988) in discussing the educational and behavioural assessment of
the culturally diverse student endorses the use of reliable and effective assessment and evaluation practices. Rather than simply measure student performance in terms of strengths and weaknesses, Sugai recommended the student be assessed and/or evaluated in the context in which student performance or behaviour occurs. In order that the clinician be able to identify if indeed a problem exists, Sugai recommended the following guiding questions be asked before a problem is identified and special education services required:

1. Have several independent referrals been made?
2. How is the problem behavior operationalized or defined?
3. Is the behavior functionally different from some comparison or standard, for example, peer group?
4. Have there been dramatic changes in the individual's behavior in relatively short periods of time?
5. Have there been any significant life events in the student's or family's recent history?
6. Does the behavior interfere with the student's academic progress? Peer or adult relations? Community functioning?
7. Is the behavior destructive of property or injurious to other people? (p. 70)

Further to the issue of problem identification is the nature of the problem as defined by the communicative function of a behaviour and the concept of critical effect (Sugai, 1988). When Sugai discussed the communicative function of a behaviour, as it relates to the nature of a problem, he was referring to the "motivation and intent which drives a behaviour" (p. 79). For example, a child wishes to go to the washroom but is denied the opportunity by the teacher, the child in turn acts out and is asked to leave the classroom, the child then goes to the washroom. Conversely, the child can ask to work quietly outside of the
classroom and then go to the washroom. The critical effect then can be the result of different forms of behaviour, and the clinician's responsibility in assessing the culturally diverse student is not only to ascertain behaviour but to examine both environmental and predisposing conditions to ameliorate biased referral and placement of culturally diverse students (Sugai).

In developing an assessment model which is sensitive to the concept of cultural diversity, Massey (1988) described a tripartite multicultural assessment model. Massey went on to reiterate practices for test-based assessment which corroborates earlier work on cross cultural assessment and testing developed by Irvine (1973). Although Massey recognized that by 'testing the limits' and adapting tests to fit the cultural context in which they are delivered negates the standardized procedures developed for the instruments in question, he also acknowledged "that norm referenced interpretation is a largely unproductive endeavour among multicultural populations" (p. 27). In response to concerns surrounding culturally fair assessment practices, Massey developed a cross cultural assessment model, see Table 2.1.

Table 2.1. A Cross Cultural Assessment Model

<table>
<thead>
<tr>
<th>1: DATA COLLECTION</th>
<th>2: ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>Clinical interview/consultation with interpreter</td>
</tr>
<tr>
<td>-Informal evaluation</td>
<td>-Birthplace/age on arrival/length of residency</td>
</tr>
<tr>
<td>Formal evaluation</td>
<td>-Developmental/health history</td>
</tr>
<tr>
<td>-Interm consultation/intervention</td>
<td>-Educational history</td>
</tr>
<tr>
<td>-Re-evaluation of skills</td>
<td>-Family history</td>
</tr>
</tbody>
</table>

3: INTERPRETATION & DIAGNOSIS
- Cross-cultural factors influencing interpretation
- Diagnostic formulation/holistic interpretation from a cross-cultural perspective
- Intuition and experience-based interpretation
- Processing strengths and weaknesses
- Specific recommendations that fit the socio-cultural context

Source: Massey, 1988; p. 23.
The model described by Massey (1988) is both a practical and simple method for the assessment of culturally diverse students. It is hierarchal in nature and allows for experiential, practical, problem solving of both the short and long term programming goals best suited to the student. The benefit of such a model is that “recommendations should include practical suggestions (rather than theoretical postulations) that can be implemented within the cultural context of the client’s current environment” (Massey, p. 32).

2.5.7 Methodological Concerns

Research in the field of testing and assessment, as it relates to Aboriginal people, is fraught with methodological concerns. Because of this, it is difficult to compare results from one study to the next. The process of research and data collection in many Aboriginal communities is impeded by a number of factors. According to Kirmayer (1994a), some of the factors which impede sampling in Aboriginal communities include:

1. Frequent travel out of the community into the bush.
2. Different perceptions of time and structures of daily routine making appointments unreliable.
3. Geographical distance and transportation access.
4. Traditional activities and religious cycles.
5. Caretaker responsibilities (especially for women).
6. Suspicion of outside researchers or burden of too much surveillance and previous research participation, resulting in low response rates.

Random sampling ignores local community dynamics that may be crucial both to the conduct of a study and to its validity and translation into useful intervention.

(p. 81)
Kirmayer goes on to state that in the collection of data the use of self-report questionnaires and standardized interviews for psychiatric diagnosis suffer from a number of limitations. Rather, focus groups and ethnographic methodologies like participant observation and key informants should be incorporated into studies to explore cultural idioms of distress (Kirmayer).

Owing to the diversity of Aboriginal populations part of the difficulty in choosing a measure is that no one instrument is likely to work everywhere. Designing and validating new instruments is both time consuming and cost prohibitive and would be culture-specific to the group under study (Kirmayer, 1994a). Rather, according to Kirmayer:

It [on how to collect data] argues in favour of using standardized instruments but addressing their limitations and possible sources of invalidity; for example, by adding culture-specific items, building in the possibility for using alternative diagnostic criteria of thresholds for caseness post hoc, emphasizing locally significant measures of disability and distress as outcome measures and combining epidemiological studies with parallel ethnographic research targeted at specific questions of validity and interpretation. (p. 72)

2.5.8 Summary

In a review of the literature which encompassed research in medicine, psychology, sociology, anthropology, history, and education, a thorough analysis of the variables which place Aboriginal children and youth at-risk were explored. Topics covered included: social and economic demographics of Aboriginal people; the mental health of both Aboriginal and Canadian child and youth populations; the relationship between behaviour and intellectual functioning in children and adolescents; psychopathology across cultures; and cross-cultural assessment and instrumentation. Because of the literature review, a greater understanding of the variables which place Aboriginal children and adolescents at risk to later failure in life and at school can be developed.

The debilitating effects of acculturation and the resultant psychological
change due to acculturative stress in Aboriginal communities was explored. The theory underpinning acculturative stress was corroborated by the social and economic demographic data and mental health indicators reported by Statistics Canada and the Medical Services Branch of Health and Welfare Canada. In this respect, the current study recognizes the rapid effects of acculturation which has significantly altered the ecological conditions among Aboriginal people. Poverty is common in many communities and its causes are the social inequalities and discrimination which face Aboriginal people today. Moreover, higher rates of unemployment and illiteracy, coupled with poorer living conditions, compound the ecological context in these same communities. The result of this rapidly shifting ecological context has seen the increased prevalence of children and families at-risk among many Aboriginal communities in Canada with these same children and families at-risk being denied many of the opportunities that mainstream Canadian society takes for granted. It is hoped that through the development of school-based interventions, partially based on the findings of the present study, the social, behavioural, emotional, and academic skills of children and youth at-risk will improve, allowing them to become equal participants in society.

2.6 The Present Study

The present study explores the relationship between problem behaviours in the school based setting with the demographic, academic, and cognitive variables to determine the predictors of problem behaviours placing the child and youth population served by the Saskatoon Tribal Council at-risk. The initial screening phase of the Saskatoon Tribal Council study on exceptionality is the singular focus of this study. By not violating standardization principles during the initial screening phase, local norms can be created to assist researchers in
determining cutoffs for the second phase of assessment in the Saskatoon Tribal Council study on exceptionality (Schwean & Saklofske, 1994). Owing to the large sample size and the extensiveness of the assessment battery, the data obtained lend themselves to a population study of the test scores and demographic data collected. Unfortunately, little research in the Canadian context exists in this domain among Canadian Aboriginal populations. As to why this might be, Kirmayer (1994a) suggests “opportunities have been lost because of the difficulties of preparing culturally appropriate instruments” (p.18).

As the use of self-report measures in Aboriginal populations is circumspect and limited (Kirmayer, 1994a), teacher ratings of behavioural competence and academic performance are incorporated. In screening for cognitive development, a non-verbal test of reasoning ability is used. By employing standardized measures which partially alleviate the risk and opprobrium of epidemiological studies in Aboriginal populations, the present study conforms to some of the research recommendations for studies of Aboriginal people made in the literature review. In order not to compromise the validity of the study random sampling techniques were not employed, rather the total student population served by the Saskatoon Tribal Council and attending school during the period of data collection, comprises the subject sample. By not incorporating random sampling techniques the reliability and validity of the study is enhanced. However, the present study is limited in that it is not exhaustive in its presentation, incorporates only quantitative methodologies, and does not include an ethnographic or qualitative component.
2.6.1 Research Questions

2.6.1.1 Research questions #1 and #2

2.6.1.1.1 Rationale

In the Ontario Child Health Study (Boyle et al., 1987; Offord et al., 1989, 1991; Sanford et al., 1992), teacher-identified impairment, in terms of school functioning, was highly related to teacher-identified disorder. Furthermore, studies have shown that students who manifest problem behaviours are at risk for failure in school and in life. These same students also score lower on intelligence tests and do not do as well academically. As well, research in the field of special education has found that students, identified as behaviourally disordered, emotionally disturbed, or learning disabled are more at risk for future delinquency than students who are not identified as special needs. For purposes of assessment and intervention, it is important to understand the relationship among the variables which can place children and youth at-risk.

2.6.1.1.2 Question #1

1. How important are academic performance as measured by the Academic Performance Rating Scale (APRS), cognitive ability as measured by the Matrix Analogies Test-Short Form (MAT-SF), age, sex, and school when each one alone is used to predict problem behaviours in a school based setting as measured by the Teacher Rating Scale of the Behavior Rating Profile-2nd Edition (BRP-2)?

2.6.1.1.3 Question #2

2. How important are academic performance as measured by the Academic Performance Rating Scale (APRS), cognitive ability as measured by the Matrix
Analogies Test-Short Form (MAT-SF), age, sex, and school when they are used together to predict problem behaviours in a school based setting as measured by the Teacher Rating Scale of the Behavior Rating Profile-2nd Edition (BRP-2)?

2.6.1.2 Research question #3

2.6.1.2.1 Rationale

In predicting problem behaviours in the general child and youth population, a number of factors have been found to correlate significantly. In terms of common psychiatric disorders, both sex and age have differential effects. Males tend to exhibit the more externalizing disorders like conduct disorder, aggression, and hyperactivity in the 12-16 year old age group, whereas females tend towards the more internalizing disorders such as depression, anxiety, and social withdrawal in the 12-16 year old age group. It is also known, given the demographic trends reported for Canada's Aboriginal population, that the social and economic conditions facing on-reserve populations are significantly lower than the indicators reported for both off-reserve populations and the total Canadian population.

2.6.1.2.2 Question #3

3. Is there a significant difference in problem behaviours in the child and youth population served by the Saskatoon Tribal Council based on age, sex, and school as measured by the Teacher Rating Scale of the Behavior Rating Profile-2nd Edition (BRP-2)?
2.6.2 Assumptions

1. It is assumed the respondents to the demographic survey, the APRS, the TRS of the BRP-2, and the MAT-SF completed, to the best of their ability and honesty, the questions posited on the survey and instruments used in the Saskatoon Tribal Council special education research project.

2. It is assumed the sample selected is representative of the child and youth population served by the Saskatoon Tribal Council.

2.6.3 Limitations

1. The study is limited in the instrumentation and demographic data collected as they may exclude areas of interest and are not exhaustive in their presentation.

2. Qualitative or ethnographic research methodologies were not incorporated addressing possible sources of invalidity in the study.

3. One school requested not to participate in the Saskatoon Tribal Council special education research.

2.7.4 Definitions

Aboriginal:

Refers to status and non-status Indians, Metis, and Inuit peoples.

Academic Performance:

Refers to academic achievement as based on teacher judgments measured by the teacher completed Academic Performance Rating Scale.

At-Risk:

Refers to the likelihood of failure at school or in life due to a number of factors that include economic, social, and physical variables which act as barriers to normal development.
Bill C-31:

Bill C-31 changed the meaning of the term “Status” and for the first time allowed for the reinstatement of Indians who had lost or were denied Status and/or Band membership in the past. The intent of Bill C-31 was to end many of the discriminatory provisions of the Indian Act, especially those which discriminated against Indian women.

First Nations

Refers to Indian bands and their peoples in Canada, recognizing the historical reality of Indian people in that they have their own cultures, languages, traditions, and forms of government.

Indian:

Refers to registered or status Indians as defined in the Indian Act. The Indian Register is a list of all registered Indians which is kept by DIAND.

Inuit:

Refers to Native people, who have traditionally resided north of the tree line in the Northwest Territories, Labrador, and the northern coast of Quebec.

Metis:

Refers to those people who are of both Indian and non-Indian ancestry.

Native:

Refers to both status and non-status Indians.

Non-Status Indians:

Refers to those Indian people who are not registered under the Indian Act of Canada.

Non-Verbal Reasoning Ability:

Refers to estimates of the child’s non-verbal reasoning ability and cognitive development as assessed by the student completed Matrix Analogies Test-Short Form.
On-Reserve:

DIAND data include status Indians on-reserve and on Crown land and settlements, selected communities, and specified Census Divisions.

Problem Behaviours:

Are those student behaviours which occur in a school based setting as measured by the Teacher Rating Scale of the Behavior Rating Profile 2nd Edition.

Status Indians:

Refers to those people of Indian ancestry who are registered under the Indian Act of Canada.
CHAPTER THREE
METHODS AND PROCEDURES

3.0 Subject Sample

The Saskatoon Tribal Council serves seven First Nations which include the three different linguistic groups Cree, Saulteaux, and Sioux. As well, each of the seven First Nations served by the Saskatoon Tribal Council is autonomous unto itself. Within the Saskatoon Tribal Council, there are a number of communities ranging in size from 200 to 800 people.

The subject sample included the students served by the Saskatoon Tribal Council, from Grades 1 to 12, who were registered and attended school 30 days prior to assessment. Only those students who live on-reserve are served by the Saskatoon Tribal Council, although they may attend off-reserve provincial and residential schools. Students from the Saskatoon Tribal Council attend over seventeen public schools, three band controlled schools, and three band controlled residential schools. Of the 809 students on the 1993 nominal role record, 289 attended schools located on the reserve. The rest attended provincial or residential schools located nearby. Those students who are registered in one of the seven bands that comprise the Saskatoon Tribal Council, but live off reserve, are not served by the Saskatoon Tribal Council and therefore, were not included as part of the subject sample.

The apparent discrepancy between the sample population, 505 students, and the nominal role records can be accounted for as due to movement, such as change of residence both on and off reserve, and sporadic attendance.
patterns. Of the 505 students assessed, 49% or 248 were girls and 51% or 257 were boys. A frequency count of the sample by age is shown in Table 3.1.

3.1 Preliminary Protocol

The initial screening was conducted by Ms. L. Robert, as part of the Saskatoon Tribal Council's study on exceptionality. Ms. L. Robert and Gordon Lobe, Superintendent of Education for the Tribal Council, made presentations to the various Bands served by the Saskatoon Tribal Council, informing them of the purpose and nature of the study. Band Council Resolutions (BCR) were passed by the Bands served by the Saskatoon Tribal Council supporting the collection of the data by granting permission to obtain assessment information from teachers, students, and parents. Parental consent was under the auspices of the individual Bands. In most cases parental consent was obtained in writing by the Bands, or when not possible, verbally. Of the seven Bands served by the Saskatoon Tribal Council, six obtained consent through a consent form, while another obtained consent through a letter requesting parents of students to contact the Band office if consent was not forthcoming. Through this process, 13 parents of the students served by the Saskatoon Tribal Council did not provide consent, three were in disagreement, while ten could not be contacted. Those students whose parents did not provide consent were not included in the subject sample.

For those students attending provincial schools, a similar procedure was followed to obtain approval to conduct the study. Ms. L. Robert and G. Lobe directly contacted the provincial public school jurisdictions involved and made presentations to the District Boards of Education who served students from the Saskatoon Tribal Council. According to Schwean and Saklofske (1994), approval for data collection in those schools located in Prince Albert School
Divisions was not as readily expedited. Although the majority of provincial educational institutions agreed to provide support to the Saskatoon Tribal Council, one school declined to participate.

Table 3.1. Sample by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage of Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>33</td>
<td>6.5</td>
</tr>
<tr>
<td>7</td>
<td>55</td>
<td>10.9</td>
</tr>
<tr>
<td>8</td>
<td>37</td>
<td>7.3</td>
</tr>
<tr>
<td>9</td>
<td>45</td>
<td>8.9</td>
</tr>
<tr>
<td>10</td>
<td>51</td>
<td>10.1</td>
</tr>
<tr>
<td>11</td>
<td>53</td>
<td>10.5</td>
</tr>
<tr>
<td>12</td>
<td>54</td>
<td>10.7</td>
</tr>
<tr>
<td>13</td>
<td>31</td>
<td>6.1</td>
</tr>
<tr>
<td>14</td>
<td>37</td>
<td>7.3</td>
</tr>
<tr>
<td>15</td>
<td>36</td>
<td>7.1</td>
</tr>
<tr>
<td>16</td>
<td>23</td>
<td>4.6</td>
</tr>
<tr>
<td>17</td>
<td>20</td>
<td>3.4</td>
</tr>
<tr>
<td>18</td>
<td>7</td>
<td>1.4</td>
</tr>
<tr>
<td>Other</td>
<td>23</td>
<td>4.6</td>
</tr>
<tr>
<td>Total</td>
<td>505</td>
<td>100</td>
</tr>
</tbody>
</table>

* percentages are approximations and may not total exactly one hundred percent.

3.2 Data Collection

Data was collected during the period November 2, 1992 to June 30, 1993. Data collection was somewhat hindered due to “the number of different school jurisdictions involved and the latent mistrust by parents of anything related to special education” (Schwean & Saklofske, 1994, p.10). The initial screening phase consisted of the Academic Performance Rating Scale, the Teacher Rating Scale of the Behaviour Rating Profile-2nd Edition, the Matrix Analogies Test-Short Form, and a short demographic questionnaire. Students were
administered the MAT-SF according to test administration protocol dictated in the MAT-SF manual (Naglieri, 1985b). In this respect, the MAT-SF was administered in group to all students between Grades 2 to 12. For those students in Grade 1, the MAT-SF was administered individually or in groups of three. In most cases, the MAT-SF was administered during class, otherwise Ms. Robert administered the instrument when in-school times were not provided. In situations where the student moved and was not served by the Saskatoon Tribal Council, the case was culled from the sample.

The teacher report form of the BRP-2 and the APRS were also completed for each student as part of the initial screening assessment. Individual cases were then matched with the teacher-completed demographic questionnaire, the BRP-2, and the APRS. The frequency count for the screening instruments are shown in Table 3.2, with incomplete and uncompleted instruments counted as missing. In total, data were collected on 505 students during the initial screening sample using the tests and rating scales described.

3.3 Instrumentation

The instrumentation under discussion include the Matrix Analogies Test-Short Form (MAT-SF), the Academic Performance Rating Scale (APRS), and the Behaviour Rating Profile-2nd Edition (BRP-2). The MAT-SF is a test of non-verbal reasoning ability completed by the student and is delivered individually or in small groups, while the APRS and the Teacher Rating Scale (TRS) of the BRP-2 are based on teacher ratings of academic achievement and problem behaviours manifested in a school based setting, respectively.
Table 3.2. Sample by Instrument

<table>
<thead>
<tr>
<th></th>
<th>BRP-2</th>
<th>MAT-SF</th>
<th>APRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Cases</td>
<td>504</td>
<td>496</td>
<td>497</td>
</tr>
<tr>
<td>Missing Cases</td>
<td>1</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>505</td>
<td>505</td>
<td>505</td>
</tr>
</tbody>
</table>

3.3.1 Teacher Ratings

Teacher ratings of behaviour and academic performance have been proven to be of benefit when conducting psychological and behavioural assessments. This is so because teachers are able to observe students daily, in a relatively standardized school environment, and in relation to their peers, therefore, making the information obtained from behavioural rating scales methodical and systematic (Lupo & Forman, 1991; Sattler, 1992). Rating scales are also a fast, economical way of quantifying information for screening efforts, epidemiological studies, and program evaluations (Edelbrock, 1988).

In the OCHS, which combined teacher, parent, and youth ratings, it was concluded that of the three informants, the teacher's perspective was the most uniform (Sanford et al., 1992). Moreover, it has been demonstrated that teachers “are better qualified to report on classroom behaviour, peer relations, academic performance, and behaviours such as difficulty following directions, inattentiveness, and ability to complete tasks” (Edelbrock, 1983, p. 296).

In reviewing the literature on the psychometric properties of teacher ratings for behavioural, adaptive, and academic measures, it was found that teacher ratings are psychometrically adequate (Hoge, 1983). In discussing the relationship between teacher judgments and psychometric instruments in the identification of learning disabled and non-handicapped students, Gresham, Reschly, and Carey (1987) stated:
One way of viewing teacher judgments is that they represent a summary or evaluative conclusions based on comprehensive and representative sample of behaviour observed in the classroom over a period of time. In terms of content validity and the domain sampling model, teacher judgments most certainly are based upon a much wider and comprehensive sampling of the content domain of achievement and classroom behaviour than standardized tests [of intelligence and academic performance]. As such, teacher judgments representatively sample the domain of interest in relation to school performance. (p. 544)

Since the efficacy of teacher ratings and judgments of academic performance and classroom behaviour has been demonstrated, and because the present study relies on the quantification of data similiar in nature to epidemiological studies, the incorporation and reliance on teacher ratings of academic performance and problem behaviours in a school-based setting is both justified and warranted.

3.3.2 Behaviour Rating Profile

The BRP-2 is composed of the same instruments as the Behaviour Rating Profile (BRP; Brown & Hammill, 1978) as developed by Brown and Hammill in 1978, 1983, and 1990. Although the item pools or administration of the instruments have not changed, subsequent editions were warranted to accommodate the inclusion of adolescents in the normative sample and to report ongoing validity and reliability studies.

Brown and Hammill (1978, 1990) consider the BRP-2 to be an ecological assessment of behaviour and emotional problems from a variety of settings and perspectives. For the purposes of the Saskatoon Tribal Council study on exceptionality, the teacher completed report of student behaviours will receive primary attention as that was the BRP-2 instrument used as a behavioural screen. However, relevant discussions surrounding the psychometric properties of the complete BRP-2 instrument package will be considered.
The Teacher Rating Scale of the BRP-2 is composed of thirty items which describe problem behaviours in the school setting. Although, factor loadings have not been completed for the BRP-2 and specifically the TRS, it is generally agreed that the items used in the TRS are representative of teacher perceptions of inappropriate or problem behaviours in a school-based setting (Broughton, 1985; Ellers, Ellers, & Bradley-Johnson, 1989; Kratochwill, 1985; Witt, 1985). In fact, the authors of the BRP-2 suggest that one of its uses is “to help identify students who are believed to have emotional, behavioural, or personal and social adjustment problems” (Brown & Hammill, 1990, p. 5).

The sentence stems on the TRS used to identify problem behaviours in a school-based setting include item descriptors on verbal aggression, arguing with the teacher and classmates, disruptiveness, swearing, in school referrals for discipline, doing homework, following directions, motivation and interest, laziness, stealing, lying, bullying, cheating, passivity and withdrawal, overactivity and restlessness, nervous habits, daydreaming, lack of concentration, number of friends among classmates, unacceptable personal habits and hygiene, following directions, self-centredness, and academic achievement (Brown & Hammill, 1990).

In rating the student, the teacher is asked to rate the student for each item on the basis of a four point descriptive Likert scale converted to a numerical weighting ranging in options from 0 (very much like the student) through to 4 (not at all like the student), resulting in a raw score which can then be converted to a percentile rank based on the norms provided in the BRP-2 examiner’s manual. High scores on the BRP-2 indicate the absence of maladaptive behaviour, whereas low scores indicate a number of problem behaviours.

In one of the first test reviews of the BRP, Kratchowill (1981) criticized the instrument because of its lack of sensitivity relating to the chronicity and
frequency of specific behaviours observed:

Ostensibly, some teachers may have known the child for years and could rate behaviours occurring over varying periods of time. A problem such as "Disrupts the classroom" may be occurring for months while "Swears in class" may be a more recent problem. Thus the scale would not be sensitive to the discrimination of duration of those behaviours occurring over a several-month period of time versus those occurring within the relative recency of the past few weeks. (p.286)

Due to this finding, Kratchowill (1985) recommends the clinician interpreting the instruments ask the respondent further information relating to the frequency and duration of a specific behaviour. Similarly, it is suggested the clinician determine the situation in which the behaviour occurs when planning intervention strategies (Kratchowill, 1985).

Witt (1985) in his review of the BRP found wanting the description of specific behaviours as presented on the Teacher Rating Scale. According to Witt, "because of the lack of behavioural specificity, the meaning of an item could vary depending on the interpretation of the respondent" (p. 166).

Nevertheless, the BRP has proven to be a stable screening instrument in the quantification of teacher's perception of classroom behaviour (Ellers et al., 1989). But in Witt's opinion, this does preclude that the BRP-2 be the sole measure of behaviour. Rather Witt stated, "the BRP should presently be confined to use only as an adjunct measure in the identification of children who are behaviourally deviant" (p. 131). Given the restrictions outlined by Witt, it should be noted the purpose of the BRP-2 in the Saskatoon Tribal Council special education study was to act as a screen, in keeping with current research on the psychometric properties as they relate to the TRS of the BRP-2.

Furthermore, the strength of the BRP-2 lies in its ability to assess across environments (Bacon, 1989; Posey, 1989) and to assist the clinician in planning programming involving the behaviourally disordered and learning disabled, whereas it weakness lies in discriminating behaviour among mentally retarded
and other population groups (Slate, 1983). In a study of learning disabled students, both regular and resource room teachers were asked to rate student behaviour. Although test-retest reliability coefficients for each rater proved high, .84 for regular teachers and .90 for resource room teachers (Lupo & Forman, 1985), the interrater reliability was low; “[the] resource room teachers rated the learning-disabled students’ behaviour as more appropriate than did regular classroom teachers” (pp. 331). This result is not surprising considering the ecological context of behaviour in a specific situation and the subsequent interpretation of that behaviour among different raters. For the purposes of this study, only classroom teachers completed the TRS of the BRP-2.

3.3.3 Academic Performance Rating Scale

The other teacher-completed rating scale used in the Saskatoon Tribal Council special education study was the Academic Performance Rating Scale, see Appendix 2. The purpose behind the development of the APRS was to provide an instrument which accurately assessed teachers’ perceptions of overall academic performance and skills deficits associated with antisocial or disruptive behaviour which could also be used to monitor the efficacy of treatment programs (DuPaul & Rapport, 1991). As the present study sought to explore predictors of problem behaviours, an instrument which assesses the academic performance of children and youth at-risk is warranted.

The APRS can be scored to yield a total score and scores for the subscales: Learning Ability, Academic Performance, Impulse Control, and Social Withdrawal (DPaul et al., 1991). The advantage to using the APRS is that it provides information pertaining to the both the child’s academic and behavioural functioning. Furthermore, the academic ability and performance of the child is not judged on specific content or curricula and is not subject to
language bias in the assessment of academic ability as would be the possibility if a verbal test of intelligence was presented to a second language learner (Cummins, 1988; Jensen, 1980).

Although the instrument is not long, 19 items, it proports to provide four subscale scores; however, no published study of a four factor solution for the APRS could be found. In an earlier study conducted on the APRS by DuPaul & Rapport (1991), a principal components analysis found the three factor solution academic success, academic productivity, and impulse control to exist.

Subsequently, DuPaul & Rapport calculated the coefficient alphas:

The results of these analysis demonstrated adequate internal consistencies for the Total APRS (.95), as well as for Academic Success (.94) and Academic Productivity (.94). The internal consistency of the impulse control subscale was weaker (.72). Subsequently, the total sample was randomly subdivided (i.e., n=242 and 245, respectively) into two independent subsamples. Coefficient alphas were calculated for all APRS scores within each subsample with results nearly identical to the above obtained. (p. 289).

In considering the efficacy of the APRS, it is recognized that it should be used as part of a multi modal assessment battery or as part of an initial screening assessment, especially if other measures of cognitive and behavioural deficits are being administered (DuPaul & Rapport). For the purposes of the present study, only the total score for the APRS was determined so as to provide an overall measure of academic performance not based on specific content or curricula. This measure was warranted because of the apparent ambiguity in the research literature surrounding the APRS as having a three or four factor solution. Although a few of the items on the APRS relate to behaviour, both of the externalizing and internalizing type, all other items refer to the student's academic performance over the past week. As the use of the APRS is limited as a screen of intelligence, a cultural free test of non-verbal reasoning ability not based on language is included in the present study.
3.3.4 Matrix Analogies Test-Short Form

The MAT-SF is a 34 item test, designed for use as a screening instrument in a group or individual setting (Naglieri, 1985b). The MAT-SF items are composed of abstract figural matrices which are a test of non-verbal reasoning ability. Non-verbal items employing geometric designs, like the MAT-SF, are culturally reduced. Because of this they are best used with young children and those who have difficulty in using the language on tests of verbal item groups (Jensen, 1980). Specifically, the MAT-SF is recommended for use with populations who have limited English language proficiency, have a communication disorder, or limited language development (Robinson, 1987). Naglieri (1985a) provided the following guidelines in the examiner's manual when trying to distinguish when to use the MAT-SF:

Use the MAT-SF
1. When rapid screening of students is desired;
2. When group administration is possible;
3. When screening for an ability-achievement discrepancy (the Multilevel Academic Survey Test is required...);
4. When stanine, percentile, or age equivalent scores are sufficient.

(p.3)

In a study conducted by Naglieri (1986) examining the test-retest reliability of the MAT-SF in a large sample of grade five students, it was found that the MAT-SF "test-retest reliability coefficient is similar to those reported [in the MAT-SF] by Naglieri [for the WISC-R sub tests and the Peabody Picture Vocabulary Test-Revised edition (PPVT-R; Dunn & Dunn, 1981)]" (p. 137). The purpose of the MAT-SF is to act as a screening instrument, recognizing that the scores should not be over generalized but rather interpreted as estimates of the child's non-verbal reasoning ability (Naglieri, 1985b). In a review of the Matrix Analogies Test-Expanded Form (MAT-EF; Naglieri, 1985a), the instrument was criticized because it was found not to discriminate among children in the older age group who are of superior ability nor among those in the younger age group who are
of below average ability (McMorris, Rule, & Steinberg, 1989). A similar situation, although not as great, exists with the MAT-SF, which is composed of half as many items as the MAT-EF. The MAT-SF should not be the sole instrument used to identify students at risk of academic difficulty. Rather it is suggested by Naglieri (1985a) that the MAT-SF be used in conjunction with measures of academic achievement, either as a screening instrument or as a single measure in a complete test battery.

Because other traditional measures of reasoning ability are verbal in nature and hence biased against students whose first language is not English, the advantage to using a progressive matrix instrument, like the MAT-SF, as a screen according to Jensen (1980):

"[is to assess] potential academic talent that might easily remain undetected by parents and teachers or by the more conventional culture-loaded tests of scholastic aptitude". (p. 648)

However, given Jensen's (1980) claim that matrix analogy tests which contain abstract reasoning items, like the MAT-SF, are culturally free, one would expect no significant difference between the norms developed in the MAT-SF based on an American sample and a sample drawn from Canadian schools. To explore the hypothesis that no significant difference between Canadian and American children's test scores on the MAT-SF would exist, Saklofske, Yackulic, Murray, and Naglieri (1991) conducted a study where the MAT-SF was administered to a sample comprised of children (N=660), aged 6 to 11 years, from five different schools in a midwestern Canadian city. It was found that some of the items on the MAT-SF were not functioning as expected based on age and total sample. Furthermore, the scores of children, in the 6 to 7 age group, were elevated (Saklofske et al.). Thus Saklofske et al. to conclude that:

While the mean scores and variances were very similar for the two groups, Canadian children scored slightly higher at the 6 and 7 year age levels. These small but important findings reinforce the need to examine the generalizability of a test's norms, despite its satisfactory reliability and
validity estimates, when employing an instrument in a new or different context. (p. 56)

In recognizing the MAT-SF for both its benefits and limitations with the score interpretation sensitive to recent research findings, it must be concluded that for the present study, the efficacy of the instrument is proven and therefore, its use warranted. Moreover, because the MAT-SF is used in conjunction with other screening instruments which include teacher ratings of academic performance and problem behaviours allows for some variation in source and mode of assessment.

3.4 Demographics

The demographic data collected pertained to the students name, age, sex, and school (either provincial or Band) attended. The demographic data gathered from these questions were solicited from the home room teachers who also completed the teacher report forms of the BRP-2 and APRS.

3.5 Data Analysis

Due to the varied number of research questions posited pertaining to predictors of problem behaviours, a single method of data analysis is inappropriate. As well, because the current study is descriptive and cross sectional in nature, it lends itself to a quantitative analysis. Because of the variables outlined, data analysis will employ a number of methods available through the SPSS suite of programs. In defining the variables for purposes of data analysis, the dependent variable and criterion variable are problem behaviours as measured by the TRS of the BRP-2. Thus the predictor or independent variables for purposes of data analysis are academic performance as measured by the APRS, non-verbal reasoning ability as measured by the MAT-SF, age group, sex, and school.
As well, the sample range is restricted, for purposes of data analysis, to those students who are between 6 and 18 years of age, to enhance the internal validity of the study which incorporated instrumentation designed for this age span. Furthermore, the sample is collapsed into three age groups representing elementary students from ages 6 to 9 years, middle years students from ages 10 to 13 years, and high school students between the ages of 14 to 18 years. These age groupings follow normal grade groupings found in most provincial and Band schools facilitating the analysis of data along these lines. As well, descriptive statistics are provided for all instruments and the demographic data collected relative to the research questions posited.

In predicting problem behaviours in a school based setting, when the variables cited in question #1 are used alone, correlation matrices are calculated to determine the observed strength of the linear relationship between the variables identified. Subsequently, when the variables are used together to predict problem behaviours as cited in research question #2, the variables are entered into a multiple linear regression analysis to determine a model which can predict problem behaviours in a school based setting. Data transformation of the MAT-SF and the APRS scores occur (Norusis, 1993) so as to approximate a normal distribution, controlling for outlier variance thereby, facilitating a multiple linear regression analysis. Since the means and the variances are not known for the sample and must be estimated from the data, Norusis recommends that the Levene test of normality be used to determine if the hypothesis of normality can be accepted for the data transformations. Collinearity diagnostics report the degree of linear relationship between the variables used to predict problem behaviours. To determine if there are significant differences as cited in research question #3, based on age group, sex, and school for problem behaviours as measured by the teacher rating
scale of the BRP-2, a $3 \times 2 \times 2$ ANOVA table is used. If significant main effects and interaction effects are demonstrated, a 2 way ANOVA table is constructed to ascertain in what groupings significant differences occur. To confirm differences between group means, a univariate analysis of variance is conducted.
CHAPTER 4
RESULTS

4.1 Overview
In reviewing the literature, it was found that children who are at risk for a negative psychosocial developmental outcome manifest behaviours and emotions which have been variously described as problematic, inappropriate, extreme, delinquent, or disordered. The present study sought to explore the predictors of problem behaviours in the school based setting to determine which factors can assist in placing the child and youth population of the Saskatoon Tribal Council at risk for failure in school or life. As well, problem behaviours reported were compared between the groups', age, sex (male or female), and school (Band or provincial) to determine if the rating of problem behaviours varied as a function of the group, thereby, enhancing the reliability of the study for the population under consideration.

Prior to conducting the data analysis, it was decided to limit the sample to those students who were between 6 to 18 years of age at time of assessment. Because the instruments used to measure problem behaviours, academic performance, and non-verbal reasoning ability were not standardized and norm referenced on populations under 6 years of age or over 18 years of age, the sample was marginally reduced.

The sample was also grouped according to age into the 6 to 9 years of age, 10 to 13 years of age, and the 14 to 18 years of age groups. The decision to categorize the sample into the age groups outlined was modelled after the grade classification of children used in schools. Age groupings were then
based on either Grades 1 to 3, Grades 4 to 8, or Grades 9 to 12. The rationale for the age grouping of students based on general grade level classifications was to enhance the analysis of the data to determine if a child's developmental level, as based on grade classification, affected the relationship between the variables in question.

For the purposes of this study, one respondent who indicated attendance at a residential school was included under the category of Band school for further data analysis. This measure was warranted because the residential school in question is administrated by a Band which is part of the Saskatoon Tribal Council and therefore, should be considered as part of the sample which comprises the Band schools.

Correlation coefficients were used to determine what variables, academic achievement, non-verbal reasoning ability, age (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age), sex (male or female), and school (Band or provincial), when used alone are related to problem behaviours in the school based setting. Subsequently, the variables were entered into a multiple linear regression analysis so as to build a model which can be used to predict problem behaviours in the school-based setting taking into account the effect of academic achievement, non-verbal reasoning ability, school (Band or provincial), sex (male or female), and age (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age). Analysis of variance was used to determine if there were any significant differences in problem behaviours between groups as based on school (Band or provincial), sex (male or female), and age (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age).
4.2 Descriptive Statistics

Table 4.1 provides the frequency counts of the number of students who completed the TRS of the BRP-2, the APRS, and the MAT-SF as based on age grouping. As is evidenced by the totals for the various instruments, the restricting of the sample to ages 6 to 18 years only marginally reduced the size of the sample from the total survey sample, N=505. As well, the fluctuation in sample size, as based on age groupings is relatively small at approximately ten percent. What is of interest in the frequency counts of the completed instruments as based on age groupings, is the lower numbers completed for all instruments in the 14-18 year age group. The discrepancy in the age group frequency counts is a result of the lower number of high school students on roll and served by the Saskatoon Tribal Council. This finding is not surprising given that over 50% of the Aboriginal people living on-reserve in Saskatchewan have a Grade 9 education or less, with only 1.6% of the on-reserve population in Saskatchewan having received a high school diploma (The Social Trends Analysis Directorate, 1991).

Table 4.1. Sample by Age and by Academic, Behavioural, and Cognitive Measure

<table>
<thead>
<tr>
<th>Age</th>
<th>APRS</th>
<th></th>
<th>BRP</th>
<th></th>
<th>MAT-SF</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq</td>
<td>% Total*</td>
<td>Freq</td>
<td>% Total*</td>
<td>Freq</td>
<td>%Total*</td>
</tr>
<tr>
<td>6-9</td>
<td>170</td>
<td>35.9</td>
<td>170</td>
<td>35.5</td>
<td>158</td>
<td>34.0</td>
</tr>
<tr>
<td>10-13</td>
<td>186</td>
<td>39.3</td>
<td>189</td>
<td>39.5</td>
<td>188</td>
<td>40.4</td>
</tr>
<tr>
<td>14-18</td>
<td>117</td>
<td>24.7</td>
<td>120</td>
<td>25.1</td>
<td>119</td>
<td>25.6</td>
</tr>
<tr>
<td>Total</td>
<td>473</td>
<td>100</td>
<td>479</td>
<td>100</td>
<td>465</td>
<td>100</td>
</tr>
</tbody>
</table>

* percentages are approximations and may not total exactly one hundred percent.

Table 4.2 provides the breakdown of the sample as based on school and sex by age grouping. The percentage difference, as based on frequency counts,
between sexes was greatest at seven percent in the 6 to 9 year age group. Otherwise the percentage difference between sexes was approximately five percent for the 10 to 13 year age group and two percent for the 14 to 18 year age group. In terms of school, for all age groups, a greater percentage of students attended provincial schools. This is especially true of the 14 to 18 year age group where over fifty percent more students attended a provincial school. For the total sample under consideration, 50.8% are male and 49.2% are female, with 62.7% attending provincial schools and 37.3% of the students attending Band schools.

**Table 4.2. Age Group by School and Sex**

<table>
<thead>
<tr>
<th>Age</th>
<th>School</th>
<th>Freq.</th>
<th>%Total*</th>
<th>Sex</th>
<th>Freq.</th>
<th>% Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-9</td>
<td>Public</td>
<td>97</td>
<td>57.1</td>
<td>Male</td>
<td>91</td>
<td>53.5</td>
</tr>
<tr>
<td></td>
<td>Band</td>
<td>73</td>
<td>42.9</td>
<td>Female</td>
<td>79</td>
<td>46.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>170</td>
<td>100</td>
<td></td>
<td>170</td>
<td>100</td>
</tr>
<tr>
<td>10-13</td>
<td>Public</td>
<td>112</td>
<td>59.3</td>
<td>Male</td>
<td>91</td>
<td>48.1</td>
</tr>
<tr>
<td></td>
<td>Band</td>
<td>77</td>
<td>40.7</td>
<td>Female</td>
<td>98</td>
<td>51.9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>189</td>
<td>100.0</td>
<td></td>
<td>189</td>
<td>100.0</td>
</tr>
<tr>
<td>14-18</td>
<td>Public</td>
<td>92</td>
<td>76.0</td>
<td>Male</td>
<td>62</td>
<td>51.2</td>
</tr>
<tr>
<td></td>
<td>Band</td>
<td>29</td>
<td>24.0</td>
<td>Female</td>
<td>59</td>
<td>48.8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>121</td>
<td>100</td>
<td></td>
<td>121</td>
<td>100</td>
</tr>
<tr>
<td>Total Sample</td>
<td>Public</td>
<td>301</td>
<td>62.7</td>
<td>Male</td>
<td>244</td>
<td>50.8</td>
</tr>
<tr>
<td></td>
<td>Band</td>
<td>179</td>
<td>37.3</td>
<td>Female</td>
<td>236</td>
<td>49.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>480</td>
<td>100</td>
<td></td>
<td>480</td>
<td>100</td>
</tr>
</tbody>
</table>

* percentages are approximations and may not total exactly one hundred percent.

**4.3 Evaluating Assumptions of Normality**

Table 4.3 provides the distribution statistics of the instruments used for the total sample. In examining the distributions of the test scores, what is of interest is the low mean score, positive skew and negative kurtosis of the MAT-SF. As the standard scores reported for the MAT-SF in Table 4.3 are stanines, which in
a normal distribution would have a mean of 5 and a standard deviation of 2 (Naglieri, 1985b), it would appear that even though the bulk of the MAT-SF test scores are positively skewed and lie on the right side of the distribution, the mean score of the MAT-SF for the sample under consideration is below average. Moreover, because the distribution is platykurtic, indicates that it is more variable.

Table 4.3. Distribution Statistics by Instrument for the Total Sample

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Kurtosis</th>
<th>Skew</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRP-2*</td>
<td>9.972</td>
<td>3.035</td>
<td>.025</td>
<td>-.247</td>
</tr>
<tr>
<td>APRS·</td>
<td>59.052</td>
<td>14.999</td>
<td>-.403</td>
<td>.024</td>
</tr>
<tr>
<td>MAT-SF**</td>
<td>3.683</td>
<td>1.759</td>
<td>-.290</td>
<td>.398</td>
</tr>
</tbody>
</table>

*standard scores; **stanines; ·raw scores.

Since the statistical procedures used in this study, correlation, multiple regression, and analysis of variance are sensitive to violations of normality and assume that all groups come from populations with homogeneous variances, it was necessary to determine what if any transformations were appropriate. One of the methods used to examine the assumption that the data come from a normal distribution is with normal probability plots (Norusis, 1993). SPSS allows for the plotting of both normal plots, which plot the deviations of the data points from a straight line and the detrended normal plot in which the points should cluster around a horizontal line in no particular pattern. In so doing, it was found that of the three measures used, the BRP-2 appeared not to violate the assumption of normality. This result is confirmed by the distribution statistics for the teacher rating scale of the BRP-2.

Spread versus level plots were then used to determine the power of transformation for the independent variables academic performance and non-verbal reasoning ability. A successful transformation will result in the points on a
spread versus level plot clustering around a straight line resulting in a slope of zero. The power of transformation is calculated by subtracting the slope by one. Therefore, if a transformation is successful and the slope is zero, the power of transformation should equal one. Results of the transformations for the MAT-SF and the APRS are presented in Table 4.4.

To determine if the sample had been derived from populations with equal variances, the Levene test for homogeneity of variances was used. The results of the data transformations for the independent variables has equalized the variances so that the spread versus level slope approximates zero. Because the Levene test for homogeneity of variances is not dependent on normal distributions, it is a particularly robust measurement for the purposes of analysis of variance and multiple regression (Norusis, 1993).

Table 4.4. Results of Data Transformations

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Slope (Spread vs Level)</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>APRS(^1)</td>
<td>.016</td>
<td>.661</td>
<td>15</td>
<td>442</td>
<td>.8228</td>
</tr>
<tr>
<td>MAT-SF(^2)</td>
<td>-.170</td>
<td>1.2002</td>
<td>15</td>
<td>442</td>
<td>.2678</td>
</tr>
</tbody>
</table>

Power of Transformation: 1. APRS\(^{.671}\); 2. MAT-SF\(^{1.672}\).

4.4 Research Question Results

4.4.1 Research Question #1

1. How important are academic performance as measured by the APRS, non-verbal reasoning ability as measured by the MAT-SF, age group (6 to 9 years of age, 10 to 13 years of age, & 14 to 18 years of age) sex (male or female), and school (Band or provincial) when each one alone is used to predict problem behaviours as measured by the TRS of the BRP-2?
4.4.2 Results and Discussion

The correlations for the dependent variable, as measured by the TRS of the BRP-2, and the independent variables sex, age group, school, MAT-SF, and APRS are displayed in Table 4.5. Variables which are significantly correlated to the TRS of the BRP-2 include the APRS, MAT-SF, and sex. From observing the relationship between the variables, it is clear that academic performance, as measured by the APRS, is the strongest predictor of problem behaviours, as measured by the TRS of the BRP-2, when used alone. Therefore, since \( r = .649 \) and \( r^2 = .421 \), for the APRS, 42.1% of the total variability is due to the correlation between academic performance and problem behaviours.

<table>
<thead>
<tr>
<th>Variable</th>
<th>School</th>
<th>Age Group</th>
<th>Sex</th>
<th>BRP-2</th>
<th>APRS</th>
<th>MAT-SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Group</td>
<td>-.144**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>.009</td>
<td>.022</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRP-2</td>
<td>-.063</td>
<td>-.050</td>
<td>.200**</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APRS</td>
<td>.064</td>
<td>-.093*</td>
<td>.238**</td>
<td>.649**</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>MAT-SF</td>
<td>.035</td>
<td>-.097*</td>
<td>.059</td>
<td>.219**</td>
<td>.312**</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*p < .05; **p < .01

However, other variables like the MAT-SF and sex are also significantly correlated to problem behaviours. For the MAT-SF where \( r = .219 \) and \( r^2 = .047 \), 4.72% of the total variability of problem behaviours, as measured by the TRS of the BRP-2, is due to the correlation with non-verbal reasoning ability, as measured by the MAT-SF. For the variable sex, where \( r = .200 \) and \( r^2 = .04 \), 4.00% of the total variability in problem behaviours, as measured by the TRS of the BRP-2, is due to the correlation with sex. A multiple regression analysis was also conducted as variables rarely act independently and multiple influences can effect change measured in the dependent variable.
4.4.3 Research Question #2

2. How important is academic performance as measured by the APRS, non-verbal reasoning ability as measured by the MAT-SF, age group (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age), sex (male, female), and school (Band, provincial) when they are used together to predict problem behaviours as measured by the TRS of the BRP-2?

4.4.4 Results and Discussion

Table 4.6 presents the stepwise multiple regression data for the variables previously indicated. Since violations of assumptions require that data be transformed, the independent variables in Table 4.6 were transformed and entered. Stepwise selection was used because it is a combination of both forward and backward selection and determines the most parsimonious model. Appendix 3 contains the multiple regression results for the variables without any transformations taking place.

In building a model which could predict problem behaviours, multiple regression analysis for the total sample, as well as for schools (Band and provincial), sex (male and female), and age group (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age) is conducted so as to enhance the reliability and internal validity of the study. To control the criterion by which variables are entered and removed from the equation, the F-to-enter (PIN) and F-to-remove (POUT) is set at 0.05 and 0.10, respectively. As would be expected from the correlation analysis, academic performance is the strongest predictor of problem behaviours, however, for the total sample, and the sample as based on age group and sex, school is also a significant predictor of problem behaviour when used in conjunction with academic performance.
Table 4.6. Stepwise Multiple Regression Predictions of Problem Behaviours (TRS of the BRP-2)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Rsq</th>
<th>RsqCh</th>
<th>F</th>
<th>Sig. of F</th>
<th>beta</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Sample N=480</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.4636</td>
<td></td>
<td>390.727</td>
<td>.000*</td>
<td>.6870</td>
</tr>
<tr>
<td>School</td>
<td>.4777</td>
<td>.0141</td>
<td>206.256</td>
<td>.000*</td>
<td>-.1188</td>
</tr>
</tbody>
</table>

| **Band Schools n=177**     |      |       |           |           |      |
| Academic Performance       | .5102|       | 166.850   | .000*     | .6767|
| Age Group                  | .5271| .0169 | 88.623    | .000*     | .1362|
| Non-Verbal Reasoning       | .5394| .0123 | 61.672    | .000*     | .1212|

| **Provincial Schools n=299**|      |       |           |           |      |
| Academic Performance       | .4477|       | 235.055   | .000*     | .6717|
| Age Group                  | .4556| .0079 | 120.915   | .000*     | -.0978|
| Non-Verbal Reasoning       | .4643| .0009 | 83.201    | .000*     | -.0974|

| **Females n=233**          |      |       |           |           |      |
| Academic Performance       | .3961|       | 146.239   | .000*     | .6436|
| School                     | .4161| .02   | 79.088    | .000*     | -.1422|

| **Males n=243**            |      |       |           |           |      |
| Academic Performance       | .4784|       | 208.188   | .000*     | .6925|
| School                     | .4886| .0102 | 107.953   | .000*     | -.1010|

| **Age 6-9 years n=169**    |      |       |           |           |      |
| Academic Performance       | .3905|       | 99.317    | .000*     | .6408|
| School                     | .4189| .0284 | 55.511    | .000*     | -.1693|

| **Age 10-13 years n=188**  |      |       |           |           |      |
| Academic Performance       | .5342|       | 208.723   | .000*     | .7315|
| School                     | .5916| .0574 | 131.098   | .000*     | -.2399|

| **Age 14-18 years n=119**  |      |       |           |           |      |
| Academic Performance       | .4344|       | 85.247    | .000*     | .6658|
| School                     | .4661| .0317 | 48.024    | .000*     | .1783|

*p<.01
In interpreting multiple regression equations, \( R^2 \) indicates the degree of linear relationship between the independent and dependent variables. Thus for the total sample and the sample as based on sex and age group, academic performance accounts for the majority of the proportion of variation in problem behaviour as explained by the model. Furthermore, although school does meet the PIN requirements and contributes to the prediction of problem behaviours in the models developed, school's overall contribution is relatively low as evidenced by the \( R^2 \) change and beta value. Nevertheless, since Band schools were coded as 0 and provincial schools were coded as 1, the negative beta value alludes to the greater predictive power of the equation in Band schools.

When the sample is grouped according to either Band or provincial school, a somewhat different model is developed. Although academic performance is still the strongest predictor of problem behaviours, it varies as a function of the school and accounts for 6% more predictive power in Band schools. Furthermore, because school is no longer a variable which is entered into the equation, the other independent variables, age group and non-verbal reasoning ability, pass the PIN criterion and are allowed entry using stepwise selection. However, the \( R^2 \) change when age group and non-verbal reasoning ability are included in the model is minimal, which in conjunction with the beta values indicate the relative unimportance of these variables in predicting problem behaviours. As well, lack of collinearity between the independent variables is confirmed by the eigenvalues and variance proportions attributed to the eigenvalues for both Band and provincial schools. In this respect, Norusis (1993) states that:

The variances of each of the regression coefficients, including the constant, can be decomposed into a sum of components associated with each of the eigenvalues. If a high proportion of the variance of two or more coefficients is associated with the same eigenvalue, there is evidence for a near dependency. (p. 357)
Table 4.7 presents the collinearity diagnostics for Band and provincial schools, with only those condition indexes which are elevated being reported. The collinearity diagnostics for the equations developed for the total sample, age group, and sex are not reported because the independent variables, school and academic performance, are highly independent. This relationship is similar in nature to that for the total sample where, for the last eigenvalue, 99% or almost 100% of the variance is accounted for by the constant and academic performance, while <1% of the variance is attributable to type of school. In contrast, age group and academic performance are moderately related for both Band and provincial schools for the last eigenvalue in each equation as reported.

Table 4.7. Collinearity Diagnostics

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>Condition Index</th>
<th>Variance Proportions</th>
<th>Proportions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Constant</td>
<td>APRS</td>
</tr>
<tr>
<td>Band Schools</td>
<td>.01196</td>
<td>17.444</td>
<td>.96727</td>
</tr>
<tr>
<td>Provincial Schools</td>
<td>.01086</td>
<td>18.356</td>
<td>.96130</td>
</tr>
</tbody>
</table>

In determining collinearity, the researcher is looking for variables which have high proportions of variability associated with one eigenvalue (Norusis, 1993). Since the variance proportions for the variable academic performance is high in both equations, 73% and 82% for Band and provincial schools respectively, and the variance proportion is moderate for age group in both equations, 24% and 16% for Band and provincial schools respectively, while the proportion of variance is low for the MAT-SF in both equations, 5% and 1.4% for Band and provincial schools respectively, it would appear that
academic performance and age group are moderately collinear, while non-verbal reasoning (MAT-SF) is independent to academic performance and age group.

When examining the strength of the equations, as based on age group and sex, the predictive power of the equations is found to vary. The most striking difference is in the 10 to 13 year age group where 53.42% of the proportion of variability in predicting problem behaviours is accounted for by academic performance, and when school is added to the model, the predictive power of the equation increases to 59.16%. In contrast, the predictive power of the equation is lowest for the 6 to 9 year age group where 39.05% of the proportion of variability is accounted for by academic performance and increases slightly to 41.89% of the proportion of variability when school is added to the equation. For females, where 39.61% of the proportion of variability is accounted for by academic performance, the predictive power of the equation increases marginally by 2% when school is added to the equation. Similarly, in the 14 to 18 year age group, academic performance accounts for 43.44% of the proportion of variability when predicting problem behaviours and only increases slightly to 46.61% when school is entered in the equation. As well, when within group beta values for school are examined, it is found that only in the 14 to 18 year old age group does attending a provincial school, as opposed to a Band school, enhance the predictive power of the equation. Thus in predicting problem behaviours, the model developed is the most powerful in the 10 to 13 year age group, followed by the model developed for males only, and the total sample. In contrast, the predictive power of the equation is weakest in the 6 to 9 year age group and among females.

In conducting multiple regression analysis, outliers are found to have an influence on the estimates of the parameters. SPSS can identify those outliers
whose standardized residual values are greater than an absolute value of three. Table 4.8 provides data on the variables under consideration for the outliers identified. To enhance the predictive power of the equation, the outliers identified in Table 4.8 are not included in the stepwise multiple regression analysis. Considering the large sample size, the relatively small number of outliers identified for the total sample, enhances the goodness of fit for the model developed.

Nonetheless, outliers are of importance because they indicate situations when the equation developed is not applicable. Thus when both academic performance and problem behaviours are high, or when behaviour is competent and academic performance is very low, or when academic performance is above average and problem behaviours are negligible while non-verbal reasoning ability is low, a goodness of fit does not exist.

Table 4.8. Outliers at 3 Standard Deviations

<table>
<thead>
<tr>
<th>Case</th>
<th>Age Group</th>
<th>Sex</th>
<th>School</th>
<th>APRS·</th>
<th>BRP-2*</th>
<th>MAT-SF*</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>6-9 years</td>
<td>Female</td>
<td>Provincial</td>
<td>64</td>
<td>63</td>
<td>35</td>
</tr>
<tr>
<td>234</td>
<td>14-18 years</td>
<td>Female</td>
<td>Band</td>
<td>57</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td>432</td>
<td>10-13 years</td>
<td>Male</td>
<td>Band</td>
<td>41</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>438</td>
<td>14-18 years</td>
<td>Male</td>
<td>Provincial</td>
<td>16</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

*APRS raw scores, μ=59.05, std. dev.=15.00; *percentile ranks.

4.4.5 Research Question #3

3. Is there a significant difference in problem behaviours, as measured by the TRS of the BRP-2, between groups, as based on age group (6 to 9 years of age, 10 to 13 years of age, and 14 to 18 years of age), sex (male, female), and school (Band, provincial) in the child and youth population served by the Saskatoon Tribal Council?
4.4.6 Results and Discussion

To determine the answer to the research question posited, an ANOVA 3 X 2 X 2 factorial design is constructed for the dependent variable measuring problem behaviours and the independent variables age group, sex, and school. Subsequently, if two-way or three-way interaction effects are present, ANOVA 2 X 2 factorial designs for the significant independent variables are created. In assessing problem behaviours, the TRS of the BRP-2 is the instrument used in the present study. To accommodate the interpretation of the ANOVA factorial designs for the TRS, the means and standard deviations of the variables age group, sex, and school, are provided in Table 4.9. Table 4.10 provides the results of the 3 X 2 X 2 ANOVA for the TRS. In examining the data, it is found that a main effect for sex F (1, 467) = 16.182, p<.01 and an interaction effect for age group by school F (2, 467) = 3.351, p<.05 exist. To further tease out the main effect and determine if being male or female had similar main effects and interaction effects, an ANOVA 3 X 2 factorial design for males and females with the independent variables age group and school is completed.

Table 4.9. Descriptive Statistics for the Teacher Rating Scale of the BRP-2

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample</td>
<td>479*</td>
<td>9.3176</td>
<td>3.0346</td>
</tr>
<tr>
<td>Age Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 6-9 years</td>
<td>170</td>
<td>9.4176</td>
<td>2.9726</td>
</tr>
<tr>
<td>Age 10-13 years</td>
<td>189</td>
<td>9.5873</td>
<td>2.9498</td>
</tr>
<tr>
<td>Age 14-18 years</td>
<td>120</td>
<td>8.9667</td>
<td>3.2331</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>244</td>
<td>8.7746</td>
<td>3.0541</td>
</tr>
<tr>
<td>Female</td>
<td>235</td>
<td>9.9915</td>
<td>2.8927</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Band</td>
<td>301</td>
<td>9.1236</td>
<td>3.4340</td>
</tr>
<tr>
<td>Provincial</td>
<td>301</td>
<td>9.5183</td>
<td>2.7627</td>
</tr>
</tbody>
</table>

*480 cases were processed, 1 case, .2%, was missing.
Table 4.10. Analysis of Variance for Teacher Rating Scale of the BRP-2 by Age Group, Sex, & School

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>152.527</td>
<td>4</td>
<td>38.132</td>
<td>4.380</td>
<td>.002</td>
</tr>
<tr>
<td>Age Group</td>
<td>4.530</td>
<td>2</td>
<td>2.265</td>
<td>.260</td>
<td>.771</td>
</tr>
<tr>
<td>Sex</td>
<td>146.357</td>
<td>1</td>
<td>146.357</td>
<td>16.812</td>
<td>.000*</td>
</tr>
<tr>
<td>School</td>
<td>6.593</td>
<td>1</td>
<td>6.593</td>
<td>.757</td>
<td>.385</td>
</tr>
<tr>
<td>2-Way Interaction</td>
<td>65.457</td>
<td>5</td>
<td>13.091</td>
<td>1.504</td>
<td>.187</td>
</tr>
<tr>
<td>Age Group X Sex</td>
<td>1.101</td>
<td>2</td>
<td>.551</td>
<td>.063</td>
<td>.939</td>
</tr>
<tr>
<td>Age Group X School</td>
<td>61.473</td>
<td>2</td>
<td>30.736</td>
<td>3.531</td>
<td>.030**</td>
</tr>
<tr>
<td>Sex X School</td>
<td>3.235</td>
<td>1</td>
<td>3.235</td>
<td>.372</td>
<td>.542</td>
</tr>
<tr>
<td>3-Way Interaction</td>
<td>42.975</td>
<td>2</td>
<td>21.468</td>
<td>2.468</td>
<td>.086</td>
</tr>
<tr>
<td>Age Group X Sex X School</td>
<td>42.975</td>
<td>2</td>
<td>21.468</td>
<td>2.468</td>
<td>.086</td>
</tr>
<tr>
<td>Explained</td>
<td>336.373</td>
<td>11</td>
<td>30.579</td>
<td>3.513</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>4065.481</td>
<td>467</td>
<td>8.706</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4401.854</td>
<td>479</td>
<td>9.209</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.01; **p<.05; *480 cases were processed, 1 case, .2%, was missing.

The ANOVA data run for the male sample is presented in Table 4.11. In examining the data, no significant main effects or interaction effects are present. However, when the analysis of variance is run for the female sample, there is a significant interaction effect for age group and school $F(2, 229) = 5.822$, $p<.01$, see Table 4.12. This indicates that the main effect and interaction effect witnessed in Table 4.10 is due to the elevated mean scores of the females which varies as a function of age group and school.
Table 4.11. Analysis of Variance for the Teacher Rating Scale of the BRP-2 (Males) by Age Group & School

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>10.934</td>
<td>3</td>
<td>3.645</td>
<td>.390</td>
<td>.760</td>
</tr>
<tr>
<td>Age Group</td>
<td>4.700</td>
<td>2</td>
<td>2.350</td>
<td>.252</td>
<td>.778</td>
</tr>
<tr>
<td>School</td>
<td>9.455</td>
<td>1</td>
<td>9.455</td>
<td>1.012</td>
<td>.315</td>
</tr>
<tr>
<td>2-Way Interaction</td>
<td>10.990</td>
<td>2</td>
<td>5.495</td>
<td>.588</td>
<td>.556</td>
</tr>
<tr>
<td>Age Group X School</td>
<td>10.990</td>
<td>2</td>
<td>5.495</td>
<td>.588</td>
<td>.556</td>
</tr>
<tr>
<td>Explained</td>
<td>43.209</td>
<td>5</td>
<td>8.642</td>
<td>.925</td>
<td>.465</td>
</tr>
<tr>
<td>Residual</td>
<td>2223.393</td>
<td>238</td>
<td>9.342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2266.602</td>
<td>243</td>
<td>9.328</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*244 cases were processed, 0 cases, 0.0%, were missing.

Table 4.12. Analysis of Variance for the Teacher Rating Scale of the BRP-2 (Females) by Age Group and School

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>.910</td>
<td>3</td>
<td>.303</td>
<td>.038</td>
<td>.990</td>
</tr>
<tr>
<td>Age Group</td>
<td>.802</td>
<td>2</td>
<td>.401</td>
<td>.050</td>
<td>.951</td>
</tr>
<tr>
<td>School</td>
<td>.298</td>
<td>1</td>
<td>.298</td>
<td>.037</td>
<td>.847</td>
</tr>
<tr>
<td>2-Way Interaction</td>
<td>93.669</td>
<td>2</td>
<td>46.834</td>
<td>5.822</td>
<td>.003*</td>
</tr>
<tr>
<td>Age Group X School</td>
<td>93.669</td>
<td>2</td>
<td>46.834</td>
<td>5.822</td>
<td>.003*</td>
</tr>
<tr>
<td>Explained</td>
<td>115.895</td>
<td>5</td>
<td>23.179</td>
<td>2.882</td>
<td>.015</td>
</tr>
<tr>
<td>Residual</td>
<td>1842.088</td>
<td>229</td>
<td>8.044</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1957.983</td>
<td>234</td>
<td>8.367</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.01; **p<.05; *236 cases were processed, 1 case, .4%, was missing

Figure 4.1 graphically portrays that no significant interaction effect for males as based on age group and school is present. However, when females as based on age group and school is graphed, it is clear that a significant interaction effect is present. From observing Figure 4.2 it would appear that the significant interaction effect occurs in the 10 to 13 year age group.
**Figure 4.1.** Interaction Effect (Males) for Age Group and School

**Figure 4.2.** Interaction Effect (Females) for Age Group and School
To confirm that a significant effect occurs, a univariate post-hoc comparison between all groups as based on age group is made. The Scheffe' method is chosen because it is considered superior for simple between group comparisons when sample sizes are not the same (Evans, 1992). Significant effects, as based on age group, occur in both the provincial school and females attending provincial school groups. Thus the difference for the 10 to 13 year age group is significant with higher mean scores for the TRS of the BRP-2 in both the provincial school group $F(2, 298)=6.417, p<.001$ and the female provincial school group $F(2, 144)=6.8065, p<.001$.

To further determine if type of school, Band or provincial, have similar main effects and interaction effects for the TRS scores reported, an ANOVA 3 X 2 factorial design is run for each school grouping for the independent variables age group and sex. In Table 4.13, only the main effects for age group $F(2, 295) = 5.477, p<.01$ and sex $F(1, 295) = 11.423, p<.01$ are significant. When the analysis of variance is run for Band schools, using the same variables, the only significant main effect is for sex $F(1, 172) = 6.25, p<.05$, see Table 4.14. This indicates that while sex and age group effect teacher ratings of problem behaviours in provincial schools, there is no interaction effect between the variables. In Band schools, only sex has a significant main effect and there is no interaction effect for age group and sex.
Table 4.13. Analysis of Variance for the Teacher Rating Scale of the BRP-2 (Provincial Schools) by Age Group & Sex

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Group</td>
<td>170.751</td>
<td>3</td>
<td>56.917</td>
<td>8.019</td>
<td>.000</td>
</tr>
<tr>
<td>Sex</td>
<td>77.756</td>
<td>2</td>
<td>38.878</td>
<td>5.477</td>
<td>.005*</td>
</tr>
<tr>
<td>2-Way Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Group X Sex</td>
<td>21.099</td>
<td>2</td>
<td>10.549</td>
<td>1.486</td>
<td>.228</td>
</tr>
<tr>
<td>Explained</td>
<td>203.243</td>
<td>5</td>
<td>40.649</td>
<td>5.727</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>2093.907</td>
<td>295</td>
<td>7.098</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2297.150</td>
<td>300</td>
<td>7.657</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.01; *300 cases were processed, 0 cases, .0%, were missing.

Table 4.14. Analysis of Variance for the Teacher Rating Scale of the BRP-2 (Band Schools) by Age Group & Sex

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Group</td>
<td>91.337</td>
<td>3</td>
<td>30.446</td>
<td>2.656</td>
<td>.050</td>
</tr>
<tr>
<td>Sex</td>
<td>15.718</td>
<td>2</td>
<td>7.859</td>
<td>.686</td>
<td>.505</td>
</tr>
<tr>
<td>2-Way Interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Group X Sex</td>
<td>22.219</td>
<td>2</td>
<td>11.110</td>
<td>.969</td>
<td>.381</td>
</tr>
<tr>
<td>Explained</td>
<td>115.707</td>
<td>5</td>
<td>23.141</td>
<td>2.019</td>
<td>.078</td>
</tr>
<tr>
<td>Residual</td>
<td>1971.574</td>
<td>172</td>
<td>11.463</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2087.281</td>
<td>177</td>
<td>11.793</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p<.05; *178 cases were processed, 1 case, .6%, was missing.

4.5 Summary of Results

The results indicate that academic performance and problem behaviours are moderately correlated. Sex and non-verbal reasoning ability are also significantly correlated with problem behaviours but the strength of the correlation is low. When problem behaviours are the criterion variable and non-
verbal reasoning ability, academic performance, school, sex, and age group are the predictor variables, academic performance continues to be the strongest predictor, with type of school slightly increasing the predictive power of the multiple regression equation developed. The strength of the equation is strongest among the 10 to 13 year age group and weakest among females. As would be expected, the multiple regression equation developed for Band and provincial schools is slightly different than the equation developed for the total sample and other groups. Although academic performance still remains the strongest predictor variable, other predictor variables entered into the multiple regression equation developed are age group and non-verbal reasoning ability. The strength of the equation developed for Band schools is slightly stronger than the one developed for provincial schools, with academic performance accounting for a greater degree of total variability. For all equations developed, except for the sample as based on Band and provincial schools, collinearity diagnostics indicate that the predictor variables are highly independent. In the sample as based on Band and provincial schools, a low but significant relationship exists between the variables academic performance and age group as predictors of problem behaviours.

In determining significant differences for problem behaviours, analysis of variance results indicate that a main effect for sex and interaction effect for age group by school exist. Furthermore, the results for the sample as based on males and females indicate that only in the female sample does a significant interaction between age group by school exist. In graphing the interaction effect, it appears that it is greatest among those females in the 10 to 13 year age group either attending Band or provincial schools. Confirming this result, univariate analysis of variance report that in the 10 to 13 year age female sample attending provincial schools, elevated mean scores for the TRS of the BRP-2 are present.
CHAPTER 5
DISCUSSION

5.1 Overview of the Study

The purpose of the present study was to investigate the predictors of problem behaviours which would place the student population served by the Saskatoon Tribal Council at risk for failure in school or in life. Specifically, the study examined predictors of problem behaviours as measured by the Teacher Rating Scale of the Behavior Rating Profile-2nd Edition with the variables sex, age group, type of school, non-verbal reasoning ability (as measured by the MAT-SF), and academic performance (as measured by the APRS). In developing a model to predict problem behaviours in the school-based setting, the correlates were analyzed both individually and together to determine which variables are the best predictors of problem behaviours. The present study also sought to explore if there was a significant difference in problem behaviours reported in the child and youth population served by the Saskatoon Tribal Council as based on age group, sex, and school.

The sample derived for the present study included all students who were living on one of the seven reserves served by the Saskatoon Tribal Council and attending either a provincial, residential, or Band school. All schools serving students of the Saskatoon Tribal Council agreed to participate in the study except for one. Of the 809 students on the 1993 nominal role record, 289 attended Band schools with the remainder attending provincial or residential schools. Those students who were registered in one of the seven bands that
comprise the Saskatoon Tribal Council but live off-reserve and were not served by the Saskatoon Tribal Council were not included in the subject sample. Thus the total sample population was 505 students with the discrepancy between the sample population and the nominal role records due to change of residence and sporadic attendance patterns.

The subject sample was restricted to those students between the ages of 6 to 18 years to enhance the validity and reliability of the present study which incorporated instrumentation designed for this age span. As well, the subject sample was collapsed into three age groups representing elementary students from ages 6 to 9 years, middle years students from ages 10 to 13 years, and high school students between the ages of 14 to 18 years. Furthermore, the analysis of the data was conducted for the total sample and the sample as based on sex, age group, and school.

The purpose behind these groupings was fourfold. On the one hand, the division of the original sample into smaller samples enhances the reliability and validity of the present findings. Secondly, the research literature indicates that differential processes might affect the manifestation of problem behaviours, as based on age group. Thirdly, it would be expected that sex differences in the expression of problem behaviours would be present due to the design of the instrumentation used to assess problem behaviours. Finally, since not all students share the same educational context, as some attend Band schools whereas others attend provincial schools, problem behaviours might vary as a function of the school. Further explanation of the theoretical background supporting the groupings of the subject sample and the findings of the present study, with regards to the current research and future studies, will be elaborated on and discussed within the parameters of the present chapter.
5.2 Findings

In determining independent predictors of problem behaviour for the total sample, it was found that academic performance, followed by non-verbal reasoning ability, and sex were significantly correlated, see Figure 5.1. Of the variables, academic performance accounted for over 42.1% of the total variability of problem behaviours as measured by the TRS of the BRP-2. Although both non-verbal reasoning and sex are significantly correlated with problem behaviours, the strength of the correlations is low. Non-verbal reasoning ability as measured by the MAT-SF accounted for 4.72% of the total variability of problem behaviour as measured by the TRS of the BRP-2 while sex accounted for only 4.00% of the total variability in problem behaviour as measured by the TRS of the BRP-2. This means that sex (p<.01, r=.200) and non-verbal reasoning ability (p<.01, r=.219) are poor predictors of problem behaviours in the school-based setting, while academic performance (p<.01, r=.649) is a moderate predictor of problem behaviours in the school-based setting.

---

**Figure 5.1.** Correlation Model for Predictors of Problem Behaviours
setting. What is of importance for this finding is the relatively low correlation between non-verbal reasoning ability and problem behaviours. Rather it was found that a stronger relationship exists between non-verbal reasoning ability as measured by the MAT-SF and academic performance ($p<.01$, $r=.312$) as measured by the APRS, accounting for approximately 10% of the total variability in scores.

Since numerous studies have found that students who are emotionally disturbed or behaviourally disordered score lower on intelligence tests and do not do as well academically (Farrington, 1991; Hallahan & Kaufmann, 1994; Werner & Smith, 1992; White et al., 1989; Worland et al., 1985; Toro et al., 1990; Ysseldyke & Algozzine, 1990), the present finding is of importance. In interpreting this finding it is important to realize that the MAT-SF is a non-verbal screen of intelligence, and since it is known that Aboriginal childrens' and youths' scores on intelligence tests are usually higher in the performance domain than in the verbal domain (Garth & Smith cited in McShane & Berry, 1988; Goldstein, 1988; McShane & Plas, 1984a, 1984b, 1988; Sattler 1974, 1992; Seyfort et al., 1980), it is not expected that the MAT-SF, a non-verbal screen of reasoning ability, would be a strong predictor of problem behaviours. The present study partially bears this out as the strength of the correlation between non-verbal reasoning ability is low. However, in examining the mean score of the MAT-SF for the total sample, it is found that it is below average. In terms of the distribution of the MAT-SF, it is both positively skewed and platykurtic, resulting in a greater degree of variability in the distribution. Given these findings and the sample and locations from which the sample was drawn, the present study demonstrated that non-verbal reasoning ability as measured by the MAT-SF is a poor predictor of problem behaviours as measured by the TRS of the BRP-2. Instead, it was found that the strength of the relationship
between academic performance as measured by the APRS and non-verbal reasoning ability as measured by the MAT-SF was greater. In retrospect then, would a measure of verbal IQ have been a better predictor of problem behaviours given the relationship between academic performance, problem behaviours, and non-verbal reasoning ability?

In multiple regression studies, using independent variables, sample sizes with over 200 subjects are preferred while studies incorporating less than a 100 subjects are not recommended (Kerlinger & Pedhazur, 1973). It is generally agreed that the larger the sample size the greater the power of the study and the more precise the statistical measurement (Kerlinger & Pedhazur; Pedhazur & Schmelkin, 1991). In understanding why there is a slight difference in the equations developed for Band and provincial schools, it should be remembered that measurement error might account for some of the variance observed. This is so because the subject sample size for provincial schools (n=299) is larger than Band schools (n=177), by approximately 60%. Furthermore, even though students who attend both Band schools and provincial schools, for the purposes of the present study, live on reserve, they do not necessarily share a similar educational context. Therefore, it would appear that even though academic performance is a stronger predictor of problem behaviours in Band schools, the strength of the equation developed for students attending provincial schools has greater power owing to the larger sample size for that group.

As well, even though age group, to be discussed later, and non-verbal reasoning combine along with academic performance to enhance the goodness of fit for both the equations developed for Band schools and provincial schools, the overall contribution of the variable non-verbal reasoning ability is minimal. This finding indicates that further research into the functional equivalence of behaviour, ability, and achievement between settings needs to be investigated.
so that a valid, comparative, descriptive framework is developed (Berry, 1989; Kirmayer, 1994a; McShane & Berry, 1988; Rubenstein & Perloff, 1986; Sugai, 1988).

In understanding why the equation developed for males has greater predictive power than the equation developed for females, it is important to consider that sex differences influence the expression of a disorder. In this respect, it is generally agreed that females tend towards the more internalizing disorders and manifest symptoms like depression, withdrawal, and somatization, whereas males tend to exhibit the more externalizing disorders like aggression and conduct disorder (Offord et al., 1989, 1991; Patterson et al., 1991). Even though the BRP-2 has not been factor analyzed, it is considered to have a single factor solution for conduct problems (Witt, 1985). Therefore, it is not unexpected that the TRS of the BRP-2 would under identify females who are internalizers but still at risk for failure in school. This finding clarifies why the strength of the equation developed to predict problem behaviours is stronger among males than females, as fewer items on the TRS of the BRP-2 identifying problem behaviours might have been endorsed for females who are internalizers and yet at-risk.

According to research, differences in the strength of the multiple regression equation observed between age groups can be accounted for by the models which have been developed to interpret deviant or delinquent behaviour among children and youth (Farrington, 1991; Patterson et al., 1991; Snyder & Huntley, 1990). As familial factors have been implicated as causal in the development and maintenance of aggression in children, it would be expected that instrumentation which is based on the rating of school-based problem behaviours would under identify children during their first few years of school. In understanding how item descriptors of a behavioural measure might effect the
rating of problem behaviours, Farrington's research should be consulted. According to Farrington, descriptors of problem behaviours vary as a function of age with younger students 8 years of age being simply described as disobedient, while older students 12 and 14 years of age, are described as being not only disobedient but also quarrelsome, aggressive, rough at play, and resentful of criticism and punishment. Therefore, amongst younger children, teachers using the BRP-2 might have endorsed fewer items thus effecting the strength of the relationship between academic performance as measured by the APRS and problem behaviours as measured by the TRS of the BRP-2.

Furthermore, because it is assumed, given normal intelligence, that academic achievement is determined primarily by time on task in the classroom and on homework assignments in the home, and since the child manifesting problem behaviours in the school environment spends less time on task than other children, it follows that he or she is at increased risk for academic failure (Patterson et al., 1991). As a result, the effects of academic failure cause dysphoric moods in the child, which are mediated by peer rejection, resulting in both peer rejection and academic failure (Patterson et al.). This explains why in the multiple regression equations developed that the predictive power of academic performance is strongest among the 10 to 13 year age group and weakest among the 6 to 9 year age group, as the development of problem behaviours in the middle years leads directly to peer failure, poor academic performance, and then school failure. Conversely, in the 6 to 9 year age group, familial processes are deemed casual in the development and maintenance of antisocial behaviour (Farrington, 1991; Patterson et al.; Snyder & Huntley, 1990) which has not yet been transferred to the school and resulted in peer and school failure (Patterson et al.). Therefore, it would be expected that a model based on academic performance as a predictor of problem behaviours in the
school setting, for the 6 to 9 year age group, is not as robust. As to why the predictive power of the equation is not strongest in the 14 to 18 year age group can partially be accounted for by the high drop-out rates among Aboriginal and First Nation children (Report of the Steering Committee Medical Services Branch, 1991; The Social Trends Analysis Directorate, 1991), which subsequently indicates that the students most at risk for academic failure have already been failed by the educational system resulting in an equation in which academic performance has less predictive power.

In determining if there were significant differences in problem behaviours between groups, it was found that males manifested more problem behaviours in a school-based setting than females. As well, when the sample was divided along the basis of sex to further tease out between group differences, it was determined that for the female sample, students in the 10 to 13 year age group were rated as having fewer problem behaviours in provincial schools than in Band schools.

These findings confirm that the TRS of the BRP-2 identifies males as manifesting a greater number of problem behaviours in the school-based setting due to the construction of the instrument which is not as sensitive to internalizing disorders which are more prevalent among females. Even so, it must still be recognized that of those females who are identified as manifesting problem behaviours, the female students attending provincial schools in the 10 to 13 year age group were rated as having fewer problem behaviours than their counterparts attending Band schools. The significance of this finding underlies the possible difference in the educational context for First Nation students attending Band and provincial schools.
5.3 Educational Implications

The Education Act requires that all children and youth, of school age, attend an educational institution. Because of this, the school is the singular place where the multifaceted needs of children are dealt with on a daily basis. As well, it is generally agreed that preventive measures taken early in a child's life will reduce the risks, disadvantages, and future costs that the child, youth, or society may experience over time (Planning and Evaluation Branch, Saskatchewan Education, Training and Employment, 1994). Since the present study has found that academic performance is a strong predictor of problem behaviours, it follows that the school can be an ameliorative factor in the prevention and treatment of behavioural problems. As a result, if the child or youth at-risk is to receive effective remediation and become resilient to a negative psychosocial development outcome and not experience failure, then it is essential that the school act as an agent of change in the child's life.

It is clear from the findings of the present study that there is a direct link between behavioural problems manifested in the school environment and academic performance. Research has also demonstrated that educational interventions need to develop the ability of children and youth at-risk to believe in their own capabilities to improve their academic performance and relations with others in the school (Connell et al., 1994). Additionally, it has been found that once youth engage in behaviour which places them at-risk, there is a tendency for negative educational outcomes to occur (Connell et al.; Patterson et al., 1991; Snyder & Huntley, 1990). In order for these destructive processes to be reversed, it is important that those involved with children and youth at-risk, including both parents and educators, act to engage and increase their academic involvement and thereby, reverse the negative processes which affect children and youth at-risk.
In terms of Canada's Aboriginal and First Nation populations, it has been reported that lower education levels and higher drop out rates than that for the total Canadian population exist (Report of the Steering Committee Medical Services Branch, 1991; The Social Trends Analysis Directorate, 1991). If First Nation students are to remain in school, it is important that the values reflected in the education system are not in conflict with the values of the family and community at large which the educational system serves (Planning and Evaluation Branch, Saskatchewan Education, Training and Employment, 1994). It is also necessary that the school involve both parents and the community so that the debilitative processes of acculturation are not reinforced in the educational system (Adams, 1989; Berry, 1980; Berry, Poortinga et al., 1992; McShane & Berry, 1988). Moreover, it is generally recognized that strategies which focus on successful remediation are more successful when they build on the strengths of community identity and culture and are not imposed externally (Blum et al., 1992). Therefore, if First Nation children are to succeed in school and not encounter failure and manifest problem behaviours, it is necessary that they have a strong sense of personal values which are not in conflict with the education system and are supported by their parents and community, who value school performance and are interested and involved in the education of their child (Planning and Evaluation Branch, Saskatchewan Education, Training and Employment). In this respect, the school should become a centre for community involvement which promotes parental and community participation in the education of their children at all levels.

Because many of the problems which students face are not specific to the school and are the result of multiple influences which act on the child, it is important that service agencies develop a collaborative and consultative culture if resources available to the schools and educators are to be maximized
(Planning and Evaluation Branch, Saskatchewan Education, Training and Employment, 1994):

Collaboration involving the adoption of cooperative principles, the establishment of partnerships and mutual goals, and the sharing of leadership, resources, and responsibilities is needed to address barriers to learning to enable children and youth to succeed in school and in life. In addition, the services provided by the different sectors are often fragmented and uncoordinated at the community level. Educators frequently do not know what resources are available or whom to call if an emergency arises with a student. In some locations services are not available. (p. 6)

The need for the development of a collaborative culture among service agencies for children and youth at-risk is made even more imperative when it is realized that there will be a dramatic rise in the on-reserve school age population, not only because of higher retention rates in school, but also because of a continuing increase in the school age population (Hagey et al., 1989). As a result, there will be an increased demand from Band run schools to further develop community education resources. Furthermore, Tribal Councils will continue to demand adequate resources from provincial and federal governments, as based on need, to address the growing demands of their school-age populations. Therefore, it is necessary that the service delivery of educational resources be developed in conjunction with the establishment of partnerships with Aboriginal and First Nation organizations whose mandate is to meet the essential needs of their children and youth. However, in order for educational service delivery to develop, it is important that both community and administrative stakeholders share a common vision and direction in the development of educational opportunities for First Nation children and youth in Saskatchewan. It is not surprising then that policy initiatives advocate a cooperative, collaborative culture for the delivery of educational services (Planning and Evaluation Branch, Saskatchewan Education, Training and Employment).
5.4 Research Implications

5.4.1 Culturally Sensitive Research

The present study is a cross-sectional analysis of the predictors of problem behaviours which place the student population of the Saskatoon Tribal Council at-risk. Because of this, the main emphasis of the present study was on the risk factors as determined by the instrumentation used and the demographic data collected. At present, little research in the Canadian context exists which explores the relationship between risk factors in Aboriginal populations. As to why this might be, Kirmayer (1994a) explains that research regarding the development of instrumentation which has been designed and standardized in Aboriginal populations has not occurred. As a result, researchers are wary of undertaking studies in which the reliability and validity of data gathering is in question. The research literature is clear in recommending that issues relating to functional equivalence and the emic-etic debate need to be addressed and resolved (Berry, 1989, Kirmayer). Even though emic measures of local idioms of distress, vocabularies, and categories of experience are likely to be more reliable and valid, they might not be comparable across populations. In order to prove that indeed psychometric equivalence exists and comparisons can be made cross-culturally using similar instrumentation, it is necessary to demonstrate or improve the various types of equivalence (Hui & Triandis, 1985). However, Kirmayer cautions that the revalidation and redevelopment of instruments specific to a given population is both time consuming and costly. Because of this, Kirmayer "argues in favour of working to modify and validate existing scales rather than starting from scratch each time" (p. 79). Leading Kirmayer to conclude:

...that all epidemiological research include an ethnographic component. This should use key informants and participant observation to explore cultural idioms of distress, as well as focus groups in which the proposed questionnaires are explored and critiqued.(p.79)
Even though local expressions of distress are likely to be unique and not comparable across populations, their incorporation will modify and/or validate standardized measures. Without such initiatives in research, studies will continue to be culturally laden and not valid or reliable interpretations of the populations under study.

5.4.2 Risk Factors and Resilience

5.4.2.1 Longitudinal studies

As is the case in the present study, the majority of research concerning resilience and risk factors pertaining to children and youth is epidemiological in nature and therefore, occurring over the short term. Although the present study only concerned itself with predictors of problem behaviour which place the child and youth population at-risk and was limited to the variables under study, further research needs to explore the roots of resilience and the variables, factors, and mechanisms which place children at-risk and also allow them to overcome adversity (Werner & Smith, 1992). According to Rutter (1989), epidemiological studies which include a longitudinal component are receiving increased recognition because of the importance in recognizing why all individuals exposed to risk factors do not develop psychological disorders. Unfortunately, much of the research has focussed on adolescents and children in their middle years to the neglect of early childhood and longitudinal studies. Research which incorporates both quantitative and qualitative methodologies and monitors high risk populations over time to determine risk and protective factors including positive attributes and indicators of successful adaptation is both desirable and needed if social policy planning, interventions, and programming are to be effective.
5.4.2.2 Developmental perspectives

Rutter (1989) and Patterson et al. (1991) identify both continuities and discontinuities in the developmental patterns of psychopathology among children and youth. Etiology and age of onset are concerns which need to be investigated if at-risk and protective factors are to be understood. Patterson et al. has proposed two different models in the development of antisocial behaviour for children and adolescents, implicating familial processes in the early starter model and the delinquent peer group in the late starter model. Without a comprehensive understanding of the child developmental processes which are in place, opportunities for remediation are lost. Rutter concluded that “a prospective epidemiological/longitudinal study starting in the preschool years and continuing into adolescence would be most helpful in delineating the processes involved” (p. 158).

Other developmental niches identified by Werner and Smith (1992) which need to be examined in future epidemiological/longitudinal studies which focus on risk and resilience are the interface between the child and culture. Werner and Smith suggested physical and social settings, child care customs which include parental beliefs regarding a child’s needs and wants, and sex role socialization need be investigated if protective mechanisms and risk factors are to be understood. In Aboriginal populations, it has been suggested that the culturally different patterns of raising children and the anxiety laden learning conditions that some students encounter when entering the school, a culturally unfamiliar environment, provide a developmental explanation for discrepancies in the assessment process to exist (Armstrong, 1993; McShane & Berry 1988). It is imperative then, that if further research into the at-risk and protective factors is to occur in First Nation populations, that issues pertaining to cross cultural psychopathology need be addressed. To facilitate this process, Kirmayer's
(1994a) guidelines to resolving the emic-etic debate and the reliability and validity of instrumentation scales should be incorporated if the study is not to be compromised.

5.4.2.3 Situation specificity

The present study incorporated teacher ratings and a test of cognitive development. The teacher ratings were specific to the rating of problem behaviours and academic performance occurring in the environment of the school. In this respect, the reliability and validity of the study would have been enhanced if data was both multi modal and multi source.

Although it is generally agreed that multi modal, multi source assessment is both desired and efficacious, little is known on how to integrate the differences as a function of the informant. According to the researchers involved in the OCHS (Boyle et al., 1987), there is little empirical evidence regarding the integration of data from multiple perspectives. In the OCHS, it was found that not only were there disagreements between informants on individual cases, but that the correlates of the disorder also varied as a function of the informant (Offord et al., 1989; Rutter, 1989). It is important then that psychological dysfunction continue to be measured along multiple dimensions and gathered from a number of informants and observers if the research is to remain culturally sensitive (Kirmayer, 1994a).

5.4.2.4 Multiple regression and replication

Further to the issue of situation specificity is the need for future research to replicate the findings and thereby, enhance the reliability of the present study (Kerlinger & Pedhazur, 1973). This type of research is required as prevalence indicators have been found to vary among Aboriginal communities (Kirmayer,
1994a), with the factors which place children and youth at-risk also varying as a function of the setting. Common criticisms of multiple regression analysis are the tendency of regression coefficients to change from sample to sample. It is generally conceded that findings which hold up using different subjects and conducted in different places can be trusted. However, studies which occur in only one local have reliability concerns. Certainly attempts were made, within the context of the present study, to determine if different groups within the sample had similar predictors of problem behaviours. In replicating studies, it is not always necessary that the study duplicate methodologies and samples, rather minor changes to samples and variables can enhance the findings of previous research and broaden the knowledge base of a particular field of inquiry (Kerlinger & Pedhazur, 1973). Because of this, further research which replicates research studies, like the current one, in different places with different samples and with minor changes to the variables would enhance the reliability and internal validity of the present study, given similar findings.

5.4.2.5 Gender bias

The present study found that a significant main effect for sex in the rating of problem behaviours exists. Moreover, the mean score for males is about one half a standard deviation below that for females. Furthermore, there is a significant interaction effect among females in the 10 to 13 year age group. As well, it was found that females, 10 to 13 years of age, attending provincial schools were rated with fewer problem behaviours than their counterparts attending Band schools. These findings indicate that in terms of future research not only should behaviours which are externalizing in nature, like problem behaviours be identified, but also those behaviours which are internalizing in nature be identified. This measure is warranted because differential paths have
been developed for males and females both at risk and resilient to a disorder and susceptible to biological and psychosocial risk factors (Werner & Smith, 1992). By so doing, possible gender bias in the identification and prevalence of females who are at-risk will be mitigated. Future research also needs to examine the functional equivalence of problem behaviours between Band and provincial schools. Furthermore, the educational context experienced by students of both genders needs be determined to ascertain if situation specificity occurs in the expression and identification of problem behaviours.

5.5 Conclusion

To assist children and youth at-risk, it is necessary to examine those processes which are in place to help determine how positive change can be implemented and bring about adjustments leading to successful adaptation. In terms of prevention and intervention in a school-based setting, the present study found that the facilitation of academic success continues to be one of the most important variables which can affect the manifestation of problem behaviours leading to subsequent academic or school failure. The responsibility of educators then is to reverse this negative transactional process. For children and youth to succeed academically and to reach their potential, it is necessary that they encounter responsible adults who are caring and trusting allowing them to feel safe and secure within the context of the educational setting. The significance of the school in both community development issues and as an advocate of the values and beliefs of the community it serves is made manifest when the historical context in which education occurred among Aboriginal populations is recognized.

The development of intervention programs should be directed towards all age groups. Moreover, the importance of intervention is made even more acute
when it is realized that females at-risk might be under identified in the present study. Furthermore, of the females who are identified, it is found that those 10 to 13 years of age attending Band schools are more at risk for academic and school failure than their counterparts attending provincial schools. Given this finding, it is necessary that federal and provincial funding agencies continue to make available resources to Tribal Councils for the development of appropriate educational interventions if those children who are at-risk are to receive remediation. As well, the current delivery of educational services needs to facilitate a collaborative culture whereby interagency cooperation between federal, provincial, and First Nation agencies is accommodated. Without such a service delivery mechanism in place, agencies representing both federal and provincial jurisdictions will continue to offer fragmented and opposing services to First Nation children and youth.

At present, within the Canadian context, there is a lack of valid and reliable epidemiological research among First Nation populations. There are currently no published studies examining the longitudinal protective factors of resilient children and youth which allow them to develop successful adaptations to later adult outcomes. Assessment and diagnosis, whether it be preventive or ameliorative, needs to examine not only risk factors but those processes which are protective and allow the child or youth to become resilient to a negative developmental outcome. Future research also needs to be validated culturally and demonstrate the incorporation of both emic and etic methodologies if findings are to be comparable and studies are not compromised by weak research designs. Without such research initiatives, policy and programming initiatives will continue to be lacking as they fail to take into account the dynamics and developmental processes which effect First Nation children and youth.
REFERENCES


APPENDICES
APPENDIX 1
Saskatoon Tribal Council
Letter of Permission
Mr. David Mykota  
Dept of Education for Exceptional Children  
University of Saskatchewan  
Saskatoon, Saskatchewan  
S7N 0W0

Dear David,

Re: Request to use STC research data

The Saskatoon Tribal Council is prepared to grant approval of your request to analyze the instruments used to collect data in the Saskatoon Tribal Council Special Education research conducted through your department by Lorna Robert. This request is conditional upon approval in writing as represented by this letter, you must also submit the results of your analysis for inclusion as an appendix to the final report of the original research project.

Finally, it must be understood that this approval includes permission for you to publish your findings in your thesis, any further publication would require its own permission from the Tribal Council and its member First Nations.

We look forward to reviewing your findings.

Yours truly,

Gordon Lobe,  
Superintendent of Schools

cc. Chief Harry L. Len N.
APPENDIX 2

Academic Performance Rating Scale
For each of the below items, please estimate the above student’s performance over the past week. For each item, please circle one choice only.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Estimate the percentage of written math work completed (regardless of accuracy) relative to classmates.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Estimate the percentage of written language arts work completed (regardless of accuracy) relative to classmates.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Estimate the accuracy of completed written math work (i.e., percent correct of work done).</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Estimate the accuracy of completed written language arts work (i.e., percent correct of work done).</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>How consistent has the quality of this child’s academic work been over the past week?</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>How frequently does the student accurately follow teacher instructions and/or class discussion during large-group (e.g., whole class) instruction?</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>How frequently does the student accurately follow teacher instructions and/or class discussion during small-group (e.g., reading group) instruction?</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>How quickly does this child learn new material (i.e., pick up novel concepts)?</td>
<td></td>
</tr>
</tbody>
</table>
9. What is the quality or neatness of this child's handwriting?

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Average</th>
<th>Above average</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

10. What is the quality of this child's reading skills?

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Average</th>
<th>Above average</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

11. What is the quality of this child's speaking skills?

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Average</th>
<th>Above average</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

12. How often does the child complete written work in a careless, hasty fashion?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

13. How frequently does the child take more time to complete work than his/her classmates?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

14. How often is the child able to pay attention without you prompting him/her?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

15. How frequently does this child require your assistance to accurately complete his/her academic work?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

16. How often does the child begin written work prior to understanding the directions?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

17. How frequently does this child have difficulty recalling material from a previous day's lessons?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

18. How often does the child appear to be staring excessively or "spaced out"?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

19. How often does the child appear withdrawn or tend to lack an emotional response in a social situation?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. From Teacher Ratings of Academic Performance: The Development of the Academic Performance Rating Scale by G. J. DuPaul, M. Rapport, and L. M. Perriello, 1990, unpublished manuscript, University of Massachusetts Medical Center, Worcester. Reprinted by permission of the authors. This form may be reproduced for personal use.
APPENDIX 4
Stepwise Multiple Regression for Nontransformed Data
Nontransformed Data Stepwise Multiple Regression
Predictions of Problem Behaviours (TRS of the BRP-2)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Rsq</th>
<th>RsqCh</th>
<th>F</th>
<th>Sig. of F</th>
<th>beta</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Sample n=480</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.4530</td>
<td></td>
<td>375.145</td>
<td>.000*</td>
<td>.6786</td>
</tr>
<tr>
<td>School</td>
<td>.4665</td>
<td>.0135</td>
<td>197.590</td>
<td>.000*</td>
<td>-.1162</td>
</tr>
<tr>
<td><strong>Band Schools n=177</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.4836</td>
<td></td>
<td>150.783</td>
<td>.000*</td>
<td>.6579</td>
</tr>
<tr>
<td>Age Group</td>
<td>.5054</td>
<td>.0218</td>
<td>81.752</td>
<td>.000*</td>
<td>.1317</td>
</tr>
<tr>
<td>Non-Verbal Reasoning</td>
<td>.5197</td>
<td>.0143</td>
<td>57.349</td>
<td>.000*</td>
<td>.1541</td>
</tr>
<tr>
<td><strong>Provincial Schools n=299</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.4465</td>
<td></td>
<td>233.976</td>
<td>.000*</td>
<td>.6895</td>
</tr>
<tr>
<td>Age Group</td>
<td>.4539</td>
<td>.0074</td>
<td>120.117</td>
<td>.000*</td>
<td>-.0917</td>
</tr>
<tr>
<td>Non-Verbal Reasoning</td>
<td>.4615</td>
<td>.0022</td>
<td>82.287</td>
<td>.000*</td>
<td>-.0953</td>
</tr>
<tr>
<td><strong>Females n=233</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.3926</td>
<td></td>
<td>138.799</td>
<td>.000*</td>
<td>.6294</td>
</tr>
<tr>
<td>School</td>
<td>.3998</td>
<td>.0072</td>
<td>74.260</td>
<td>.000*</td>
<td>-.1315</td>
</tr>
<tr>
<td><strong>Males n=243</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.4747</td>
<td></td>
<td>205.152</td>
<td>.000*</td>
<td>.6904</td>
</tr>
<tr>
<td>School</td>
<td>.4857</td>
<td>.0110</td>
<td>106.701</td>
<td>.000*</td>
<td>-.1046</td>
</tr>
<tr>
<td><strong>Age 6-9 years n=169</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.3959</td>
<td></td>
<td>101.573</td>
<td>.000*</td>
<td>.6465</td>
</tr>
<tr>
<td>School</td>
<td>.4256</td>
<td>.0297</td>
<td>57.064</td>
<td>.000*</td>
<td>-.1734</td>
</tr>
<tr>
<td><strong>Age 10-13 years n=188</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.5137</td>
<td></td>
<td>193.293</td>
<td>.000*</td>
<td>.7165</td>
</tr>
<tr>
<td>School</td>
<td>.5668</td>
<td>.0531</td>
<td>119.047</td>
<td>.000*</td>
<td>-.2304</td>
</tr>
<tr>
<td><strong>Age 14-18 years n=119</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Performance</td>
<td>.4381</td>
<td></td>
<td>86.560</td>
<td>.000*</td>
<td>.6658</td>
</tr>
<tr>
<td>School</td>
<td>.4663</td>
<td>.0282</td>
<td>48.045</td>
<td>.000*</td>
<td>.1677</td>
</tr>
</tbody>
</table>

*p<.01